the review of income and wealth

Review of Income and Wealth
Series 65, Number 2, June 2019
DOI: 10.1111/roiw.12356

CULTURAL NORMS AND SON PREFERENCE IN INTRAHOUSEHOLD FOOD DISTRIBUTION: A CASE STUDY OF TWO ASIAN RURAL ECONOMIES

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Based on the cost and content of individual calorie intake, I find evidence of son preference in food distribution in rural Bangladesh but not in the rural Philippines, which is consistent with the contrasting cultural norms of these two agrarian societies. Unlike in the Philippines, few females in Bangladesh, a male-dominated patriarchal society with the strong presence of dowry and purdah systems, seem to participate in the labor market. Gender differences in wage rates appear to be prominent in Bangladesh as well, and the transfer at marriage from a bride's family seems to exceed that from a groom's family. In Bangladesh, the village wage rate of adult females is positively associated with a girl's allocation from the animal food group, while village wage rates of adult males are negatively associated. However, no such association is observed in the Philippines, which is characterized by egalitarian values between the sexes. In recent marriages in Bangladesh, a village's average value of transfers from grooms' families is also positively associated with a girl's allocation. While higher birth order children fare worse than lower birth order children in both economies, in Bangladesh a higher birth order girl does worse than a higher birth order boy, whereas this is not the case in the Philippines. The son preference does not seem to be associated with scarcity, as it is prominent in non-poor Bangladeshi households but not in poor ones; the preference does not appear in either category in the Philippines. A Bangladeshi village's access to television, which I use as a proxy for liberal values, is positively associated with girls' calorie allocations.

JEL Codes: C12, C13, C33, D13, D30

Keywords: intrahousehold, nutrients, bargaining, gender, inequality

1. INTRODUCTION

An understanding of how cultural norms can influence intrahousehold food distribution has critical policy implications, given the severity of nutrient deficiency around the developing world.[1] However, despite a considerable increase in

Note: I thank Richard Blundell, Andrew Chesher, Imran Rasul, Sonia Bhalotra, Giacomo de Giorgi, Stephan Klasen, and two anonymous referees for their valuable comments and suggestions. I also thank Howarth Bouis, Wahid Quabili, and Agnes Quisumbing in helping me accessing the IFPRI data and with numerous queries, and Susan Boulanger for editorial support. The findings, interpretations, and conclusions expressed in this paper are entirely of mine. They do not necessarily represent the views of the International Bank for Reconstruction and Development/World Bank and its affiliated organizations, or those of the Executive Directors of the World Bank or the governments they represent. All the remaining errors are mine.

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[1]Nearly 3 billion people (including 56 percent of the pregnant and 44 percent of the non-pregnant women) suffer from iron deficiency anemia (IDA), and one third of the world's population suffer from zinc deficiency (see Standing Committee on Nutrition, 2004, 2000; McLean *et al.*, 2008). Twenty percent of the maternal deaths in Africa and Asia are due to IDA (Ross and Thomas, 1996). One in every three preschool-aged children in the developing countries is malnourished (Smith *et al.*, 2003). Undernutrition, coupled with infectious diseases, accounts for an estimated 3.5 million deaths annually (see *Scaling Up Nutrition, A Framework for Action*, available at http://siteresources.worldbank.org/NUTRITION/). At levels of malnutrition found in South Asia, approximately 5 percent of GNP is lost each year due to debilitating effects of iron, vitamin A, and iodine deficiencies alone (World Bank, 1994).

the intrahousehold resource allocation literature, progress in understanding intrahousehold food distribution issues remains limited, as does information on the role of culture in food distribution. In general, existing empirical work in economics does not adequately capture the specific cultural contexts within which individuals in households make decisions (Quisumbing, 2003; Fernandez, 2008), while the lack of individual dietary intake data in typical household surveys constrains the analysis of intrahousehold food distribution.

To the best of my knowledge, only a few studies have attempted to replicate a common intrahousehold allocation framework across different cultural contexts. Quisumbing and Maluccio (2003) found pro-male bias in education spending in Bangladesh, a patriarchal society in which husbands control most household resources, but not in West Sumatra, Indonesia, a matrilineal and matrilocal society.[2] The contrast between these two Asian Islamic societies illustrates the difficulty in predicting the direction of sex preference if underlying culture and customs are not considered.

Intrahousehold allocations can be influenced by norms dictating differential roles, acceptable behaviors, rights, privileges, and life options for women and men (Agarwal, 1997; Kabeer, 1999). The bargaining power and "threat points" of women *vis-à-vis* men could be influenced by cultural factors. In a cultural context such as the purdah (veil) system, which values female seclusion, limits women's mobility and participation in outside economic activities, and makes males the main breadwinners, and in the absence of public provision for old-age support, women may invest in the human capital of their sons even more than their spouses, as women are younger at marriage and can expect to live longer than their husbands, *ceteris paribus.*[3] The gender discrimination in South Asia (SA), in contrast to sub-Saharan Africa (SSA) (where daughters are slightly more nutritionally favored than sons), is arguably due to the dowry culture in SA that requires families to pay bridegrooms to marry their daughters *vis-à-vis* the custom in SSA of husbands paying a bride price (Quisumbing, 2003). The cultural norms of a patriarchal society, combined with the economic necessity of manual labor in an agrarian economy, may suggest that sons are prized (Chung and Das Gupta, 2007), while the tradition of dowry payments could put families with daughters in a disadvantaged position. Some religions and customs also put a premium on sons; in the Hindu tradition, for example, a son lights his father's funeral pyre. Lineage is primarily traced through the male in many societies, and families may depend on men for physical protection (Oldenburg, 1992).

Against this backdrop, by focussing on intrahousehold food allocation for children I demonstrate evidence of son preference in Bangladesh, a patriarchal, male-dominated society characterized by the purdah and dowry system, but not in the Philippines, a bilineal society without gender-discriminatory social norms.

In doing so, I attempt to make some contributions to the literature. First, I extend the focus from an individual's total calorie intake to the implications of

[2]See also Quisumbing (2003) and the references therein.

[3]Women's age at marriage can also be influenced by the cultural norms related to females' labor market participation *vis-à-vis* household activities. Smith *et al*. (2003) find that women marry at younger ages in South Asia and at older ages in Latin America.

the cost and content of that calorie consumption. The previous literature, including the influential work of Pitt *et al*. (1990), assumes calories as a sufficient statistic for different nutrients and thus focusses on individuals' calorie intake as the key metric for analyzing intrahousehold food distribution.[4] However, this emphasis does not shed much light on the severe nutrient deficiency problem around the developing world as calorie adequacy often exists alongside nutrient deficiency (Bouis *et al*., 1992). The focus on calorie intake also tends to understate intrahousehold inequality. Two identical household members can consume the same amount of calories. However, the composition of that intake could vary widely, with one consuming relatively more expensive, better-tasting, better-quality, and more prestigious food items than the other.[5]

Second, in contrast to the previous literature that finds no evidence of gender inequality among children,[6] I find son preference in Bangladesh and argue that this preference is explained neither by the current nutrition–health – labor market linkage nor by scarcity. Pitt *et al*. (1990), for example, argue that gender inequality in food distribution is due to the nutrition–health – labor market linkage, demonstrating calorie-intake inequality among adults in rural Bangladesh but not among children (less than 12 years). This inequality, however, is due to adult males' participation in more energy-intensive labor market activities, in which health influences productivity, while adult females (for whom there are no market returns for health due to social norm based sex-segregated occupational patterns) engage in low energy-intensive household activities. Due to their limited labor market participation, the sex disparity in food distribution is absent among children. Hence, if the nutrition – labor market linkage drives the son preference, one would expect greater disparities among older than among younger children. However, I find that son preference persists at all ages in Bangladesh, but at no age in the Philippines. Moreover, son preference appears to be more prominent in Bangladesh's non-poor or higher-income households than in poor or lower-income households, while not in either category in the Philippine sample (which appears to be poorer than the Bangladeshi one). Dowry payment—a unique cultural feature of Bangladesh—tends to rise with household wealth, which might help explain why sons are preferred over daughters in Bangladesh's higher-income households.

While future sex disparity in participation and earnings in the labor market could influence the sex disparity in calorie distribution among children, Behrman

[4]See Behrman (1990), among others, for a survey of this literature.

[5]Bouis and Pena (1997) propose an inequality measure of an individual's food share (FS) over calorie share(CS) within the household. According to this FS/CS index, a value greater than 1 for a particular food or food group will indicate an individual's favored position, and a value less than 1 implies an unfavored position for allocation of that particular food item or food group.

[6]Using the adult-good method, (Deaton, 1989) finds no evidence of boy–girl discrimination. Using household food expenditure data from rural Pakistan, Bhalotra and Attfield (1998) find no evidence of sex disparity in children's food allocation. Some studies argue that boys receive more nutrition (Chen *et al*., 1981; Das Gupta, 1987) and more healthcare (Basu, 1993; Ganatra and Hirve, 1994), and are more likely to be vaccinated (Borooah, 2004) than girls. However, other studies find no gender difference in anthropometric measures (Marcoux, 2002). Some studies find that households discriminate between boys and girls in bad times (Behrman, 1988a; Rose, 2000), while Duflo (2005) concludes that even in countries where the preference for boys is strongest, evidence that girls receive less care than boys under normal circumstances is hard to find.

(1988b) does not find any such link in rural India.[7] Consistent with the purdah culture in Bangladesh, few women seem to participate in the labor market. Although both societies are agrarian, in Bangladesh, adult males' labor market participation is seven times that of adult females, whereas in the Philippines, males' participation is only double that of adult females. The mean village wage rate for adult males is twice that of adult females in Bangladesh, while consistent with egalitarian norms in Philippine society, no such sex disparity in wage rates is observed there.

Using village mean wage rates for adult males and females as a proxy for the potential future earnings of boys and girls in the society, an approach similar to that of Rosenzweig and Schultz (1982),[8] I find that in Bangladesh the female wage rate positively, and the male wage rate negatively, affects a girl's allocation from the animal food group (the most expensive and nutritionally rich); this does not occur in the Philippines.[9] Thus my third contribution is to demonstrate the link between intrahousehold food distribution and expected labor market returns in Bangladesh, whereas the previous literature found no such link in South Asia. The absence of such a link in the Philippines could be due to no sex disparity in adult wages, and no bar on females' labor market participation under the country's egalitarian social norms.

Fourth, building on the assumption set out by Rosenzweig and Schultz, I also explore if and how children's food allocation in Bangladesh[10] is affected by the practice of dowry versus bride price in a village. I find that the higher the transfer from grooms' families at recent marriages in a village, the higher are girls' animal food allocations, while higher transfers from brides' families appear to lower that allocation (although not statistically significant). While some previous studies (cited below) analyze the link between dowry and intrahousehold allocation, my contribution here is to explore households' responses to their daughters' food allocation in anticipation of future transfers required at those daughters' marriages. These last two findings indicate that son preference in Bangladesh (and its absence in the Philippines) is a household's economic response to preexisting cultural norms (that is, purdah and dowry) in the society.

Fifth, while I do not have any direct way to measure the effect of cultural norms in intrahousehold food distribution in these two societies, for Bangladesh, I find that a village's access to a television (TV) significantly improves girls' food allocation. Jensen and Oster (2009), citing studies which found that television can influence a broad range of attitudes and behavior, found that introduction of

[7]Using the same data, Pitt *et al.* (1990) find gender inequality in calorie consumption for the age group ≥ 13 and argue that this further strengthens their claim, as a large proportion of children ≤ 13 years do not participate in the labor market.

[8]Rosenzweig and Schultz (1982) conclude that in a stable, slowly developing society parents expect that the conditions they face as adults will be similar to what their children will face. Thus, the study assumes that expectations regarding children's future sex-specific earning opportunities are informed by contemporaneous sex-specific adult earning patterns.

[9]As Folbre (1984) commented on Rosenzweig and Schultz (1982), it is unclear if this link depicts the relationship between intrahousehold allocation and sex disparity in expected labor market returns or evidence of intrahousehold bargaining on current allocation in which women with greater incomes have greater influence on allocations, leading to greater investments in daughters.

[10]Similar data is unavailable in the Philippines survey.

cable TV in India is associated with significant decreases in domestic violence toward women and son preference. Television can expose remote rural villages to modern lifestyles. Many popular TV dramas and soap operas in Bangladesh feature urban (and even international settings), showing women with education, and working outside home, living independently, and marrying later; all of these practices differ widely from those in rural areas.

Sixth, while the birth order effect is mixed in the previous literature (Das Gupta, 1987; Bhalotra and Attfield, 1998), I find that higher birth order children fare worse than lower birth order children in both countries. However, a higher birth order girl does worse than a higher birth order boy in Bangladesh, but not in the Philippines, an indication of son preference in households' unobserved fertility choice in Bangladesh.

Finally, I also attempt to improve upon the empirical strategy. Barcellos *et al*. (2010) argue that the assumption that boys and girls live in families with similar characteristics (observables and unobservables) may bias the findings of previous work, as families with son preference may follow a male-biased stopping rule for childbearing. To overcome this problem, they restrict the sample to families (with the age of children 0–12 months or a bit older) identical in observables, and they find son preference regarding time allocation, breastfeeding, vaccinations, and vitamin supplementation. While novel, this strategy suffers from the bias resulting from unobservable household characteristics, and it also does not permit analysis of discrimination among older children. I thus employ the household fixed-effect (henceforth, FE) method to control for unobserved household fixed effects in analyzing intrahousehold food distribution.

This paper, nonetheless, has several limitations. First, the available survey information does not permit direct measurement of the effect of cultural norms on sex disparity in food distribution. Apart from cultural norms, unobserved economic factors could also influence the differences underlying food distribution in the two societies. Second, I use individual food intake data based on 24-hour recall methodology. Such data, arguably, provide a better measure of calorie demand than do household food expenditure surveys (Behrman and Deolalikar, 1987; Bouis and Haddad, 1992; Bouis *et al*., 1992). Nonetheless, the recall data could be prone to reporting bias in favor of respondents' appropriate norms rather than actual allocations. Theoretically, the bias could go either way, but since people tend not to admit their obvious discrimination publicly (Levitt and Dubner, 2005), in an environment discriminatory against girls, recall data is likely to understate actual boy–girl discrimination in food intake. Third, it is also not obvious whether the observed sex difference in food allocation in the sample households is over- or under-representative of true inequality. On the one hand, sample selection bias may result from past discrimination against girls through sex-selective abortion and higher female infant mortality due to households' neglect of critical care or food allocation to female infants (Das Gupta, 1987). In that case, the observed boy–girl difference in the data is likely to be the lower bound of true inequality, as the girls in the sample are the preferred ones. On the other hand, as the mortality rate tends to drop after age 5, which is also reflected in household's reported mortality incidence in Bangladesh data (see Table A.1 in the Appendix, in the online Supporting Information), the girls observed in the sample could be the ones with better health endowments (as they have survived).[11] Thus it is unclear if the observed allocations are over- or under-estimates of true sex disparity, which depends on whether the households compensate or reinforce the endowments of the surviving children within and between genders.

The rest of the paper is organized as follows. Section 2 highlights relevant cultural norms of the two countries. Section 3 provides a descriptive analysis of the survey data. Section 4 provides the empirical analysis, and Section 5 concludes.

2. Cultural Norms

This section contrasts the cultural norms of Bangladesh and the Philippines.

2.1. *Bangladesh*

Bangladesh is a patriarchal society with high level of gender discrimination. More than 2.7 million Bangladeshi women are missing, indicating son preference leading to sex-selective abortions and neglect and abandonment of girls in early childhood (OECD, 2009). Based on the son preference subindex of the OECD Social Institutions and Gender Index (SIGI), Bangladesh holds 101st position (with an index value of 0.5) out of 122 countries, while China holds the last position.[12]

Morris (1997) sees the combination of religion, history, and culture in Bangladesh to pose too formidable a barrier for women to overcome; they remain dependent on men throughout their lives, from fathers to husbands, brothers, or sons. They do not have their own identities and are rarely viewed as individuals. From the time of birth, as Morris notes, a Muslim woman's place in Bangladeshi society is largely predetermined. While a son is welcomed into the world with the cry of "Allah Akbar" (God is Great), a female child receives only the whisper of the Quranic prayer. Soon after the birth of a Bangladeshi girl, her relatives begin the negotiations for her marriage. A key feature of this marriage is the dowry payment, made over the course of several years and a significant financial burden for most families. An inability to pay dowry severely affects a young bride's treatment in her husband's family home, which is consistent with Rao (1997), who finds that lower dowries are associated with increased wife beating.

Amin and Cain (1997) document dowry inflation in Bangladesh over the past decades. As Ambrus *et al*. (2010) illustrate, the dowry system first emerged in the 1950s and has now almost entirely replaced the traditional bride-price system, making Bangladesh the only Muslim country to rarely practice the bride-price and almost universally practice the dowry. Muslim marriages involve negotiation of a *mehr* (the traditional Islamic bride-price, ideally paid at the time of the wedding) as a part of the marriage contract. However, unlike in other Islamic

[11]Similar sex-disaggregated mortality data is unavailable in the Philippines survey.

[12]This indicator is inspired by Sen (1990). The SIGI countries are coded by Klasen based on Klasen and Wink (2003) on the scale of 0, 0.25, 0.5, 0.75, and 1, with 0 indicating that missing women is not a problem and 1 implying a severe incidence of excess female mortality. For a recent survey of the missing women issue in developing countries, see *Economist* (2010).

countries, in Bangladesh the key characteristic of *mehr* is that it is almost universally and automatically specified to be paid only in the case of husband-initiated divorce, much like a standard prenuptial agreement.

The purdah (veil) custom limits women's access to education and employment and freedom and mobility in rural Bangladesh (Begum, 1998; Rozario, 1998; Gruenbaum, 1991; Hoodfar, 1991; Papanek, 1982). It enables men to dominate their females by exercising control over property, income, and their labor (Rahman, 1994; Zaman, 1995). Bakr (1994) finds that the practice of purdah, which is socially and culturally determined, has been used deliberately as an instrument enabling men to dominate the family structure and divide labor by gender, leaving women extremely dependent upon their husbands. Hashemi *et al.* (1996) argue that as a result of purdah, Bangladeshi women are traditionally isolated at home, with little social contact outside their kin groups. Amin (1997) finds that the practice of female seclusion influences and conditions women's decisions regarding the roles they assume, and it remains a dominant influence in women's lives, showing little evidence of responsiveness to poverty.

In this sociocultural context, it is unsurprising that women appear to be a "residual category" in intrahousehold food distribution, eating after men and children and making do with what is left (Kabeer, 1998). This practice is believed to ensure the longevity and good fortune of male guardians, and thus girls are taught by their mothers to get used to such deprivation (Naved, 2000).

2.2. *The Philippines*

Mendez and Jocano (1974), Medina (1995), and Miralao (1997), among others, provide detailed accounts of the traditional regime in the Philippine family. The precolonial social structure of the Philippines gave equal importance to maternal and paternal lineage, which gave Philippine women enormous power within a clan. Women were entitled to property, engaged in trade, could exercise their divorce right, and could become village chiefs in the absence of a male heir. Although the male-centered colonization processes effected some significant changes in the traditional gender regime, Philippine women, in comparison with their Euro-American and Southeast Asian counterparts, have always enjoyed a greater share of legal equality with men and have held relatively high social status since the precolonial era. The laws in the Philippines reflect egalitarian rather than patriarchal politics. It is illegal to denigrate women publicly. Women have the same legal rights as men, including parental authority and the right to inherit, sell, and own property (Agbayani-Siewerat, 2004; OECD, 2009).

The tradition of marriage and courtship underscores the importance of the bride and her family in the society. A man is expected to court a woman to win her heart. Parents prefer that their daughter be courted in their home, so they have a chance to know the man. Sometimes, the courtship lasts for several years, during which the man is measured based on his ability to respect and serve the bride's family. Often, the woman is courted by several men and will choose the best from among her suitors.

Traditionally, the dowry was a part of the Philippine marriage, but in contrast to Bangladesh, it is the payment from the groom to the bride and her family (similar to bride price in sub-Saharan Africa). Before marriage, the groom gave a dowry (*bigay-kaya*) to the bride's family, consisting of gold, land, money, slaves, or anything of value.[13]

In Philippine folklore, both the husband and wife come from a single piece of bamboo, which contributes to the egalitarian concept of the role of husband and wife in the society. Conversely, the folklore belief in Bangladesh, grounded in Islamic tradition, is that the woman is made from the man's chest bone, indicating that she is inherently weaker than and dependent on the man. A father in the Philippine tradition is a breadwinner, while the mother is the *Reyna ng Tahanan* ("Queen of the Home"). She controls the finances, acts as a religious mentor, disciplines the children, and may also arrange the marriages of sons and daughters to improve the family's dynastic connections.[14] Overall, the mother holds the key to household development (Flavier, 1970). Since she controls household finances, her parental family rather than her husband's family has a better chance of receiving financial help.

In this cultural setting, the society values offspring regardless of sex. Girls are as valuable as boys; women are as important as men. Parents provide equal opportunities to their children regardless of sex. In contrast to Bangladesh, linguistic analysis of Philippine kin terminology has a striking lack of gender differentiation (Stoodley, 1957). For example, the Tagalog language has a general term for a child (*anak*), but no specific word for either "daughter" or "son." Similarly, the ethnographic studies document no evidence of son preference in food distribution (Palabrica-Costello, 1994). Fertility studies show that Filipinos are just as likely (if not slightly more) to desire a daughter as a son (Wong and Ng, 1985). Almond *et al.* (2009) find that while, for all other Asian immigrants to Canada, sex ratios are normal at first parity and rise with parity if there were no previous sons, for the Philippine immigrants, the sex ratio is at the biological norm for all parities, including for a third child preceded by two girls, indicating no son preference at all. According to the OECD SIGI index, the Philippines is one of the top-ranked countries (seventh out of 102 non-OECD countries, while Bangladesh ranks 90th), reflecting a high degree of gender equality. In terms of the son-preference index, the Philippines' value is 0, indicating no missing women problem (OECD, 2009).

3. Data and Descriptives

3.1. *Bangladesh*

For Bangladesh, I use an innovative household survey data from the International Food Policy Research Institute (IFPRI). It contains four rounds of surveys

[13]Some other forms of dowry included the following: (i)*Panghimuyat*—a sum of money given to the bride's mother as the compensation for the sleepless nights she endured while rearing the girl; (ii) *Bigay-susu*—another sum given to the mother or wet nurse who gave milk to the bride during her infancy; and (iii) *Himaraw*—a sum of money given to the parents of the bride to reimburse them for the cost of bringing her up. The giving of a ring, although influenced by Western culture, is a scaled-down version of the tradition of a groom offering a dowry to his wife and her family. Aside from the dowry, the groom had to serve the bride's parents for free, chopping wood, fetching water, and doing other manual work. See http://philippinealmanac.com/philippine-history/marriage-customs-of-the-ancient-filipinos/.

[14]However, marriages are no longer arranged in the Philippines, and have not been for a long time.

at four-month intervals during 1996–7 (Round 1: June–September 1996; Round 2: October–December 1996; Round 3: February–May 1997; and Round 4: June–September 1997) in 47 villages from three sites. The survey objective was to evaluate the impact of commercial vegetable production in Saturia (site 1), polyculture fish production in household-owned ponds in Mymensingh (site 2), and polyculture fish production in group-managed ponds in Jessore (site 3) on household income, nutrition, and time allocation. The survey questionnaire was administered to 5,541 individuals in 955 rural households in each round. The survey collected detailed information on demographic characteristics, agricultural production, other income-earning activities, expenditure patterns, time allocation, individual food intakes, health, morbidity, and education. It also collected information on family background, marriage history, assets at marriage, transfers at marriage, inheritance, women's mobility, and empowerment.

Table A.1 presents some descriptives averaging over four rounds. I divide the households into the poor and non-poor categories, based on the absolute poverty line (APL), that is, per capita calorie consumption of 2,122 kilocalories per day. As this case study involves data from two different countries at different time periods, the use of APL is convenient, as it does not require conversion of nominal income to real income using purchasing power parity to analyze the behavior of poor and non-poor groups in the two different samples. Based on APL, the majority of the households in any given round are poor. At the same time, the majority of the households tend to move in and out of poverty in different rounds, and about 35 percent of the households remain poor in all four rounds. About 7 percent of the households are landless, based on the landholding data collected in round 1. About the poverty dynamics, I also find substantial variation across different rounds regarding both per capita monthly expenditure and budget share for various food groups.

The claim by Pitt *et al.* (1990) of children's non-participation in the labor market tends to hold in the IFPRI survey. Detailed work activities of children are absent from the survey. The survey records occupations for 1,203 children (630 of whom are boys) as follows: two boys are involved in farming, one is in service, two are laborers, and another two are servants, while one girl is listed as doing household work, three as servants, and one as a laborer; the rest are recorded as children or students. The wage data do not indicate any wage labor for children. In the adult category, females are recorded as having much lower levels of participation in wage labor, and the female wage rate is almost half the male wage rate (see Tables A.1 and A.2).[15]

The marriage module of the survey records transfers (at 1996 prices) at marriage from a wife's family to her husband's family, to her husband, or to her and her husband (henceforth, loosely termed as dowry), and the transfer from her husband's family to her family, to her, or to her and her husband (loosely termed as *mehr*; i.e., bride price). For the empirical analysis in the following section, I construct a village-level average of total transfer from a wife's and a husband's

[15]The mean wage rate is averaged over all activities of adult males and females in four rounds in a given village, and the nominal wage rate is deflated by the village rice price, averaged over four rounds to obtain a proxy for the real wage rate.

TABLE 1
TRANSFERS AT MARRIAGE FROM WIFE'S AND HUSBAND'S FAMILY IN BANGLADESH

Variables	(1) Ldwry OLS	(2) Lmehr OLS	(3) Ldwry SUR	(4) Lmehr SUR
Lwpland	0.147***	0.124***	0.163***	0.151***
	(0.053)	(0.042)	(0.053)	(0.044)
Lhpland	0.051	0.120***	0.040	0.099**
	(0.048)	(0.039)	(0.047)	(0.039)
lenmarr	−0.028***	0.049***	−0.029***	0.048***
	(0.007)	(0.005)	(0.007)	(0.006)
huseduc	0.075***	−0.026	0.078***	−0.029
	(0.023)	(0.020)	(0.022)	(0.021)
wifeduc	0.006	0.077***	−0.002	0.075***
	(0.026)	(0.029)	(0.025)	(0.028)
feducfw	0.036*	0.039*	0.038*	0.043*
	(0.021)	(0.023)	(0.021)	(0.023)
feducmw	−0.047	0.041	−0.050	0.043
	(0.032)	(0.036)	(0.031)	(0.036)
feducfh	0.043*	0.014	0.035	0.018
	(0.023)	(0.019)	(0.022)	(0.019)
feducmh	−0.005	0.005	0.002	0.001
	(0.049)	(0.064)	(0.048)	(0.064)
Constant	7.608***	5.471***	7.614***	5.449***
	(0.251)	(0.215)	(0.252)	(0.229)
Observations	348	363	342	342
Adj. R^2	0.194	0.350		

Notes: Heteroskedasticity consistent robust standard errors clustered at the household level are in brackets; *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$; dwry, wife's family transfer; mehr, husband's family transfer; wpland, wife's parents land; hpland, husband's parents land; lenmarr, length of marriage; huseduc, husband's education; wifeduc, wife's education; huseduc, husband's education; feducfw, wife's father education; feducmw, wife's mother's education; feducfh, husband's father education; feducmh, husband's mother education; L, natural log.

family based on marriages occurring between 1990 and 1995. Consistent with the phenomenon of dowry price inflation, it appears that, on average, transfer from a wife's family (dowry) is about 3.5 times higher than that from a husband's family (*mehr*)[16].

Table 1 presents a simple regression analysis of the association between a husband's and wife's own and family characteristics and transfers at marriage from their families (the first two columns report OLS results and last two seemingly unrelated regression [SUR] results). A wife's parents' landholding increases both the dowry and *mehr*. The magnitude of the effect of the former is larger than that of the latter, implying a net outflow from a wife's family. This outflow increases with the landholding of her parents. The mean value of dowry for all marriages in the survey is 9,544 taka, while the average value of *mehr* is 6,496 taka, both in 1996 prices. A 10 percent increase in the wife's parents' landholding

[16]The data enable me to construct the village-level average for 33 of the 47 villages based on the marriages occurring in the specified period.

would increase the transfer from her family by 16 percent and from her groom's family by 15 percent, in the SUR estimate. Education of a wife's father is also positively associated with both dowry and *mehr*. A wife's education increases *mehr*, while a husband's education increases dowry, and the magnitude of these opposite effects are almost similar to an additional year of schooling for a wife *vis-à-vis* her husband. Finally, the coefficient of the length of marriage (calculated based on the year of marriage since the survey year) is consistent with the findings in the literature about dowry price inflation and the replacement of bride price with a dowry in recent periods. The earlier the year of marriage, the lower (higher) is the value of transfer from a wife's (groom's) family. If the marriage had occurred a year later, dowry would increase by 3 percent, and *mehr* would decrease by 5 percent in the SUR estimate.

The literature suggests that girls tend to live in bigger families with a higher number of siblings than boys (Morduch and Stern, 1997). Based on the number of co-residing living siblings for a boy *vis-à-vis* a girl, both the mean and 75th percentile of female siblings of a boy and of a girl appear to be higher in poor households than in non-poor households. The average for the total number of siblings is higher in poor than non-poor households. The mean and 25th percentile of male siblings of a girl is also higher in poor than in non-poor households, indicating that girls tend to live in bigger families in poor households. However, this pattern could be due to the use of a per capita calorie-based poverty line. By construction, the per capita calorie intake would be lower in households with more children, as a child would consume fewer calories than an adult. Moreover, if a girl's required calorie amount is less than that of a boy, as the WHO requirement figures suggest (World Health Organization, 1985), and, accordingly, if a girl consumes fewer calories than a boy, then APL-based poor households could end up having more children than adults and more girls than boys.

Regarding village access to television, it appears that 4 out of 47 villages have no access at all. These four villages contain about 13 percent and 7 percent of the total survey observations for females and males, respectively.

Both monthly per capita expenditure and per capita calorie consumption are higher in non-poor than in poor households, while the composition of food expenditure and calorie consumption from three broadly defined food groups—animal, fish, and dairy (henceforth, animal), cereals, and plant and others—are roughly similar between the two groups. Moreover, food expenditure share is also substantially higher for non-poor than for poor households, primarily due to higher amounts of calorie consumption in the latter, indicating a high income elasticity of food consumption, particularly at relatively low levels of income. As reflected in the price to purchase the same amount of calories from different food groups, the animal group is the most expensive.

Children (aged less than 10 years) on average eat about 500 calories more in non-poor than in poor families (see Table 2). The total calorie intake of boys is about 8 percent higher than that of girls in non-poor families; in poor families, boys' calorie intake is 4 percent higher than the girls'. However, the boy–girl difference in total calorie intake does not necessarily imply discrimination, as the mean requirement for girls for this age group is about 214 calories less than that

TABLE 2

Food Distribution Between Boys and Girls (≤ 10 years) in Bangladesh and the Philippines

	All		Poor		nonpoor	
	Boy	Girl	Boy	Girl	Boy	Girl
Bangladesh						
Total calorie intake	1,451	1,361	1,185	1,137	1,757	1,627
Calorie share from animal group	3.73	3.43	3.74	3.75	3.71	3.05
Calorie share from plant and other (excluding cereals)	15.36	16.14	15.37	15.61	15.34	16.78
Individual's animal calorie/household's animal calorie (%)	0.16	0.14	0.16	0.15	0.16	0.13
Individual's plant calorie/household's plant calorie (%)	0.15	0.14	0.15	0.15	0.14	0.13
Individual's cereal calorie/household's cereal calorie (%)	0.14	0.13	0.14	0.14	0.13	0.12
Total food expenditure (taka/day)	8.99	8.41	7.55	7.17	10.63	9.90
Expenditure share on:						
Animal group	23.14	21.88	22.87	22.63	23.45	20.99
Plant group	32.88	34.53	33.59	34.05	32.08	35.11
Individual food expenditure/household food expenditure (%)	0.14	0.14	0.15	0.14	0.14	0.13
Mean age	6.44	6.27	6.31	6.19	6.59	6.36
Philippines						
Total calorie intake	1,288	1,236	1,121	1,081	1,843	1,763
Calorie share from animal group	7.28	7.37	7.27	7.16	7.32	8.11
Calorie share from plant and other (excluding cereals)	66.13	69.42	64.81	68.99	70.53	70.89
Individual's animal calorie/household's animal calorie (%)	0.14	0.14	0.14	0.14	0.15	0.15
Individual's plant calorie/household's plant calorie (%)	0.13	0.12	0.13	0.12	0.14	0.13
Individual's cereal calorie/household's cereal calorie (%)	0.13	0.13	0.13	0.12	0.15	0.16
Total food expenditure (taka/day)	4.01	4.05	3.33	3.30	6.26	6.62
Expenditure share on:						
Animal group	32.93	31.93	33.42	32.14	31.29	31.19
Plant group	51.61	54.07	50.42	53.57	55.58	55.76
Individual food expenditure/household food expenditure (%)	0.13	0.13	0.13	0.13	0.14	0.13
Mean age	4.94	4.99	5.01	5.05	4.71	4.83

of boys. The requirements for all other critical macro- and micro-nutrients are almost the same for boys and girls.[17]

As discussed, calorie adequacy can coexist with micronutrient deficiency, as main sources of calories, although cheap, are not always good sources of a variety of critical micronutrients (IFRPI–BIDS–INFS, 1998). Moreover, for critical nutrients such as protein and iron, sources as well as quantity matter. Protein from animal and dairy sources, as opposed to cheaper cereal sources, are high quality and more easily digestible, while iron from animal and dairy sources, known as haem-iron, has high bioavailability (World Health Organization, 1985). The animal food group is the most expensive and at the same time the richest in various nutrients, such as protein and iron; it also promotes the bioavailability of micronutrients from non-staple plant foods and cereals. For these reasons, I focus on individuals' calorie and food expenditure share of the animal group in analyzing intrahousehold food distribution. Based on animal-group shares of calories

[17]For the requirements for micronutrients for males and females of different age groups in developing countries, see World Food Programme (2000). The calorie requirement figures for children are from World Health Organization (1985), which are based on the United States (U.S.) National Center for Health Statistics (NCHS) referenced children sample. Some studies argue that the calorie requirement figures are themselves gender-biased, as the standards based on energy use for various activity levels may systematically understate the actual energy use of women (Chen *et al.*, 1981; Sen, 1984).

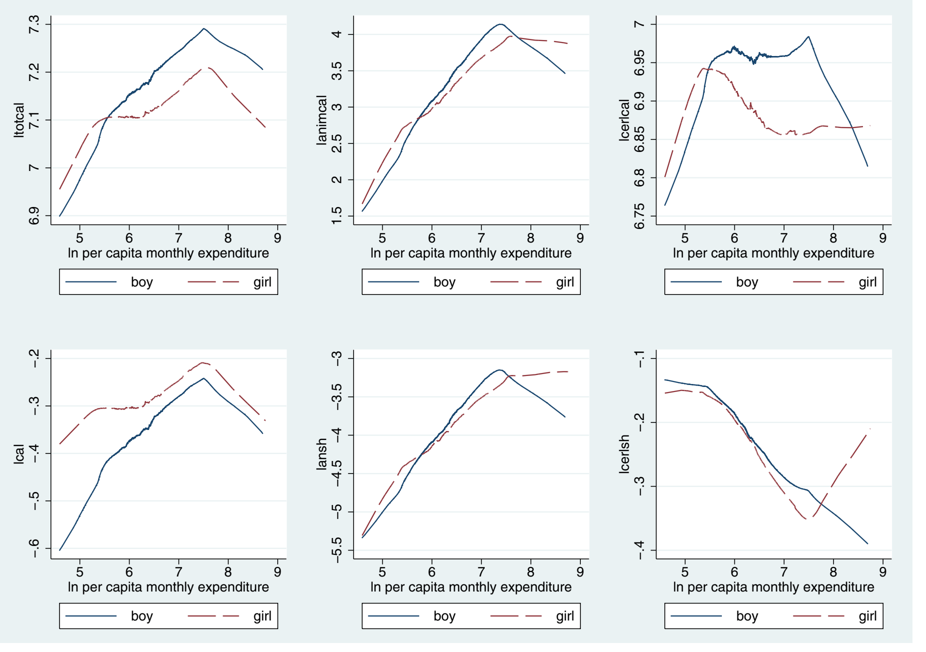

Figure 1. Bangladesh: Calorie Share Engel Curves, Lowess Fit, Bandwidth = 0.8 [Color figure can be viewed at wileyonlinelibrary.com]

Notes: ltotcal, ln calorie intake; lanimcal, ln animal calorie intake; lcerlcal, ln cereal calorie intake; lcal, calorie adequacy ratio; lansh, ln (animal calorie/total calorie); lcerlsh, ln(cereal calorie/total calorie).

and food expenditure, the boy–girl disparity is more prominent in non-poor than in poor households. The calorie share from the animal group is virtually same between boys and girls in poor families, but boys' share is 22 percent higher than girls' share in non-poor households. The same pattern applies regarding boys' versus girls' intakes of animal calories as a share of total household calories from animal sources and also regarding boys' and girls' food expenditure shares for animal products in poor and non-poor households.[18] None of these differences are likely to be driven by the ages of the children, as the mean age of children in both types of households is around 6 years.

3.2. *The Non-parametric Engel Curve for Bangladesh*

The upper panel of Figure 1 presents non-parametric (using a locally weighted regression method, lowess at bandwidth 0.8) Engel curve for boys and girls for total calories and calories from the animal and cereal groups. The lower panel portrays their calorie adequacy ratios[19] and calorie shares from the animal

[18]The total household animal calories and spending on the animal food group are the total of the animal calorie intake and spending on the animal food group of all individuals in the household, not just those of the children.

[19]The calorie adequacy ratio is an individual's calorie intake as a share of his/her calorie requirement.

and cereal groups. As opposed to the linear calorie Engel curve in the literature (Deaton and Subramanian, 1996), these Engel curves are broadly quadratic, implying an increase in total calories and animal and cereal calories before their declines with the increase in income. The cereal calorie intake tends to flatten at a relatively low level of income compared to the income level at which animal calorie intake tends to decline. While with the increase in income boys' total calorie intakes surpass girls' intakes, girls' calorie adequacy ratios appear to be higher than those of the boys at all income levels. Conversely, as income level increases, boys' total animal calorie intakes and animal calories as a share of total calorie intake both tend to surpass those of girls roughly at around monthly per capita expenditure of 350 taka (about 150 taka less than the national rural lower poverty line in 1995–6). This pattern is consistent with the above descriptive analysis showing that the boy–girl difference in animal calorie share is higher in non-poor than in poor families. Finally, as expected, the cereal share in total calories tends to decline with the increase in income. Non-parametric Engel curves of total expenditure and animal and cereal expenditure as a proportion of total expenditure broadly mirror the findings based on total calorie and calorie share Engel curves (not shown).

3.3. *The Philippines*

The Philippines data come from the IFPRI study, the Philippines Cash Cropping Project. The objective of the project was to understand the effects of cash cropping on human nutrition. Four survey rounds were administered to 448 households in 29 villages over a 16-month period in 1984–5, in the predominantly rural southern province of Bukidnon. The households, comprising 2,880 individuals, were surveyed to assess the effects of agricultural commercialization on land tenure, family resource allocation, and nutrition. Similar to the Bangladesh survey,[20] the Philippines survey also collected a broad range of individual and household level information, including demography, schooling, farm and non-farm labor, food and non-food expenditure, and most importantly for my analysis, individual food intake information based on 24-hour recall methodology.

Table A.3 presents some descriptives averaging over four rounds. Based on the real per capita GDP and poverty headcount ratio ($1.25 a day, PPP), Bangladesh appears to be poorer than the Philippines.[21] However, based on APL, the Philippine sample seems to have a larger proportion of poor households than the Bangladeshi sample. This phenomenon is because the survey area was in a relatively poorer province, and the sampling criterion limited households surveyed to those with at least one child less than 5 years old and farming less than 15 hectares of land. Using the country-level exchange rate conversion between current local currency unit to constant 2005 U.S. dollars, the per capita monthly expenditure in the Philippine sample seems to be about $4 higher than that of the Bangladeshi sample (see Tables A.1 and A.3). More than half of the sample

[20]The survey in the rural Philippines served as valuable input for designing the subsequent Bangladesh Survey.

[21]The data are from the World Bank World Development Indicator Database.

households are landless, compared to 7 percent of households in the Bangladesh sample. About 5 percent of the Philippine households owned a television, used here as a proxy for modern and liberal norms in empirical analysis. Despite the disproportionately larger share of poor households in the Philippine sample, as in the Bangladeshi sample, a significant share of the households tended to move in and out of poverty in different survey rounds. While more than 97 percent of the households seemed to be poor in at least one round, 71 percent of the households were poor in all four survey rounds. Consistent with the poverty level, more than 70 percent of household expenditure was on food.

The average household size is about one person lower in non-poor than in poor families, while the share of boys compared to girls is higher in non-poor households. While, on average, the number of male siblings tends to be roughly similar between poor and non-poor households, the number of female siblings is less in non-poor than in poor households, resulting in higher numbers of siblings in poor than in non-poor households. This pattern is similar to the Bangladesh sample, although the magnitude is much larger in the Philippine sample. However, as mentioned before, this pattern could be due to the per capita calorie-based poverty line used in both samples.

While the magnitude differs, the Philippine and Bangladesh samples show broad similarities regarding calorie consumption and composition of food expenditure. In the Philippines data, on average the per capita calorie consumption of the non-poor household is about 1,000 calories higher than that of poor families. However, the calorie and expenditure composition for the three broadly defined food groups (animal, plants and others, and cereals), are roughly similar between the poor and non-poor households. Similar to Bangladesh, in the Philippines animal products are the most expensive sources of calories, and households spend about 30 percent of their food budget to obtain about 6 percent of their calories from this costly food group. A key difference with Bangladesh, however, is that the plant and other sources contribute more than the cereal sources to the families' calorie and expenditure compositions, which could be due to Philippine households' reliance on roots and tubers, cassava, and corn for cheaper sources of calories.

Bangladesh and the Philippines show notable differences in gender disparity in wage labor and wage rate (see Tables A.2 and A.3). Philippine adult males' labor market participation is not seven times higher (as for males in Bangladesh), but about twice as much as the participation of Philippine adult females. Unlike Bangladesh, in the Philippines adult males' wage rate is almost the same as that of adult females.

Regarding children's food distribution (Table 2), boys' calorie intakes are about 3–4 percent higher than girls', which could be due to differences in calorie requirements for boys *vis-à-vis* girls. The Philippines differs starkly from Bangladesh in its almost total lack of gender disparity in both poor and non-poor households regarding calorie share or the expenditure share of animal products. In the non-poor households, girls' calorie shares from animal sources are about 9 percent higher than boys', while the expenditure shares from animal products are roughly the same between boys and girls.

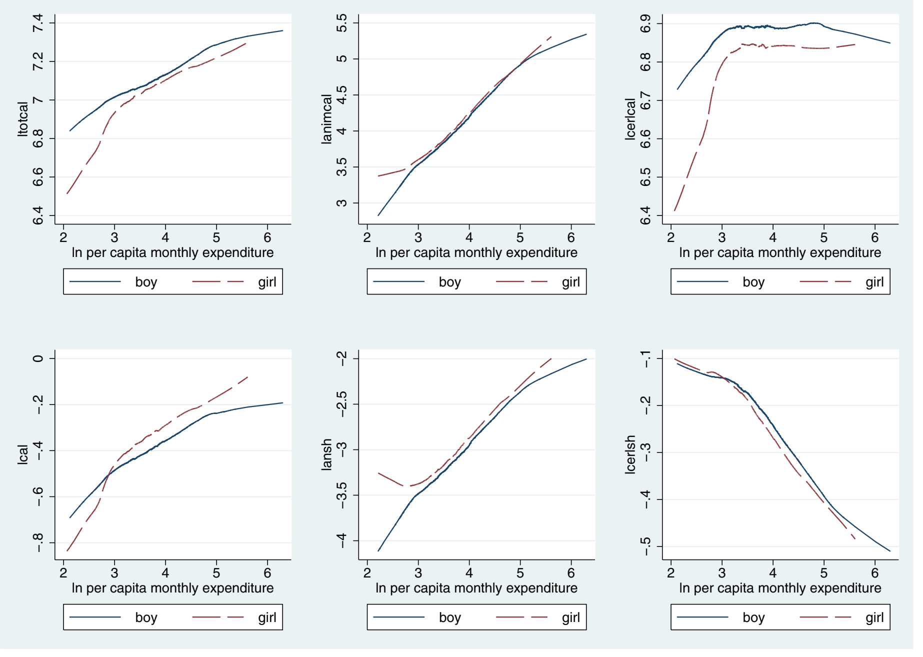

Figure 2. Philippines: Calorie Share Engel Curves, Lowess Fit, Bandwidth = 0.8 [Color figure can be viewed at wileyonlinelibrary.com]

Notes: ltotcal, ln calorie intake; lanimcal, ln animal calorie intake; lcerlcal, ln cereal calorie intake; lcal, calorie adequacy ratio; lansh, ln (animal calorie/total calorie); lcerlsh, ln(cereal calorie/total calorie).

3.4. *The Non-parametric Engel Curve for the Philippines*

Figure 2 presents the calorie Engel curves for the Philippines. Similar to Bangladesh, with the increase in income, calories from the animal group grow while those from the cereal group decline. Total calorie intake tends to increase with income, and at log per capita expenditure value of 3, girls' calorie adequacy ratio surpasses that of boys. Unlike Bangladesh, the Philippines shows much less sex disparity in animal calorie consumption. If anything, the girls' animal calorie (and animal calorie share) Engel curve tends to be on or slightly above the boys' curve. The APL measure suggests that the Philippine sample is relatively poorer than the Bangladeshi sample. In line with that, unlike Bangladesh, the decline in calorie intake for children with the increase in income is not prominent in the Philippine calorie Engel curve. Engel curves based on expenditure measures portray a similar story from the spending side (not presented).

4. Empirical Analysis

4.1. *Basic Specification*

I first estimate the following basic empirical model, separately for Bangladesh and the Philippines:

$$y_{ijst} = \beta_0 + \beta_1 age_{ijst} + \beta_2 age^2_{ijst} + \beta_3 girl_{ijst} + \mathbf{X}_{hjst} \times \boldsymbol{\beta_4} + \sum_t \beta_{5t} R_t + \sum_l \beta_{6l} S_l + \epsilon_{ijst}, \tag{1}$$

where y is a measure of intrahousehold food distribution of an individual i of household j in site s at time t. The set of household characteristics ($\mathbf{X}_{hjst}$) includes per capita expenditure and its square, per capita landholding, and household size, all in logs, share of boys, girls, adolescents males and females, and adult males, survey rounds (R_t), and sites (S_l) (for Bangladesh) dummies. The sign and size of coefficient β_3 of the girl dummy variable (=1 if the child is a girl) are of key interest.

The OLS estimate of equation (1) has econometric concerns, as households with boys *vis-à-vis* girls could differ in terms of observable and unobservable characteristics. A household's unobserved fertility preference can affect both the household size and sex composition of the children and the sex preference in food allocation. The marriage market selection effect (Foster, 1998) can also be at play, whereby each spouse's sex preference for a child could be correlated with the other spouse's characteristics (such as education and assets) through marriage, which in turn could be correlated with sex composition of children and their food allocation. Also, if girls are born into bigger families, they may have (lower) higher food allocation if bigger families have greater (dis)economies of scale (Deaton and Paxson, 1998). If the scale (dis)economies are not sufficiently captured by the household size and composition, then the OLS estimates may carry a bias. To the extent that these unobserved household and spousal characteristics and unmeasured scale effect are time-invariant, they could be controlled in household fixed-effect (FE) estimates. As the survey was conducted in four rounds in both countries, exploiting within-household variations in food distribution measures between boys and girls in different rounds and variations in time-varying household characteristics across rounds (such as poverty status and monthly per capita expenditure), I also estimate equation (1) using household FE. However, variation in household size and composition and per capita landholding in Bangladesh (landholding information was collected in the first round only) was limited. This could potentially lead to imprecise estimates of the effects of these variables. The FE estimates will also be based on a restricted sample of households with at least one boy and one girl. The signal-to-noise ratio is also likely to decrease due to differencing.

4.2. *Variants*

Using both OLS and FE methods, I also estimate a number of variants of equation (1) to explore different hypotheses.

TV: First, to explore if a Bangladeshi village's access to TV leads to less sex disparity in food allocation, I augment the basic specification by controlling for a dummy (= 1) if the village has access to TV (and 0 otherwise), and its interaction with the girl dummy. Similar village-level data on TV access are not available from the Philippines survey, but it does contain information on whether a household has a TV. So, for the Philippines, I use a dummy (=1) if the household has a

TV and interact that with the girl dummy. However, having a TV in the household may not sufficiently capture the effect of TV on a community's social norms. In Bangladesh, it is quite common for male villagers to watch TV (even if they do not own one) in small tea-stalls or at the marketplaces, while female villagers lacking their own TV may gather to watch popular TV dramas and serials with other women at the house of a neighbor who does. Thus, a TV may affect the norms of a community even if not many individuals in that community own one. A Bangladeshi village's access to TV, as the results in the following subsection summarize, seems to positively affect girls' food allocation from the animal group, but a Philippine household's TV does not have any significant effect on girls' animal group food allocations. So, in other variants of equation (1), I control for the TV effect in Bangladesh but not in the Philippines.

Differential Age Effect: Further to the discussion on child mortality at different ages (and its decline after age 5) and children's potential labor market activities (see Section 1), it is useful to investigate at which age sex disparity in food distribution becomes apparent. Hence, instead of just the intercept effect of sex difference in the basic specification, in a variant, I also interact age with the girl dummy.

Future Returns to Labor and Marriage Markets: To explore the link between future labor market returns and current food distribution among children, in the spirit of Rosenzweig and Schultz (1982), in one specification, I control for the mean real village wage rate of adult males and females and interact these wage rates with the girl dummy. For Bangladesh, to explore if a household's allocation for a girl (*vis-à-vis* a boy) could be influenced by the expected payments at her marriage, I use village mean payments from grooms' and brides' families at the marriages (and their interaction with the girl dummy) that occurred during 1990–5 in another specification.

Birth Order: In relation to a household's unobserved fertility preference and sex composition of children, in another specification I control for a child's birth order and interact this with the girl dummy to see if the allocation is worse for higher birth order children, particularly girls.

Poverty and Landlessness: Further to the indication in descriptive analysis of more disparity in non-poor than in poor Bangladeshi households, in another specification, I use an APL dummy (=1 if the household is poor) and its interaction with the girl dummy. APL is a time-varying household characteristic, as households tend to move in and out of poverty in different rounds. To explore if son preference varies with land ownership, in another variant, instead of controlling for per capita landholding, I use a dummy equal to 1 if the household is landless and interact the landless dummy with the girl dummy.

Seasonality: Households may discriminate against girls in bad times but not in good times, as suggested by previous studies. To explore the effect of seasonality on gender discrimination, in another specification I interact round dummies with the girl dummy to see if a girl's allocation is particularly worse in any particular round.

Household Economies of Scale: Controlling for household composition, any potential household scale (dis)economies (Deaton and Paxson, 1998) might make individuals of a larger household (worse)better off in nutrient consumption (at the same level of per capita expenditure). Thus, in one variant I interact the girl dummy with log household size to explore changes in a girl's allocation (*vis-à-vis* a boy's) with the change in family size. In another specification, I interact the girl dummy with log per capita expenditure to examine how does a girl's allocation (versus a boy's) changes with the increase in household income.

The estimates of these models for Bangladesh and the Philippines are summarized below.

4.3. *Bangladesh*

Table 3 presents OLS and FE estimates of equation (1) for calorie and animal calorie shares. In line with the summary statistics and non-parametric figures, a girl's total calorie intake appears to be lower than a boy's (about 5 percent in the OLS estimate and 4 percent in the FE estimate). However, her calorie adequacy ratio appears to be higher than that of a boy because of lower-requirement figures for girls compared to boys at a given age.

Son preference becomes evident in the allocation of animal calories. A girl's animal calorie share is about 11 percent lower than that of a boy (column 6), while her animal calories as a proportion of total animal calories of the household is 12 percent lower than the corresponding share of a boy in an FE estimate (column 8). FE estimates are both higher in magnitudes and significance level, potentially indicating the downward bias of OLS results arising from unobserved household fixed effects discussed above. Household size, holding composition fixed, is a proxy for scale economies. No consistent pattern of scale economies appears from changing the sign and significance of the coefficient of household size for total calorie and animal calorie measures. Limited variation in household size across rounds also makes it difficult to obtain a precision of scale effect in the FE estimate. Regarding seasonality, calorie intake seems to be lower in rounds 1 and 3, while animal calorie share in total calories seems to be higher in rounds 1 and 2 compared to round 4, indicating that seasonality can vary differently for different food items. At a low level of income, while a child's calorie adequacy ratio increases with the household income, her animal calories as a share of total household animal calories declines substantially, perhaps due to disproportionately larger increases in animal calorie consumption by adolescents and adults.

Table 4 summarizes key parameters of interest from different variants of equation (1) for total calories and animal-calorie-based food distribution measures. In model 1, I augment the basic specification by adding a village access to TV dummy and its interaction with a girl. A girl's animal calorie share in her total calories and the household's total animal calories appear to be 36 percent and 27 percent lower than the corresponding shares for a boy (column 6 and 8). If a village has access to TV, girls' shares increase by 28 percent and 16 percent, respectively, compared to in a village without access to TV. Both the girl and the girl × tv coefficients are jointly significant for all the dependent variables in model 1.[22]

[22]The *p*-values of the joint significance of the parameters of interest in all these variants are not reported but are available upon request.

TABLE 3

Intrahousehold Food Distribution in Bangladesh: OLS and FE Estimates

	log(total calorie)		$\log(\frac{\text{calorie intake}}{\text{calorie requirement}})$		$\log(\frac{\text{animal calorie}}{\text{total calorie}})$		$\log(\frac{\text{animal calorie}}{\text{household animal calorie}})$	
	OLS	FE	OLS	FE	OLS	FE	OLS	FE
Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
age	0.264***	0.283***	0.153***	0.172***	−0.290***	−0.251***	0.073*	0.085
	(0.021)	(0.023)	(0.021)	(0.023)	(0.060)	(0.061)	(0.044)	(0.053)
age^2	−0.013***	−0.014***	−0.008***	−0.010***	0.018***	0.015***	−0.001	−0.003
	(0.002)	(0.002)	(0.002)	(0.002)	(0.005)	(0.005)	(0.003)	(0.004)
female	−0.053***	−0.040**	0.054***	0.066***	−0.034	−0.107**	−0.079**	−0.123***
	(0.019)	(0.019)	(0.019)	(0.019)	(0.054)	(0.050)	(0.038)	(0.044)
Lmcapx	0.416	0.467	0.431	0.494*	2.291**	0.542	−0.884	−2.106***
	(0.286)	(0.295)	(0.285)	(0.293)	(0.908)	(1.203)	(0.545)	(0.658)
Lmcapx^2	−0.025	−0.030	−0.027	−0.033	−0.133*	−0.028	0.062	0.147***
	(0.022)	(0.022)	(0.022)	(0.022)	(0.069)	(0.089)	(0.042)	(0.049)
Llandpc	0.026	−0.839***	0.026	−0.869***	0.277***	0.803	0.046	−0.139
	(0.034)	(0.324)	(0.034)	(0.320)	(0.106)	(1.378)	(0.059)	(0.821)
Lhhsz	0.084**	−0.376	0.083**	−0.392*	0.123	1.032	−0.862***	−0.370
	(0.033)	(0.230)	(0.032)	(0.227)	(0.094)	(1.077)	(0.053)	(0.643)
shm0–10	0.220	0.013	0.216	−0.002	−0.437	0.974	0.070	2.052
	(0.146)	(0.438)	(0.146)	(0.433)	(0.470)	(1.619)	(0.280)	(1.347)
shf0–10	0.281**	0.508	0.276**	0.528	−0.715	−0.556	−0.071	1.404
	(0.134)	(0.402)	(0.133)	(0.398)	(0.463)	(2.339)	(0.269)	(1.166)
shm11–17	0.308**	0.238	0.298**	0.229	−0.421	−1.165	−0.029	0.755
	(0.126)	(0.418)	(0.126)	(0.414)	(0.481)	(1.853)	(0.278)	(1.265)
shf11–17	0.069	0.021	0.063	0.005	−0.300	−0.371	0.014	0.009
	(0.131)	(0.381)	(0.130)	(0.378)	(0.450)	(1.656)	(0.262)	(1.061)
shm18+	−0.208	−0.455	−0.215	−0.457	0.643	2.149	−0.042	0.327
	(0.169)	(0.511)	(0.168)	(0.504)	(0.525)	(2.040)	(0.326)	(1.495)
round1	−0.036*	−0.041*	−0.042**	−0.047**	0.128	0.164*	0.017	0.042
	(0.021)	(0.022)	(0.021)	(0.022)	(0.087)	(0.092)	(0.048)	(0.052)
round2	0.002	−0.004	−0.000	−0.007	0.256***	0.209**	0.031	0.024
	(0.021)	(0.022)	(0.021)	(0.022)	(0.081)	(0.085)	(0.044)	(0.046)

TABLE 3 *Continued*

	log(total calorie)		$\log(\frac{\text{calorie intake}}{\text{calorie requirement}})$		$\log(\frac{\text{animal calorie}}{\text{total calorie}})$		$\log(\frac{\text{animal calorie}}{\text{household animal calorie}})$	
	OLS	FE	OLS	FE	OLS	FE	OLS	FE
Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
round3	−0.102***	−0.113***	−0.104***	−0.115***	−0.118	−0.078	−0.019	0.005
	(0.022)	(0.023)	(0.022)	(0.023)	(0.088)	(0.091)	(0.047)	(0.048)
site1	−0.028		−0.028		−0.355***		0.036	
	(0.025)		(0.025)		(0.084)		(0.047)	
site2	−0.034		−0.035		0.101		0.099**	
	(0.025)		(0.025)		(0.082)		(0.043)	
Constant	4.290***	5.543***	−2.782***	−1.521	−12.273***	−8.162*	2.105	4.909*
	(0.933)	(1.196)	(0.931)	(1.189)	(3.032)	(4.877)	(1.765)	(2.597)
Observations	3,349	3,349	3,349	3,349	3,005	3,005	3,005	3,005
Adj. R^2	0.331	0.272	0.143	0.111	0.114	0.026	0.163	0.030
Households	627	627	627	627	618	618	618	618

Notes: Heteroskedasticity consistent robust standard errors allowing for within household correlation are in brackets; *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$; Mcapx, monthly per capita expenditure, landpc, land per capita, sh, share, m, male, f, female and associated numbers indicate age group, i.e., shm0–10, share of males of age 0–10 in the household; hhsz, household size; L, natural log.

TABLE 4

Intrahousehold Food Distribution in Bangladesh: Alternative Models

		log(total calorie)		$\log(\frac{\text{calorie intake}}{\text{calorie requirement}})$		$\log(\frac{\text{animal calorie}}{\text{total calorie}})$		$\log(\frac{\text{animal calorie}}{\text{household animal calorie}})$	
		OLS	FE	OLS	FE	OLS	FE	OLS	FE
Model	Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1	girl	−0.107*	−0.087	0.002	0.015	0.215	−0.364*	−0.034	−0.271**
		(0.057)	(0.066)	(0.057)	(0.067)	(0.181)	(0.189)	(0.097)	(0.124)
	tv	0.003		0.002		0.269		0.049	
		(0.052)		(0.052)		(0.170)		(0.096)	
	tv ×	0.060	0.052	0.058	0.056	−0.271	0.282	−0.050	0.163
	girl	(0.057)	(0.069)	(0.057)	(0.069)	(0.187)	(0.196)	(0.102)	(0.135)
2	girl	−0.031	−0.062	0.025	−0.015	−0.224	−0.457*	−0.233	−0.267
		(0.083)	(0.098)	(0.081)	(0.094)	(0.242)	(0.235)	(0.142)	(0.166)
	tv	0.014		0.008		0.247		0.049	
		(0.053)		(0.053)		(0.174)		(0.096)	
	tv ×	0.039	0.004	0.046	0.022	−0.220	0.340*	−0.041	0.149
	girl	(0.059)	(0.076)	(0.058)	(0.074)	(0.188)	(0.195)	(0.101)	(0.133)
	age	0.113***	0.106***	0.058***	0.050***	−0.102***	−0.066***	0.041***	0.049***
		(0.005)	(0.006)	(0.005)	(0.006)	(0.016)	(0.014)	(0.010)	(0.013)
	age ×	−0.010	0.001	−0.003	0.008	0.062***	0.009	0.029**	0.001
	girl	(0.008)	(0.010)	(0.008)	(0.009)	(0.022)	(0.021)	(0.014)	(0.016)
3	girl	−0.173**	−0.104	−0.062	0.003	0.312	−0.149	−0.024	−0.237
		(0.076)	(0.078)	(0.077)	(0.079)	(0.246)	(0.223)	(0.136)	(0.196)
	tv	0.005		0.004		0.273		0.023	
		(0.053)		(0.053)		(0.176)		(0.098)	
	tv ×	0.048	0.047	0.047	0.052	−0.237	0.436**	−0.010	0.244*
	girl	(0.059)	(0.073)	(0.060)	(0.074)	(0.198)	(0.204)	(0.106)	(0.139)
	Lfwage	−0.004		−0.002		−0.040		−0.148**	
		(0.042)		(0.042)		(0.135)		(0.075)	

TABLE 4 *Continued*

		log(total calorie)		$\log(\frac{\text{calorie intake}}{\text{calorie requirement}})$		$\log(\frac{\text{animal calorie}}{\text{total calorie}})$		$\log(\frac{\text{animal calorie}}{\text{household animal calorie}})$	
		OLS	FE	OLS	FE	OLS	FE	OLS	FE
Model	Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Lfwage × girl	−0.029	−0.015	−0.026	−0.012	0.098	0.399***	0.133	0.231
		(0.043)	(0.048)	(0.043)	(0.048)	(0.135)	(0.154)	(0.088)	(0.165)
	Lmwage	0.091		0.089		−0.374		0.024	
		(0.088)		(0.087)		(0.283)		(0.167)	
	Lmwage × girl	−0.089	−0.008	−0.090	−0.003	0.020	−0.297	−0.250	−0.376**
		(0.085)	(0.076)	(0.085)	(0.076)	(0.292)	(0.207)	(0.155)	(0.169)
4	girl	−0.229	−0.184	−0.120	−0.082	0.447	−0.461	−0.277	−0.738
		(0.228)	(0.233)	(0.226)	(0.231)	(0.646)	(0.574)	(0.386)	(0.482)
	tv	0.015		0.013		0.334*		0.039	
		(0.054)		(0.054)		(0.181)		(0.099)	
	tv × girl	0.028	0.041	0.027	0.044	−0.319	0.433**	−0.040	0.256*
		(0.061)	(0.075)	(0.061)	(0.076)	(0.205)	(0.205)	(0.109)	(0.142)
	Lfwage	0.009		0.010		0.014		−0.160*	
		(0.048)		(0.048)		(0.151)		(0.086)	
	Lfwage × girl	−0.062	0.003	−0.059	0.002	0.069	0.398**	0.135	0.298
		(0.053)	(0.064)	(0.052)	(0.063)	(0.154)	(0.179)	(0.110)	(0.202)
	Lmwage	0.080		0.077		−0.346		−0.069	
		(0.080)		(0.079)		(0.318)		(0.188)	
	Lmwage × girl	−0.016	−0.042	−0.015	−0.030	0.056	0.007	−0.105	−0.247
		(0.091)	(0.085)	(0.091)	(0.084)	(0.356)	(0.263)	(0.189)	(0.207)
	Lvdowry	0.003		0.004		0.125**		−0.004	
		(0.018)		(0.018)		(0.056)		(0.032)	
	Lvdowry × girl	−0.011	0.006	−0.011	0.005	−0.054	−0.087	−0.032	−0.029
		(0.019)	(0.024)	(0.019)	(0.023)	(0.059)	(0.063)	(0.035)	(0.059)
	Lvmehr	0.011		0.010		−0.127*		−0.079**	
		(0.021)		(0.021)		(0.077)		(0.039)	
	Lvmehr × girl	0.020	0.004	0.020	0.006	0.050	0.161*	0.082	0.118
		(0.026)	(0.028)	(0.026)	(0.028)	(0.086)	(0.085)	(0.052)	(0.088)

TABLE 4 *Continued*

		log(total calorie)		$\log(\frac{\text{calorie intake}}{\text{calorie requirement}})$		$\log(\frac{\text{animal calorie}}{\text{total calorie}})$		$\log(\frac{\text{animal calorie}}{\text{household animal calorie}})$	
		OLS	FE	OLS	FE	OLS	FE	OLS	FE
Model	Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
5	girl	−0.141**	−0.091	−0.030	0.021	0.318	−0.309	−0.155	−0.308**
		(0.067)	(0.082)	(0.067)	(0.082)	(0.231)	(0.224)	(0.110)	(0.145)
	tv	−0.003		−0.005		0.339*		0.051	
		(0.055)		(0.055)		(0.179)		(0.089)	
	tv ×	0.029	0.059	0.028	0.065	−0.318	0.376*	−0.053	0.274*
	girl	(0.060)	(0.079)	(0.060)	(0.079)	(0.203)	(0.221)	(0.105)	(0.143)
	border	0.001	−0.022	0.000	−0.019	−0.036	−0.102	−0.050***	−0.123*
		(0.012)	(0.039)	(0.012)	(0.039)	(0.037)	(0.085)	(0.018)	(0.067)
	border	0.017	−0.003	0.016	−0.007	−0.018	−0.042	0.040**	−0.013
	× girl	(0.011)	(0.011)	(0.011)	(0.011)	(0.041)	(0.029)	(0.020)	(0.024)
6	girl	−0.182***	−0.090	−0.071	0.012	0.211	−0.408*	−0.065	−0.311**
		(0.058)	(0.069)	(0.058)	(0.070)	(0.202)	(0.211)	(0.106)	(0.137)
	tv	−0.014		−0.016		0.281*		0.055	
		(0.050)		(0.050)		(0.167)		(0.094)	
	tv ×	0.093*	0.060	0.091*	0.063	−0.295	0.276	−0.063	0.161
	girl	(0.055)	(0.070)	(0.055)	(0.071)	(0.187)	(0.195)	(0.101)	(0.135)
	APL	−0.345***	−0.317***	−0.344***	−0.316***	0.223**	0.124	0.117**	0.051
		(0.022)	(0.024)	(0.022)	(0.024)	(0.089)	(0.111)	(0.051)	(0.070)
	APL	0.055*	−0.005	0.053*	−0.005	0.041	0.068	0.063	0.056
	×girl	(0.030)	(0.031)	(0.030)	(0.031)	(0.112)	(0.121)	(0.064)	(0.081)
7	girl	−0.102*	−0.092	0.007	0.011	0.223	−0.337*	−0.025	−0.247*
		(0.058)	(0.067)	(0.058)	(0.067)	(0.181)	(0.196)	(0.097)	(0.128)
	tv	0.006		0.004		0.277*		0.053	
		(0.052)		(0.052)		(0.167)		(0.095)	
	tv ×	0.056	0.053	0.054	0.057	−0.288	0.271	−0.056	0.152

TABLE 4 *Continued*

		log(total calorie)		$\log(\frac{\text{calorie intake}}{\text{calorie requirement}})$		$\log(\frac{\text{animal calorie}}{\text{total calorie}})$		$\log(\frac{\text{animal calorie}}{\text{household animal calorie}})$	
		OLS	FE	OLS	FE	OLS	FE	OLS	FE
Model	Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	girl	(0.058)	(0.069)	(0.058)	(0.070)	(0.186)	(0.201)	(0.101)	(0.138)
	landless	−0.005		−0.005		−0.201		0.037	
		(0.046)		(0.046)		(0.166)		(0.098)	
	landless	−0.044	0.060	−0.046	0.059	0.097	−0.278	−0.065	−0.223
	×girl	(0.061)	(0.087)	(0.060)	(0.086)	(0.192)	(0.201)	(0.133)	(0.192)
8	girl	−0.084	−0.226	0.035	−0.115	1.119*	0.969	0.270	0.450
		(0.235)	(0.250)	(0.235)	(0.251)	(0.636)	(0.698)	(0.447)	(0.522)
	tv	0.008		0.006		0.264		0.053	
		(0.052)		(0.052)		(0.170)		(0.096)	
	tv ×	0.051	0.050	0.049	0.054	−0.264	0.336*	−0.057	0.209
	girl	(0.057)	(0.069)	(0.057)	(0.069)	(0.186)	(0.193)	(0.103)	(0.135)
	Lmcapx	−0.031	0.020	−0.033	0.018	−0.160*	−0.129	−0.078	−0.031
	×girl	(0.033)	(0.035)	(0.033)	(0.035)	(0.094)	(0.104)	(0.062)	(0.068)
	Lhhsz	0.095**	0.010	0.096**	0.011	0.047	−0.303**	0.101	−0.298*
	×girl	(0.046)	(0.049)	(0.047)	(0.050)	(0.146)	(0.149)	(0.108)	(0.159)
	Lmcapx	0.436	0.455	0.453	0.483*	2.419***	0.605	−0.833	−2.117***
		(0.287)	(0.287)	(0.286)	(0.286)	(0.918)	(1.218)	(0.544)	(0.657)
	Lmcapx^2	−0.026	−0.030	−0.027	−0.032	−0.137**	−0.028	0.060	0.149***
		(0.022)	(0.022)	(0.022)	(0.022)	(0.069)	(0.090)	(0.042)	(0.050)
	Lhhsz	0.041	−0.379	0.040	−0.395*	0.092	1.076	−0.908***	−0.313
		(0.038)	(0.231)	(0.038)	(0.229)	(0.109)	(1.073)	(0.070)	(0.634)

Notes: Heteroskedasticity consistent robust standard errors allowing for within household correlation are in brackets; *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$; Mcapx, monthly per capita expenditure, fwage, mean female village wage, mwage, mean male village wage, vdowry, mean (1990–5) village transfer at marriage from wife's family, vmehr, mean(1990–5) village transfer at marriage from husband's family, border, child's birth order, APL, absolute poverty line; hhsz, household size; L, natural log. Additional covariates are from the basic specification (see Table 3).

In model 2, instead of age square in equation (1), I interact the girl dummy with age to see at which age sex disparity becomes prominent. The intercept effect remains substantial for animal calorie shares (columns 5–8). For each incremental age, the female's allocation *vis-à-vis* a male's increases only marginally, showing sex difference to be persistent across all ages of children.

Model 3 explores the link between children's food distribution and expected labor market returns, and finds a strong positive (negative) link between a girl's animal calorie allocation and the mean village wage rate of adult women (men), in addition to a strong positive effect of TV on a girl's allocation. Doubling the female wage rate would increase a girl's animal calorie share in her total calories by 40 percent, while doubling the male wage would reduce it by 30 percent. The coefficients for a girl and girl × log female wage (Lfwage) and a girl and girl × log male wage (Lmwage) are jointly significant in FE estimates for animal calorie share in total calories and the household's total animal calories. So are the girl and girl × tv coefficients for the corresponding calorie share measures. Model 4 further includes average village transfer from a bride's family (dowry) and groom's family (*mehr*) and their interaction with the girl dummy. A girl's animal calorie allocation seems to be negatively associated with dowry and positively associated with *mehr*, and the coefficient for *mehr* is significant at 10 percent, providing at least a weak indication for the link between these practices and intra-household allocation. Model 5 demonstrates that children of higher birth order, particularly if they are girls, seem to be in a disadvantaged position compared to those born ahead of them in the allocation of animal calories (both as a share of individual total calories and as a share of total household animal calorie intakes). The coefficient of girl and girl × birth order are jointly significant in the FE estimate for these calorie shares (columns 6 and 8).

In contrast to the previous literature, the gender disparity seems not to be driven by scarcity, as poverty does not appear to be a key determinant of disparity in model 6. While in a non-poor household a girl's animal calorie share in her total calorie intake is about 41 percent lower than a boy's (column 6) and a girl's animal calorie share in the household's total animal calories is 31 percent lower than a boy's (column 8), no such disparity appears in poor families. Regarding these animal calorie shares, a girl's position is worse than a boy's in households with landholding. While compared to girls in households with landholding, girls in landless families are worse off (model 7), it is not possible to identify in the FE estimate whether boy–girl discrimination is worse in landless than in landholding households. Consistent with the findings related to the absolute poverty level, model 8 demonstrates that a girl's animal calorie shares are worse in higher-income households than in lower-income households, and in bigger households than in smaller ones. That girls do worse in higher-income or non-poor households than in poor families is consistent with some previous literature. Almond *et al*. (2009) note that the sex ratio is higher in the richer states of India, such as Punjab. Sen and Sengupta (1983) find higher gender disparity in anthropometry measures in richer households than in poorer ones. As the results in Table 1 tend to indicate, dowry payment may rise (more than *mehr*) with a daughter's parentwealth, which in turn may lead to stronger son preference in non-poor households.[23]

As regards seasonality, round 2 contains the major agricultural lean season, while round 3 contains the minor one. However, I do not find any significant evidence of seasonality either in a girl's or a boy's animal calorie shares. Neither a girl's (boy's) animal calories as a percentage of her (his) total calories, nor as a share of total household's animal calories, differ significantly across survey rounds (results unreported).

Sex disparity based on expenditure measures (summarized in Table 5) broadly resembles that based on calorie measures. Model 1 reports the result of the girl dummy from the estimation of basic specification (equation (1)). Consistent with total calorie intake, a girl's total food expenditure is 5 percent lower than that for a boy in OLS and 3.5 percent in the FE estimate. A girl's animal food expenditure share in total food expenditure is 6 percent lower than that for a boy in the FE, while her animal food expenditure as a share of total household animal food expenditure is 7 percent lower than a boy's.

The effect of village access to television (model 2) has a substantial positive impact on girls' expenditure shares. A girl's animal food expenditure share in her total food expenditure is 27 percent higher, and her animal food expenditure share in total household animal food expenditure is 18 percent higher in a village with TV access compared to villages without it (columns 6 and 8). As a small percentage of villages (and of the sample) do not have access to TV, and this could be correlated with other village characteristics, it is interesting to see that the effect of a village's access to TV is significant in the FE estimate. The girl dummy and its interaction with the TV dummy are jointly significant in the FE estimate for all the dependent variables. Instead of age square, when the girl dummy interacts with age (model 3), I find a substantial intercept effect of the girl dummy for animal expenditure shares (columns 6 and 8) and only a marginal increment of these shares for a girl with an increase in her age. These findings imply the persistence of sex disparity at all ages of children for animal group expenditure shares.

Doubling the village female wage rate would increase a girl's animal expenditure share in her family's total food expenditure by 24 percent (model 4, column 6) and her animal food expenditure share in total household animal food expenditure share by 22 percent, while doubling the village male wage would reduce the latter share by 22 percent. The effect of mean village dowry on a girl's animal expenditure shares has expected negative signs but is not statistically significant, while mean village *mehr* positively affects these shares and is significant (at the 10 percent level) for a girl's animal expenditure share in her total food expenditure (model 5, columns 6 and 8). Girls of higher birth order also have less expenditure allocation for the animal group, and both girl and birth order interaction are jointly significant for these expenditure shares in the FE estimate (model 6, columns 6 and 8).

[23]Son preference in non-poor households is also consistent with the long-standing hypothesis of evolutionary biology, namely the Trivers–Willard (TW) hypothesis (Trivers and Willard, 1973), which predicts that high-status individuals favor boys, and low-status individuals prefer girls. Almond and Edlund (2007) provide evidence of the TW hypothesis regarding children's sex ratio from U.S. natality data, while Hopcroft (2005) provides evidence in terms of children's education in the U.S.

TABLE 5
INTRAHOUSEHOLD FOOD EXPENDITURE DISTRIBUTION IN BANGLADESH: BASIC AND ALTERNATIVE MODELS

Model	Variables	log(totexp)		$\log(\frac{totexp}{hhtotexp})$		$\log(\frac{animexp}{totexp})$		$\log(\frac{animexp}{hhanimexp})$	
		OLS	FE	OLS	FE	OLS	FE	OLS	FE
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1	girl	−0.051**	−0.035*	−0.051***	−0.032	0.001	−0.064*	−0.055*	−0.074*
		(0.021)	(0.019)	(0.019)	(0.020)	(0.041)	(0.036)	(0.032)	(0.038)
2	girl	−0.037	−0.108**	−0.095**	−0.078*	0.165	−0.313*	−0.031	−0.240**
		(0.058)	(0.047)	(0.048)	(0.046)	(0.154)	(0.162)	(0.095)	(0.122)
	tv	0.084		−0.023		0.156		0.053	
		(0.053)		(0.045)		(0.142)		(0.092)	
	tv × girl	−0.015	0.081	0.049	0.051	−0.179	0.273	−0.026	0.182
		(0.060)	(0.051)	(0.049)	(0.051)	(0.158)	(0.166)	(0.100)	(0.130)
3	girl	0.002	−0.025	−0.046	0.000	−0.105	−0.455**	−0.181	−0.273*
		(0.085)	(0.081)	(0.074)	(0.080)	(0.194)	(0.192)	(0.127)	(0.155)
	tv	0.093*		−0.015		0.143		0.056	
		(0.053)		(0.046)		(0.144)		(0.092)	
	tv × girl	−0.032	0.040	0.032	0.007	−0.148	0.306*	−0.023	0.154
		(0.061)	(0.056)	(0.051)	(0.056)	(0.159)	(0.162)	(0.099)	(0.129)
	age	0.094***	0.097***	0.090***	0.093***	−0.047***	−0.033***	0.060***	0.060***
		(0.006)	(0.007)	(0.005)	(0.007)	(0.011)	(0.010)	(0.009)	(0.012)
	age × girl	−0.005	−0.009	−0.006	−0.008	0.038**	0.019	0.022*	0.008
		(0.009)	(0.010)	(0.008)	(0.010)	(0.016)	(0.016)	(0.012)	(0.015)
4	girl	−0.096	−0.029	−0.097	−0.025	0.163	−0.115	−0.017	−0.149
		(0.084)	(0.069)	(0.070)	(0.073)	(0.192)	(0.171)	(0.124)	(0.172)
	tv	0.092*		−0.026		0.155		0.028	
		(0.054)		(0.046)		(0.144)		(0.093)	

TABLE 5 *Continued*

Model	Variables	log(totexp) OLS (1)	log(totexp) FE (2)	$\log(\frac{totexp}{hhtotexp})$ OLS (3)	$\log(\frac{totexp}{hhtotexp})$ FE (4)	$\log(\frac{animexp}{totexp})$ OLS (5)	$\log(\frac{animexp}{totexp})$ FE (6)	$\log(\frac{animexp}{hhanimexp})$ OLS (7)	$\log(\frac{animexp}{hhanimexp})$ FE (8)
	tv × girl	−0.031	0.118**	0.046	0.072	−0.187	0.372**	0.009	0.263*
		(0.062)	(0.057)	(0.051)	(0.055)	(0.166)	(0.173)	(0.103)	(0.135)
	Lfwage	−0.010		−0.017		−0.003		−0.132**	
		(0.047)		(0.038)		(0.102)		(0.065)	
	Lfwage × girl	−0.049	0.103**	−0.009	0.058	−0.029	0.242**	0.114	0.217
		(0.051)	(0.052)	(0.044)	(0.059)	(0.102)	(0.099)	(0.079)	(0.147)
	Lmwage	−0.042		0.016		0.024		0.042	
		(0.098)		(0.073)		(0.262)		(0.131)	
	Lmwage × girl	−0.031	−0.030	0.015	0.002	0.055	−0.027	−0.202	−0.221*
		(0.098)	(0.074)	(0.082)	(0.070)	(0.225)	(0.149)	(0.125)	(0.124)
5	girl	−0.043	−0.233	−0.088	−0.128	0.133	−0.270	−0.257	−0.482
		(0.273)	(0.242)	(0.222)	(0.230)	(0.465)	(0.391)	(0.340)	(0.385)
	tv	0.098*		−0.015		0.179		0.041	
		(0.055)		(0.047)		(0.145)		(0.092)	
	tv × girl	−0.030	0.112*	0.043	0.077	−0.269	0.354**	−0.019	0.266*
		(0.064)	(0.060)	(0.053)	(0.059)	(0.170)	(0.176)	(0.104)	(0.136)
	Lfwage	−0.005		−0.042		0.018		−0.154**	
		(0.053)		(0.041)		(0.109)		(0.072)	
	Lfwage × girl	−0.044	0.148**	0.020	0.107	−0.080	0.221*	0.121	0.297*
		(0.060)	(0.065)	(0.054)	(0.074)	(0.110)	(0.116)	(0.099)	(0.180)
	Lmwage	−0.090		−0.112		0.224		−0.071	
		(0.101)		(0.083)		(0.276)		(0.152)	
	Lmwage × girl	−0.017	−0.055	0.064	−0.015	0.099	0.230	−0.071	−0.107
		(0.110)	(0.084)	(0.095)	(0.085)	(0.267)	(0.208)	(0.158)	(0.171)
	Lvdowry	0.006		0.016		0.086*		−0.005	
		(0.021)		(0.016)		(0.045)		(0.028)	
	Lvdowry × girl	−0.015	0.017	−0.018	0.007	−0.027	−0.058	−0.031	−0.030
		(0.022)	(0.025)	(0.019)	(0.025)	(0.044)	(0.046)	(0.032)	(0.051)

TABLE 5 *Continued*

		log(totexp)		$\log(\frac{totexp}{hhtotexp})$		$\log(\frac{animexp}{totexp})$		$\log(\frac{animexp}{hhanimexp})$	
		OLS	FE	OLS	FE	OLS	FE	OLS	FE
Model	Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Lvmehr	−0.004		−0.039*		−0.061		−0.075**	
		(0.028)		(0.021)		(0.057)		(0.034)	
	Lvmehr × girl	0.010	0.013	0.026	0.011	0.038	0.101*	0.077*	0.098
		(0.032)	(0.027)	(0.027)	(0.031)	(0.063)	(0.060)	(0.047)	(0.078)
6	girl	−0.062	−0.125**	−0.142**	−0.114**	0.233	−0.185	−0.137	−0.233
		(0.066)	(0.059)	(0.056)	(0.055)	(0.196)	(0.199)	(0.109)	(0.143)
	tv	0.080		−0.033		0.220		0.061	
		(0.055)		(0.047)		(0.150)		(0.093)	
	tv × girl	−0.049	0.101*	0.038	0.081	−0.215	0.327*	−0.024	0.282**
		(0.062)	(0.055)	(0.049)	(0.050)	(0.173)	(0.192)	(0.105)	(0.143)
	border	−0.029**	−0.028	−0.024**	−0.028	−0.022	−0.018	−0.041**	−0.078
		(0.013)	(0.044)	(0.012)	(0.041)	(0.023)	(0.074)	(0.016)	(0.059)
	border × girl	0.019	0.001	0.019*	0.004	−0.015	−0.057**	0.034**	−0.025
		(0.012)	(0.013)	(0.011)	(0.012)	(0.034)	(0.024)	(0.017)	(0.020)
7	girl	−0.115*	−0.130**	−0.122**	−0.083	0.155	−0.370**	−0.064	−0.283**
		(0.061)	(0.055)	(0.051)	(0.050)	(0.176)	(0.182)	(0.103)	(0.130)
	tv	0.070		−0.019		0.165		0.059	
		(0.051)		(0.044)		(0.139)		(0.089)	
	tv × girl	0.010	0.087*	0.038	0.049	−0.196	0.269	−0.040	0.179
		(0.058)	(0.052)	(0.048)	(0.051)	(0.157)	(0.165)	(0.098)	(0.130)
	APL	−0.271***	−0.255***	0.087***	0.064***	0.166**	0.103	0.121***	0.062
		(0.031)	(0.035)	(0.022)	(0.024)	(0.068)	(0.092)	(0.043)	(0.057)
	APL ×girl	0.071*	0.022	0.051*	0.008	0.041	0.083	0.067	0.062
		(0.039)	(0.038)	(0.030)	(0.030)	(0.089)	(0.101)	(0.058)	(0.069)

TABLE 5 *Continued*

		$\log(\text{totexp})$		$\log(\frac{\text{totexp}}{\text{hhtotexp}})$		$\log(\frac{\text{animexp}}{\text{totexp}})$		$\log(\frac{\text{animexp}}{\text{hhanimexp}})$	
		OLS	FE	OLS	FE	OLS	FE	OLS	FE
Model	Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
8	girl	−0.025	−0.105**	−0.091*	−0.080*	0.160	−0.298*	−0.032	−0.226*
		(0.059)	(0.048)	(0.049)	(0.046)	(0.154)	(0.165)	(0.095)	(0.126)
	tv	0.088*		−0.022		0.156		0.052	
		(0.053)		(0.045)		(0.140)		(0.091)	
	tv ×	−0.024	0.080	0.048	0.051	−0.181	0.265	−0.025	0.175
	girl	(0.060)	(0.052)	(0.049)	(0.050)	(0.159)	(0.168)	(0.099)	(0.132)
	landless	−0.004		0.017		−0.117		0.028	
		(0.048)		(0.047)		(0.149)		(0.088)	
	landless	−0.088	−0.024	−0.051	0.026	0.112	−0.123	0.012	−0.112
	×girl	(0.071)	(0.088)	(0.065)	(0.083)	(0.160)	(0.172)	(0.112)	(0.158)
9	girl	0.263	0.187	0.100	0.153	0.494	0.033	−0.083	−0.123
		(0.288)	(0.275)	(0.219)	(0.231)	(0.479)	(0.543)	(0.406)	(0.471)
	tv	0.082		−0.024		0.155		0.059	
		(0.052)		(0.045)		(0.142)		(0.092)	
	tv ×	−0.013	0.091*	0.049	0.061	−0.178	0.302*	−0.035	0.216*
	girl	(0.060)	(0.051)	(0.049)	(0.051)	(0.159)	(0.164)	(0.101)	(0.129)
	Lmcapx	−0.055	−0.028	−0.042	−0.015	−0.062	0.002	−0.013	0.059
	×girl	(0.043)	(0.042)	(0.031)	(0.033)	(0.073)	(0.085)	(0.057)	(0.061)
	Lhhsz	0.022	−0.069	0.036	−0.077	0.032	−0.202**	0.075	−0.268*
	×girl	(0.052)	(0.053)	(0.048)	(0.061)	(0.113)	(0.094)	(0.093)	(0.142)
	Lmcapx	1.147***	0.785*	−0.749***	−0.980***	2.049***	1.232	−0.547	−1.530***
		(0.407)	(0.424)	(0.253)	(0.286)	(0.775)	(1.015)	(0.498)	(0.576)
	Lmcapx^2	−0.064**	−0.049	0.055***	0.066***	−0.129**	−0.082	0.037	0.102**
		(0.031)	(0.032)	(0.020)	(0.022)	(0.058)	(0.074)	(0.039)	(0.044)
	Lhhsz	0.018	−0.376	−0.927***	−1.203***	−0.009	0.014	−0.941***	−0.669
		(0.045)	(0.392)	(0.036)	(0.318)	(0.078)	(0.873)	(0.059)	(0.615)

Notes: Heteroskedasticity consistent robust standard errors allowing for within household correlation are in brackets;*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$; totexp, individual's total food expenditure; hhtotexp, household's total food expenditure, animexp, individual's animal food expenditure; hhanimexp, total household animal food expenditure. For descriptions of the covariates, see the notes to Table 4.

Gender disparity in animal expenditure shares is also more prominent in non-poor than in poor households (model 7, columns 6 and 8). A girl's animal expenditure share in her total food expenditure is 30 percent lower, and her animal expenditure as a share of total household animal food expenditure is 23 percent lower than the corresponding shares for a boy in families with landholding. These shares, however, do not vary significantly between a girl in a landholding household and a girl in a landless household (model 8, columns 6 and 8). Model 9 suggests that a girl is worse off in a bigger family than in a smaller one in terms of expenditure shares on animal food. Doubling the household size reduces a girl's animal expenditure share in total food expenditure by 20 percent (column 6), while her share in total household animal expenditure decreases by 27 percent (column 8). Finally, I find no significant effect of seasonality on a girl's animal food expenditure shares (results not reported).

4.4. *The Philippines*

Table 6 presents the results of the estimates of the basic specification (equation (1)) for calorie-based measures for the Philippines. Similar to Bangladesh, a girl's total calorie intake is about 3 percent lower than that of a boy, while her calorie adequacy ratio is about 7 percent higher than a boy in the FE estimate. OLS estimates are similar in magnitude. In contrast to Bangladesh, however, no significant boy–girl difference appears in animal calorie shares (columns 6 and 8). Household size and boys' share do not vary across rounds and thus are dropped in the FE estimate.

Table 7 summarizes variants of equation (1) for calorie and animal calorie shares. A household's TV ownership does not significantly affect a girl's animal calorie allocation (model 1), so in the following variants I do not control for TV. Interacting the girl dummy with age (model 2) does not indicate that gender inequality in animal calorie allocation appears to be significant at higher or lower ages.

The village male or female wage rate appears to have no significant effect on a girl's animal calorie allocation (model 3, columns 6 and 8). The girl dummy and its interaction with either male or female wage are not jointly significant. While children of higher birth order seems to be worse off than those of lower birth order in terms of share in the household's total animal calories, the effect does not vary significantly between a higher birth order girl versus a higher birth order boy (model 4, column 8). Regarding animal calorie shares, gender disparity is not significant in either poor or non-poor households (model 5) or in landless versus landholding families (model 6). Nor does it appear that a girl is worse off in terms of her animal calorie shares in bigger as opposed to smaller, or in higher-income as opposed to lower-income, households (model 7). Regarding seasonality (model 8), compared to round 4, a boy's animal calorie share in his total calories only differs significantly in round 1 (16 percent less), while a girl's corresponding share does not vary significantly in rounds 1–3 from her share in round 4. A boy's animal calories as a share of total household animal calories differs significantly in round 1 (13.5 percent lower) and 2 (8 percent lower) from that in round 4. The corresponding share for a girl is 9 percent higher than that of a boy in round 1, 15

TABLE 6

Intrahousehold Food Distribution in the Philippines: OLS and FE Estimates

	log(total calorie)		$\log(\frac{\text{calorie intake}}{\text{calorie requirement}})$		$\log(\frac{\text{animal calorie}}{\text{total calorie}})$		$\log(\frac{\text{animal calorie}}{\text{household animal calorie}})$	
	OLS	FE	OLS	FE	OLS	FE	OLS	FE
Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
age	0.174***	0.184***	0.001	0.017	−0.189***	−0.131***	0.026	0.037
	(0.019)	(0.016)	(0.019)	(0.016)	(0.041)	(0.033)	(0.025)	(0.029)
age^2	−0.009***	−0.009***	0.001	0.000	0.013***	0.008***	0.000	0.000
	(0.002)	(0.001)	(0.002)	(0.001)	(0.003)	(0.003)	(0.002)	(0.002)
female	−0.037**	−0.034**	0.067***	0.069***	0.053	0.010	−0.005	−0.014
	(0.015)	(0.013)	(0.015)	(0.013)	(0.038)	(0.021)	(0.022)	(0.020)
Lmcapx	0.216	0.372	0.280	0.354	0.492	−0.487	−0.484**	−0.418
	(0.218)	(0.245)	(0.221)	(0.246)	(0.561)	(0.669)	(0.223)	(0.267)
Lmcapx^2	−0.009	−0.034	−0.019	−0.033	0.008	0.088	0.059**	0.050
	(0.028)	(0.031)	(0.028)	(0.032)	(0.072)	(0.086)	(0.029)	(0.034)
Llandpc	0.027	0.161	0.032	0.186	0.107	−0.487	0.059	0.604**
	(0.058)	(0.184)	(0.058)	(0.192)	(0.142)	(1.000)	(0.061)	(0.254)
Lhhsz	0.052		0.055		0.051		−0.773***	
	(0.051)		(0.052)		(0.129)		(0.064)	
shm0–10	0.114		0.094		−0.404		−0.638**	
	(0.220)		(0.221)		(0.590)		(0.264)	
shf0–10	0.042	−0.429	0.009	−0.864	−0.249	2.242	−0.469*	0.298
	(0.213)	(0.891)	(0.214)	(0.949)	(0.603)	(2.515)	(0.271)	(0.877)
shm11–17	−0.250	−0.120	−0.271	0.002	−0.562	−1.543	−1.147***	0.056
	(0.240)	(0.484)	(0.241)	(0.502)	(0.635)	(1.411)	(0.283)	(0.406)
shf11–17	−0.377*	−0.856	−0.429*	−1.176	−0.677	2.227	−0.772***	0.664
	(0.218)	(0.766)	(0.223)	(0.822)	(0.598)	(2.126)	(0.284)	(0.557)
shm18+	0.370	−0.817	0.350	−0.601	−0.737	−4.602**	−0.382	−1.403*
	(0.268)	(1.007)	(0.271)	(1.002)	(0.733)	(1.896)	(0.313)	(0.850)
round1	0.016	0.024	0.028	0.042	−0.122	−0.138	−0.107***	−0.095***
	(0.027)	(0.030)	(0.027)	(0.030)	(0.084)	(0.085)	(0.032)	(0.036)

TABLE 6 *Continued*

	log(total calorie)		$\log(\frac{\text{calorie intake}}{\text{calorie requirement}})$		$\log(\frac{\text{animal calorie}}{\text{total calorie}})$		$\log(\frac{\text{animal calorie}}{\text{household animal calorie}})$	
	OLS	FE	OLS	FE	OLS	FE	OLS	FE
Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
round2	−0.026	−0.022	−0.029	−0.020	−0.040	−0.087	−0.022	−0.009
	(0.024)	(0.026)	(0.025)	(0.026)	(0.077)	(0.081)	(0.028)	(0.031)
round3	−0.097***	−0.095***	−0.099***	−0.095***	0.064	0.075	0.020	0.021
	(0.026)	(0.027)	(0.026)	(0.027)	(0.078)	(0.079)	(0.025)	(0.025)
Constant	5.606***	5.795***	−1.332***	−0.960	−4.135***	−1.659	0.807*	−1.423**
	(0.467)	(0.612)	(0.475)	(0.621)	(1.271)	(1.654)	(0.475)	(0.630)
Observations	3,826	3,826	3,715	3,715	3,548	3,548	3,548	3,548
Adj. R^2	0.180	0.171	0.062	0.037	0.089	0.016	0.258	0.044
Households	426	426	424	424	423	423	423	423

Notes: Heteroskedasticity consistent robust standard errors allowing for within household correlation are in brackets; *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$; Mcapx, monthly per capita expenditure, landpc, land per capita, sh, share, m, male, f, female and associated numbers indicate age group, i.e., shm0–10, share of males of age 0–10 in the household; hhsz, household size; L, natural log.

TABLE 7
Intrahousehold Food Distribution in the Philippines: Alternative Models

		log(total calorie)		$\log(\frac{\text{calorie intake}}{\text{calorie requirement}})$		$\log(\frac{\text{animal calorie}}{\text{total calorie}})$		$\log(\frac{\text{animal calorie}}{\text{household animal calorie}})$	
		OLS	FE	OLS	FE	OLS	FE	OLS	FE
Model	Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1	girl	−0.039**	−0.037***	0.065***	0.068***	0.003	0.001	−0.007	−0.011
		(0.016)	(0.014)	(0.016)	(0.013)	(0.002)	(0.002)	(0.023)	(0.021)
	tv	0.186***		0.187***		0.018		0.148	
		(0.067)		(0.067)		(0.025)		(0.091)	
	tv × girl	0.009	0.046	−0.000	0.018	−0.006	−0.007	0.009	−0.060
		(0.068)	(0.034)	(0.071)	(0.035)	(0.018)	(0.008)	(0.095)	(0.043)
2	girl	−0.067	−0.038	−0.045	−0.034	0.054	0.071	−0.033	0.047
		(0.050)	(0.046)	(0.049)	(0.041)	(0.109)	(0.075)	(0.059)	(0.066)
	age	0.072***	0.079***	0.002	0.010**	−0.039***	−0.029***	0.029***	0.045***
		(0.005)	(0.005)	(0.005)	(0.004)	(0.011)	(0.009)	(0.006)	(0.007)
	age × girl	0.006	0.001	0.019**	0.017***	−0.001	−0.011	0.005	−0.010
		(0.008)	(0.007)	(0.008)	(0.006)	(0.018)	(0.012)	(0.009)	(0.010)
3	girl	0.096	0.105	0.225	0.183*	0.178	0.141	0.089	0.118
		(0.150)	(0.104)	(0.152)	(0.101)	(0.340)	(0.184)	(0.190)	(0.175)
	Lfwage	−0.013		−0.024		−0.092		−0.067	
		(0.048)		(0.048)		(0.117)		(0.055)	
	Lfwage × girl	0.052	0.019	0.058	0.050	−0.296**	−0.053	0.072	−0.036
		(0.051)	(0.038)	(0.050)	(0.037)	(0.129)	(0.067)	(0.069)	(0.068)
	Lmwage	−0.060		−0.039		0.106		0.089	
		(0.100)		(0.100)		(0.237)		(0.116)	
	Lmwage × girl	−0.152	−0.123	−0.178	−0.133*	0.185	−0.047	−0.133	−0.064
		(0.117)	(0.082)	(0.119)	(0.078)	(0.259)	(0.146)	(0.147)	(0.136)

TABLE 7 *Continued*

		log(total calorie)		$\log(\frac{\text{calorie intake}}{\text{calorie requirement}})$		$\log(\frac{\text{animal calorie}}{\text{total calorie}})$		$\log(\frac{\text{animal calorie}}{\text{household animal calorie}})$	
		OLS	FE	OLS	FE	OLS	FE	OLS	FE
Model	Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
4	girl	−0.044	−0.007	0.082**	0.116***	−0.027	−0.004	0.022	0.011
		(0.037)	(0.029)	(0.038)	(0.027)	(0.085)	(0.048)	(0.043)	(0.048)
	border	−0.024**	−0.046**	−0.024**	−0.046**	−0.040	−0.015	−0.071***	−0.065**
		(0.011)	(0.020)	(0.011)	(0.019)	(0.030)	(0.031)	(0.012)	(0.032)
	border × girl	0.002	−0.007	−0.003	−0.011*	0.020	0.002	−0.006	−0.006
		(0.009)	(0.007)	(0.009)	(0.007)	(0.020)	(0.011)	(0.010)	(0.011)
5	girl	0.006	−0.033	0.103*	0.058	0.004	−0.002	0.056	0.042
		(0.052)	(0.049)	(0.053)	(0.051)	(0.009)	(0.007)	(0.059)	(0.059)
	APL	−0.479***	−0.458***	−0.479***	−0.464***	0.014**	0.010	0.143***	0.013
		(0.037)	(0.041)	(0.037)	(0.042)	(0.007)	(0.007)	(0.049)	(0.049)
	APL ×girl	−0.047	−0.002	−0.042	0.011	−0.002	0.003	−0.066	−0.061
		(0.053)	(0.051)	(0.054)	(0.053)	(0.009)	(0.008)	(0.061)	(0.060)
6	girl	−0.021	−0.014	0.083***	0.091***	0.003	−0.001	0.018	−0.014
		(0.025)	(0.019)	(0.025)	(0.018)	(0.004)	(0.002)	(0.032)	(0.029)
	landless	−0.003	−0.071	−0.012	−0.070	−0.004	0.015	0.003	0.027
		(0.034)	(0.081)	(0.034)	(0.082)	(0.005)	(0.021)	(0.037)	(0.103)
	landless ×girl	−0.031	−0.038	−0.031	−0.040	−0.002	0.003	−0.045	−0.001
		(0.036)	(0.027)	(0.036)	(0.025)	(0.005)	(0.003)	(0.043)	(0.040)
7	girl	−0.257	−0.179	−0.068	−0.021	0.006	0.379	0.008	0.131
		(0.176)	(0.138)	(0.183)	(0.132)	(0.432)	(0.262)	(0.213)	(0.180)
	Lmcapx	0.048*	0.033	0.037	0.015	−0.047	−0.044	0.004	0.017

TABLE 7 *Continued*

Model	Variables	log(total calorie)		$\log(\frac{\text{calorie intake}}{\text{calorie requirement}})$		$\log(\frac{\text{animal calorie}}{\text{total calorie}})$		$\log(\frac{\text{animal calorie}}{\text{household animal calorie}})$	
		OLS	FE	OLS	FE	OLS	FE	OLS	FE
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	×girl	(0.029)	(0.024)	(0.030)	(0.024)	(0.075)	(0.055)	(0.040)	(0.034)
	Lhhsz	0.022	0.014	0.000	0.018	0.104	−0.102	−0.013	−0.099
	×girl	(0.061)	(0.049)	(0.063)	(0.048)	(0.136)	(0.073)	(0.070)	(0.068)
	Lmcapx	0.189	0.357	0.255	0.347	0.523	−0.470	−0.487**	−0.425
		(0.219)	(0.244)	(0.223)	(0.245)	(0.565)	(0.669)	(0.222)	(0.269)
	$Lmcapx^2$	−0.009	−0.034	−0.018	−0.033	0.007	0.088	0.059**	0.050
		(0.028)	(0.031)	(0.028)	(0.031)	(0.072)	(0.086)	(0.029)	(0.034)
	Lhhsz	0.042		0.054		0.004		−0.767***	
		(0.060)		(0.060)		(0.139)		(0.068)	
8	girl	−0.063**	−0.061**	0.044	0.048*	−0.022	−0.050	−0.087***	−0.100***
		(0.028)	(0.028)	(0.029)	(0.028)	(0.067)	(0.066)	(0.030)	(0.029)
	round 1	0.008	0.002	0.010	0.000	0.064	0.055	0.080*	0.087**
	× girl	(0.041)	(0.041)	(0.041)	(0.041)	(0.102)	(0.099)	(0.044)	(0.043)
	round 2	0.033	0.038	0.027	0.032	0.162	0.136	0.155***	0.151***
	× girl	(0.035)	(0.035)	(0.036)	(0.036)	(0.099)	(0.098)	(0.043)	(0.042)
	round 3	0.064	0.068	0.054	0.056	0.073	0.051	0.095**	0.102***
	× girl	(0.041)	(0.041)	(0.041)	(0.041)	(0.103)	(0.103)	(0.038)	(0.037)

Notes: Heteroskedasticity consistent robust standard errors allowing for within household correlation are in brackets;*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. For covariate abbreviations, see the note to Table 4. Covariates from the basic specification (Table 6) are controlled for.

percent higher in round 2, and 10 percent higher in round 3—all statistically significant differences. In round 4, however, a girl's share is 20 percent less than that of a boy (boys' coefficients are unreported).

Table 8 summarizes the results of the variants of the core specification for total food expenditure and animal food expenditure shares, which broadly resemble the above results based on total calories and animal calorie share measures. The first model reports a girl dummy coefficient of the estimate of equation (1), which shows no significant sex disparity in the FE estimates for any of the outcome variables. A household's TV ownership does not affect a girl's food expenditure-based measures in the FE estimate (model 2). When instead of age square, I interact the girl dummy with age, neither of them, individually or jointly, are significant for animal expenditure shares (model 3).

No significant relationship appears between either adult male or female village real wage rates and a girl's animal expenditure shares (model 4). A higher birth order child appears to get less in terms of total food spending and as a proportion of the household's total food expenditures and total household spending on animal food compared to a lower birth order child. This birth order effect, however, does not vary between genders (model 5). Gender inequality in animal expenditure shares is not prominent in either poor or non-poor (model 6) or landless or landholding households (model 7). It does not appear either that a girl is better or worse off in terms of animal expenditure shares in larger as opposed to smaller households, or in a higher-income as opposed to a lower-income household (model 8).

Finally, regarding seasonality (a boy's coefficients are not shown to conserve space), compared to round 4, a boy's animal expenditure share in total food expenditure is 23.5 percent lower in round 1 and 19 percent lower in round 2. A girl's share is 5 percent higher than a boy's in round 1 and 13 percent higher in round 2. Shares in round 3 are not significantly different from those in round 4. A boy's animal food expenditure as a share of total household animal food expenditure is 15 percent lower in round 1 and 8 percent lower in round 2 compared to that in round 4, while his share in round 3 does not differ significantly from that in round 4. Conversely, the corresponding girl's share is 12 percent lower than a boy's share in round 4, but 11 percent higher in round 1, 14 percent higher in round 2, and 13 percent higher in round 3.

5. Summary and Conclusions

Despite substantial progress in intrahousehold resource allocation literature, the effect of sociocultural context on such allocation has remained less explored in empirical work. While the existing literature focusses on a broad range of individual outcomes, the analysis of intrahousehold food distribution based on actual food intake data is also limited. In analyzing total calorie intake, the previous literature suggests that in an agrarian economy, food intake affects the productivity of manual labor, and that the gender disparity in food distribution is due to the gender disparity in energy-intensity of occupations, with men engaging in more energy-intensive labor market activities and thus receiving the greatest food

TABLE 8
Intrahousehold Food Expenditure Distribution in the Philippines: Basic and Alternative Models

		log(totexp)		$\log(\frac{totexp}{hhtotexp})$		$\log(\frac{animexp}{totexp})$		$\log(\frac{animexp}{hhanimexp})$	
		OLS	FE	OLS	FE	OLS	FE	OLS	FE
Model	Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1	girl	−0.019	−0.024	−0.032*	−0.027	0.011	−0.014	−0.011	−0.023
		(0.021)	(0.016)	(0.018)	(0.017)	(0.032)	(0.016)	(0.022)	(0.019)
2	girl	−0.028	−0.024	−0.039**	−0.027	−0.002	−0.003	−0.018	−0.022
		(0.021)	(0.017)	(0.018)	(0.017)	(0.006)	(0.003)	(0.023)	(0.020)
	tv	0.063		0.096		0.017		0.063	
		(0.131)		(0.078)		(0.032)		(0.134)	
	tv × girl	0.223**	0.006	0.150	0.006	0.023	−0.001	0.153	−0.027
		(0.106)	(0.045)	(0.103)	(0.045)	(0.028)	(0.011)	(0.157)	(0.056)
3	girl	−0.037	0.010	−0.101*	0.018	0.041	−0.004	−0.029	0.025
		(0.064)	(0.057)	(0.054)	(0.057)	(0.088)	(0.049)	(0.059)	(0.061)
	age	0.055***	0.069***	0.051***	0.069***	−0.015	−0.018***	0.031***	0.046***
		(0.006)	(0.006)	(0.006)	(0.006)	(0.009)	(0.006)	(0.006)	(0.007)
	age × girl	0.004	−0.005	0.013	−0.007	−0.006	−0.002	0.003	−0.008
		(0.010)	(0.008)	(0.008)	(0.008)	(0.014)	(0.008)	(0.009)	(0.009)
4	girl	0.171	0.261*	−0.005	0.150	0.255	0.023	0.162	0.102
		(0.234)	(0.145)	(0.149)	(0.137)	(0.279)	(0.134)	(0.194)	(0.171)
	Lfwage	−0.064		−0.039		−0.012		−0.059	
		(0.063)		(0.046)		(0.096)		(0.057)	
	Lfwage × girl	−0.010	−0.011	0.056	−0.008	−0.310***	−0.019	0.059	−0.043
		(0.073)	(0.052)	(0.056)	(0.052)	(0.112)	(0.051)	(0.069)	(0.068)

TABLE 8 *Continued*

		$\log(\text{totexp})$		$\log(\frac{\text{totexp}}{\text{hhtotexp}})$		$\log(\frac{\text{animexp}}{\text{totexp}})$		$\log(\frac{\text{animexp}}{\text{hhanimexp}})$	
		OLS	FE	OLS	FE	OLS	FE	OLS	FE
Model	Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Lmwage	0.128		0.093		0.242		0.168	
		(0.128)		(0.095)		(0.197)		(0.136)	
	Lmwage × girl	−0.134	−0.203*	−0.072	−0.124	0.105	−0.010	−0.181	−0.051
		(0.162)	(0.108)	(0.118)	(0.109)	(0.222)	(0.105)	(0.156)	(0.133)
5	girl	−0.063	−0.026	−0.016	−0.023	−0.089	−0.008	0.008	0.000
		(0.045)	(0.037)	(0.032)	(0.037)	(0.078)	(0.033)	(0.043)	(0.045)
	border	−0.054***	−0.063***	−0.082***	−0.057**	−0.018	0.006	−0.070***	−0.064**
		(0.014)	(0.024)	(0.009)	(0.022)	(0.025)	(0.026)	(0.013)	(0.031)
	border × girl	0.012	0.001	−0.004	−0.001	0.026	−0.002	−0.004	−0.005
		(0.011)	(0.009)	(0.007)	(0.009)	(0.018)	(0.007)	(0.010)	(0.010)
6	girl	0.071	0.023	−0.037	−0.026	0.003	−0.006	0.007	0.007
		(0.090)	(0.079)	(0.054)	(0.051)	(0.020)	(0.017)	(0.007)	(0.007)
	APL	−0.431***	−0.432***	0.109**	0.006	0.042**	0.029	0.022***	0.006
		(0.057)	(0.060)	(0.047)	(0.051)	(0.018)	(0.019)	(0.005)	(0.005)
	APL ×girl	−0.098	−0.050	0.006	−0.001	−0.004	0.004	−0.012	−0.012
		(0.093)	(0.084)	(0.055)	(0.053)	(0.020)	(0.019)	(0.007)	(0.008)
7	girl	0.023	−0.009	−0.016	−0.017	0.006	−0.004	0.005	−0.020
		(0.034)	(0.025)	(0.027)	(0.026)	(0.009)	(0.004)	(0.033)	(0.029)
	landless	−0.060	0.064	−0.009	0.048	0.001	0.083***	−0.020	−0.019
		(0.038)	(0.145)	(0.033)	(0.090)	(0.012)	(0.027)	(0.041)	(0.114)
	landless ×girl	−0.082*	−0.027	−0.031	−0.018	−0.014	0.004	−0.033	−0.006
		(0.045)	(0.034)	(0.036)	(0.034)	(0.012)	(0.006)	(0.044)	(0.039)

TABLE 8 *Continued*

		log(totexp)		$\log(\frac{totexp}{hhtotexp})$		$\log(\frac{animexp}{totexp})$		$\log(\frac{animexp}{hhanimexp})$	
		OLS	FE	OLS	FE	OLS	FE	OLS	FE
Model	Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
8	girl	−0.498**	−0.300*	−0.231	−0.235	−0.022	0.216	−0.042	−0.027
		(0.245)	(0.180)	(0.184)	(0.171)	(0.355)	(0.200)	(0.209)	(0.171)
	Lmcapx	0.077*	0.056*	0.022	0.046*	−0.052	−0.031	0.005	0.030
	×girl	(0.040)	(0.031)	(0.031)	(0.027)	(0.058)	(0.044)	(0.039)	(0.032)
	Lhhsz	0.098	0.037	0.058	0.021	0.107	−0.057	0.005	−0.051
	×girl	(0.082)	(0.056)	(0.061)	(0.055)	(0.120)	(0.050)	(0.070)	(0.062)
	Lmcapx	0.686**	0.619*	−0.354	−0.294	0.838*	0.060	−0.484**	−0.519*
		(0.300)	(0.342)	(0.225)	(0.218)	(0.443)	(0.548)	(0.211)	(0.269)
	$Lmcapx^2$	−0.027	−0.054	0.047	0.032	−0.063	0.014	0.059**	0.062*
		(0.039)	(0.045)	(0.029)	(0.027)	(0.055)	(0.069)	(0.027)	(0.034)
	Lhhsz	0.035		−0.680***		0.026		−0.781***	
		(0.075)		(0.062)		(0.113)		(0.078)	
9	girl	−0.072*	−0.072*	−0.078***	−0.073***	−0.057	−0.073	−0.105***	−0.120***
		(0.037)	(0.037)	(0.025)	(0.025)	(0.053)	(0.054)	(0.030)	(0.030)
	round 1	0.061	0.049	0.066*	0.062*	0.051	0.051	0.103**	0.111***
	× girl	(0.058)	(0.060)	(0.035)	(0.035)	(0.090)	(0.086)	(0.043)	(0.042)
	round 2	0.055	0.053	0.053	0.058*	0.147*	0.126*	0.145***	0.142***
	× girl	(0.048)	(0.048)	(0.033)	(0.032)	(0.077)	(0.075)	(0.042)	(0.041)
	round 3	0.095*	0.091*	0.058**	0.061**	0.075	0.058	0.123***	0.131***
	× girl	(0.052)	(0.051)	(0.028)	(0.028)	(0.086)	(0.086)	(0.039)	(0.039)

Notes: Heteroskedasticity consistent robust standard errors allowing for within household correlation are in brackets;*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. See the notes to Table 5 for covariate abbreviations. Covariates from the basic specification (Table 6) are controlled for.

allocation. Cultural norms seem to drive such sex-segregated occupational choices. Hence, the inequality is observed among adults but not among children. Also, no evidence appears to link the intrahousehold allocation among children and their future labor market participation. Some literature further suggests that boy–girl discrimination could be driven by scarcity of households resources, as such inequality is observed in bad times but not under normal circumstances.

In this context, I have attempted to contribute to the literature by demonstrating that intrahousehold inequality in food distribution tends to exist among children in Bangladesh, but it is not necessarily apparent if the focus is on total calorie intake rather than on the cost and composition of calories. The latter considerations have critical nutritional implications, as the most expensive sources of calories—that is, the animal food group—are also the richest nutritionally. Total calories, a key focus of the past literature, might not be a good metric for analyzing intrahousehold food distribution, as calorie adequacy can coexist with micronutrient deficiency. Besides nutritional implications, total calorie intake as a metric can also understate the extent of intrahousehold inequality, as two people can consume the same amount of calories but the cost and content of those calories can vary substantially.

To further explore the role of cultural norms of son preference in food distribution, I have analyzed the case of two agrarian economies—Bangladesh and the Philippines—in which manual labor is a key feature. The two societies, however, vary strikingly in terms of gender related cultural norms. In Bangladesh's patriarchal society, women appear to occupy a "residual" category; their position, influenced by purdah and dowry systems, reflects the social view of women as potential drains on their paternal families' resources through dowry payments. On the other hand, Philippine women are seen as the "Queen of the Home," with the tradition of men engaging in "courtship" rituals to win their potential brides, including manual labor for the brides' families and payment of a bride price. Consistent with the contrasting cultural norms in these two societies, a variety of measures focussed on allocation from the animal food group shows strong evidence of son preference in Bangladesh but not in the Philippines.

Consistent with the previous literature, this inequality does not appear to be due to gender inequality in labor market activities, as children in Bangladesh do not seem to participate in the labor market, although sex disparity in food distribution is prominent there. Moreover, if inequality is due to labor market activities, it should be more prominent among older than younger children, whereas it appears consistent across all ages in Bangladesh, but at no age in the Philippines. Nor does the inequality in Bangladesh tend to be driven by scarcity, as it is more prominent in non-poor or higher-income households than in poor or lower-income households, and it is not evident in either category of families in the Philippines.

While both the Philippines and Bangladesh are agrarian economies, consistent with the literature on purdah culture in Bangladesh, I find limited participation of adult women in the labor market there. While adult males' labor market participation is double that of adult females in the Philippines, it is sevenfold that of adult females in Bangladesh. Adult males' wage rate is twice that of adult females in Bangladesh, while consistent with the Philippines' egalitarian values no such wage difference is apparent there. Adult female wage rates tend to positively affect a girl's allocation from the animal food group in Bangladesh, while adult male wage rates negatively affect that allocation. Such effects, however, are not observed in the Philippines.

Arguably, the dowry system contributes to gender disparity in South Asia. As the literature suggests, Bangladesh is the only Muslim country in which bride price is rarely observed and dowry almost universally practiced. Consistent with that, I find that, on average, transfers at marriage from a bride's family exceed transfers from a groom's family, and the more recent the marriage, the higher is the former and the lower is the latter. The larger are the transfers from grooms' families (either to the bride, groom and bride, or bride's family) in recent marriages in a village, the higher are girls' allocations of animal foods. The higher the transfers from brides' families (either to bride, groom and bride, or groom's family), the lower (although not statistically significant) are girls' allocations. These findings possibly indicate that while son preference in Bangladesh (and its absence in the Philippines) might have a sound economic basis, this basis is shaped by preexisting cultural norms in these societies (that is, purdah culture and dowry versus bride-price customs). Son preference in non-poor households in Bangladesh, but not in the Philippines, might also be related to the phenomenon that transfers from a bride's family tends to increase with the bride's parental wealth (proxied by the bride's parental landholding). Consistent with dowry price inflation and the replacement of the bride price with dowry, as the descriptive analysis shows, the effect of the bride's parents' wealth on the transfer from the bride's family is higher than that on the transfer from the groom's family. Finally, consistent with the literature that TV can play a major role in promoting modern gender norms in villages, I find that a Bangladeshi village's access to TV positively affects a girl's allocation from the animal food group.

A major limitation of my analysis, however, is the inability to directly measure the strength of cultural norms across households and the effects of those norms on intrahousehold food distribution. While the household fixed-effect estimates attempt to control for unobserved time-invariant effects at the household level, the underlying differences in food distribution in these two societies could still be influenced by various time-variant unobserved factors that I am unable to control for. Hence, one direction of future research could be to directly measure different dimensions of cultural norms in a society to see how those affect important household decisions such as intrahousehold food distribution.

Recent research from the field of social psychology and behavioral economics (see, e.g., Thaler and Sunstein, 2008; World Bank, 2015) also suggests that while social norms deeply influence individuals' decisions, such decisions could also be altered through creative nudges, resulting in better outcomes in personal health, savings, and wealth. Therefore, a promising direction for future research would be to see if and how social norms related to gender could be influenced through nudges and the effect of those nudges in improving gender equality in intrahousehold resource allocation.

Finally, while Bangladeshi cultural norms support more gender inequality than the Philippine norms, Bangladesh has also made considerable progress in recent years *vis-à-vis* many of its South Asian neighbors, such as India, Pakistan, and Afghanistan, in promoting female well-being, education, and economic empowerment. For example, the female schooling gap, which was very large in the past, has mostly disappeared (thanks to stipend programs for girls). Women's employment in export sectors is up (thanks to the success of the garment industry). Gender bias in mortality has fallen (Klasen and Wink, 2003), and access to credit has improved through microcredit programs. Naturally, the data used in this paper would not capture these more recent developments. So, another interesting avenue for future research will be to see how gender inequality in food distribution has evolved over time in Bangladesh *vis-à-vis* other countries in the region, given Bangladesh's recent policies favoring female empowerment.

References

Agarwal, B., "Bargaining and Gender Relationships: Within and Beyond the Household," *Feminist Economics*, 3(1), 1–51, 1997.

Agbayani-Siewerat, P., "Assumptions of Asian American Similarity: The Case of Filipino and Chinese American Students," *Social Work*, 49(1), 39–51, 2004.

Almond, D. and L. Edlund, "Trivers–Willard at Birth and One Year: Evidence from US Natality Data 1983–2001," *Proceedings of the Royal Society: Series B*, 274, 2491–6, 2007.

Almond, D., L. Edlund, and K. Milligan, "Son Preference and the Persistence of Culture: Evidence from Asian Immigrants to Canada," NBER Working Paper No. 15391, 2009.

Ambrus, A., E. Field, and M. Torero, "Muslim Family Law, Prenuptial Agreements, and the Emergence of Dowry in Bangladesh," *Quarterly Journal of Economics*, 125(3), 1349–97, 2010.

Amin, S., "The Poverty–Purdah Trap in Rural Bangladesh: Implications for Women's Roles in the Family," *Development and Change*, 28, 213–33, 1997.

Amin, S. and M. Cain, "The Rise of Dowry in Bangladesh," in G. W. Jones, R. M. Douglas, J. C. Caldwell, and R. M. D'Souza (eds), *The Continuing Demographic Transition*, Clarendon Press, Oxford, 1997.

Bakr, N., "Problems Faced by Women Journalists in Bangladesh," in F. Azim and N. Zaman (eds), *Infinite Variety*, University Press, Dhaka, 1994.

Barcellos, S. H., L. Carvalho, and A. Lleras-Muney, "Child Gender and Parental Investment in India: Are Boys and Girls Treated Differently?" Mimeo, Rand and UCLA, 2010.

Basu, A. M., "How Pervasive Are Sex Differentials in Childhood Nutrition Levels in South Asia?" *Social Biology*, 40(1–2), 25–37, 1993.

Begum, R., "A Comparative Study on the Status of Awareness and Potential of Credit Receiver and Credit Non-receiver Rural Women in Selected Areas of Dinajpur District of Bangladesh," Master's thesis, Bangladesh Agricultural University, Mymenshingh, Bangladesh, 1998.

Behrman, J. R., "Intrahousehold Allocation of Nutrients and Gender Effects: A Survey of Structural and Reduced Form Estimates," in S. R. Osmani (ed.), *Nutrition and Poverty*, Oxford University Press, Oxford, 1990.

———, "Intrahousehold Allocation of Nutrients in Rural India: Are Boys Favored? Do Parents Exhibit Inequality Aversion?" *Oxford Economic Papers*, 40, 32–54, 1988.

———, "Nutrition, Health, Birth Order and Seasonality: Intrahousehold Allocation in Rural India," *Journal of Development Economics*, 28, 43–63, 1988.

Behrman, J. R. and A. B. Deolalikar, "Will Developing Country Nutrition Improve with Income? A Case Study for Rural South India," *Journal of Political Economy*, 95(3), 492–507, June 1987.

Bhalotra, S. and C. Attfield, "Intrahousehold Resource Allocation in Rural Pakistan: A Semiparametric Analysis," *Journal of Applied Econometrics*, 13(5), 463–80, 1998.

Borooah, V. K., "Gender Bias among Children in India in Their Diet and Immunisation against Disease," *Social Science and Medicine*, 58, 1719–31, 2004.

Bouis, H. E. and L. J. Haddad, "Are Estimates of Calorie-Income Elasticities Too High? A Recalibration of the Plausible Range," *Journal of Development Economics*, 39(2), 333–64, October 1992.

Bouis, H. E. and C. L. Pena, "Inequality in the Intrafamily Distribution of Food: The Dilemma of Defining an Individual's Fair Share," in L. Haddad, J. Hoddinott, and H. Alderman (eds), *Intrahousehold Resource Allocation in Developing Countries: Models, Methods, and Policy*, The Johns Hopkins University Press, Baltimore, MD, 179–93, 1997.

Bouis, H. E., L. J. Haddad and E. Kennedy, "Does It Matter How We Survey Demand for Food? Evidence from Kenya and the Philippines," *Food Policy*, 17(5), 349–60, 1992.
Chen, L. C., E. Huq, and S. D'Souza, "Sex Bias in the Family Allocation of Food and Health Care in Rural Bangladesh," *Population and Development Review*, 7, 000–000, 1981.
Chung, W. and M. Das Gupta, "The Decline of Son Preference in South Korea: The Roles of Development and Public Policy," *Population and Development Review*, 33(4), 757–83, 2007.
Das Gupta, M., "Selective Discrimination against Female Children in Rural Punjab, India," *Population and Development Review*, 13, 77–100, March 1987.
Deaton, A., "Looking for Boy–Girl Discrimination in Household Expenditure Data," *World Bank Economic Review*, 3(1), 1–15, 1989.
Deaton, A. and C. Paxson, "Economies of Scale, Household Size, and the Demand for Food," *Journal of Political Economy*, 106(5), 897–930, 1998.
Deaton, A. and S. Subramanian, "The Demand for Food and Calories," *Journal of Political Economy*, 104(1), 133–62, 1996.
Duflo, E., "Gender Equality in Development," MIT Working Paper, MIT, 2005.
Economist, "Gendercide: What Happened to 100 Million Baby Girls?" March 6–12, 2010.
Fernandez, R., "Culture and Economics," in S. Durlauf and L. Blume (eds), *New Palgrave Dictionary of Economics*, 2nd edn, Palgrave Macmillan, New York, 2008.
Flavier, J. M., *Doctor to the Barrios, Experiences with the Philippine Reconstruction Movement*, New Day Publishers, Quezon City, 1970.
Folbre, N., "Market Opportunities, Genetic Endowments, and Intrafamily Resource Distribution: Comment," *American Economic Review*, 74, 518–20, 1984.
Foster, A., "Marriage Market Selection and Human Capital Allocations in Rural Bangladesh," Mimeo, University of Pennsylvania, Philadelphia, PA, 1998.
Ganatra, B. and S. Hirve, "Male Bias in Health Care Utilization for Under-Fives in a Rural Community in Western India," *Bulletin of the World Health Organization*, 72(1), 101–4, 1994.
Gruenbaum, E., "The Islamic Movement, Development, and Health Education: Recent Changes in the Health of Rural Women in Central Sudan," *Social Science and Medicine*, 33(2), 000–000, 1991.
Hashemi, S. M., S. R. Schuler, and A. P. Riley, "Rural Credit Programs and Womens Empowerment in Bangladesh," *World Development*, 24(4), 635–53, 1996.
Hoodfar, H., "Return to the Veil: Personal Strategy and Public Participation in Egypt," in N. Redclift and T. Sinclair (eds), *Working Women: International Perspectives on Labour and Gender Ideology*, Routledge, London, 1991.
Hopcroft, R. L., "Parental Status and Differential Investment in Sons and Daughters: Trivers–Willard Revisited," *Social Forces*, 83(3), 2491–6, 2007.
IFRPI–BIDS–INFS, *Commercial Vegetable and Polyculture Fish Production in Bangladesh: Their Impacts on Income, Household Resource Allocation, and Nutrition*, International Food Policy Research Institute, Washington, D.C., Bangladesh Institute of Development Studies, Dhaka, and Institute of Nutrition and Food Science, Dhaka, 1998.
Jensen, R. and E. Oster, "The Power of TV: Cable Television and Women's Status in India," *Quarterly Journal of Economics*, 124(3), 1057–94, 2009.
Kabeer, N., "Subordination and Struggle: Women in Bangladesh," *New Left Review*, 168, 95–121, 1998.
———, "Resources, Agency, and Achievements: Reflections on the Measurement of Women's Empowerment," *Development and Change*, 30(3), 435–64, 1999.
Klasen, S. and C. Wink, "Missing Women—Revisiting the Debate," *Feminist Economics*, 9, 263–300, 2003.
Levitt, S. D. and S. J. Dubner, *Freakonomics: A Rogue Economist Explores the Hidden Side of Everything*, William Morrow, New York, 2005.
Marcoux, A., "Sex Differentials in Undernutrition: A Look at Survey Evidence," *Population and Development Review*, 28(2), 275–84, 2002.
McLean, E., M. Cogswell, I. Egli, D. Wojdyla, and B. de Benoist, "Worldwide Prevalence of Anaemia, WHO Vitamin and Mineral Nutrition Information System, 1993–2005," *Public Health Nutrition*, 23, 1–11, 2008.
Medina, B., *The Filipino Family, a Text with Selected Readings*, The University of the Philippines Press, Diliman, Quezon City, 1995.
Mendez, P. P. and F. L. Jocano, *The Filipino Family, in Its Rural and Urban Orientation: Two Case Studies*, Centro Escolar University, Mendiola, Manila, 1974.
Miralao, V., "The Family, Traditional Values and Sociocultural Transformation of Philippine Society," *Philippine Sociological Review*, 45(1–4), 189–215, 1997.
Morduch, J. J. and H. S. Stern, "Using Mixture Models to Detect Sex Bias in Health Outcomes in Bangladesh," *Journal of Econometrics*, 77(1), 259–76, 1997.

Morris, J., "The Changing Face of Women in Bangladesh," *Slant*, Spring 1997.
Naved, R., "Intrahousehold Impact of the Transfer of Modern Agricultural Technology: A Gender Perspective," Food Consumption and Nutrition Division Discussion Paper 85, International Food Policy Research Institute, Washington, D.C., 2000.
OECD, "Social Institutions and Gender Index," http://genderindex.org/ (accessed July 31, 2010).
Oldenburg, P., "Sex Ratio, Son Preference and Violence in India: A Research Note," *Economic and Political Weekly*, December 5–12, 2657–62, 1992.
Palabrica-Costello, M., "Understanding Gender-Differentiated Constraints to Philippine Farm Household Investments in Adolescents: Implications for their Nutritional Status," Research Report Series No. 7, Nutrition of Adolescent Girls Research Program, International Center for Research on Women, 1994.
Papanek, H., "Purdah in Pakistan: Seclusion and Modern Occupations for Women," in H. Papanek and G. Minault (eds), *Studies on Purdah In South Asia*, Chankaya Publications, Delhi, 1982.
Pitt, M. M., M. R. Rosenzweig, and M. N. Hassan, "Productivity, Health, and Inequality in the Intra-household Distribution of Food in Low-Income Countries," *American Economic Review*, 80(5), 1139–56, 1990.
Quisumbing, A. R., *Household Decisions, Gender, and Development: A Synthesis of Recent Research*, International Food Policy Research Institute, Washington, D.C., 2003.
Quisumbing, A. R. and J. Maluccio, "Resources at Marriage and Intrahousehold Allocation: Evidence from Bangladesh, Ethiopia, Indonesia, and South Africa," *Oxford Bulletin of Economics and Statistics*, 65(3), 283–327, 2003.
Rahman, A., "Women, Cultural Ideology and Change in Rural Bangladesh," *Canadian Journal of Development Studies*, 15(3), 429–43, 1994.
Rao, V., "Wife-Beating in Rural South India," *Social Science and Medicine*, 44(8), 1169–80, 1997.
Rose, E., "Gender Bias, Credit Constraints and Time Allocation in Rural India," *The Economic Journal*, 110, 738–58, 2000.
Rosenzweig, M. R. and P. T. Schultz, "Market Opportunities, Genetic Endowments, and Intrafamily Resource Distribution: Child Survival in Rural India," *American Economic Review*, 72, 803–15, 1982.
Ross, J. S. and E. L. Thomas, *Iron Deficiency Anemia and Maternal Mortality*, Academy for Education Development, Washington, D.C., 1996.
Rozario, S., "Disjunctions and Continuities: Dowry and the Position of Single Women in Bangladesh," in C. Risseeuw and K. Ganesh (eds), *Negotiation and Social Space: A Gendered Analysis of Changing Kin and Security Networks in South Asia and Sub-Saharan Africa*, SAGE Publications, Thousand Oaks, CA, 1998.
Sen, A. K., "Family and Food: Sex Bias in Poverty," in A. K. Sen (ed.), *Resources, Values, and Development*, Basil Blackwell, Oxford, 1984.
———, "More Than 100 Million Women Are Missing," *The New York Review of Books*, 37(20), December 20, 1990.
Sen, A. K. and S. Sengupta, "Malnutrition of Rural Children and the Sex Bias," *Economic and Political Weekly*, Annual Number, May 1983.
Smith, L. C., U. Ramakrishnan, A. Ndiaye, L. Haddad, and R. Martorell, "The Importance of Women's Status for Child Nutrition in Developing Countries," in A. R. Quisumbing (ed.), *Household Decisions, Gender, and Development*, International Food Policy Research Institute, Washington, D.C., 2003.
Standing Committee on Nutrition, *Fourth Report on the World Nutrition Situation*, United Nations System, Geneva, 2000.
———, "Nutrition and the Millennium Development Goals," *SCN News*, July, United Nations System, Geneva, 2004.
Stoodley, B., "Some Aspects of Tagalog Family Structure," *American Anthropologist*, 59(2), 236–49, 1957.
Thaler, R. H. and C. R. Sunstein, *Nudge: Improving Decisions about Health, Wealth, and Happiness*, Yale University Press, New Haven, CT, 2008.
Trivers, R. L. and D. E. Willard, "Natural Selection of Parental Ability to Vary the Sex-Ratio of Offspring," *Science*, 179, 90–2, 1973.
Wong, A. K. and S. M. Ng, "Ethnicity and Fertility in Southeast Asia: A Comparative Analysis," Research Notes and Discussions Paper 50, Institute of Southeast Asian Studies, Singapore, 1985.
World Bank, *Enriching Lives: Overcoming Vitamin and Mineral Malnutrition in Developing Countries*, World Bank, Washington, D.C., 1994.
———, *World Development Report 2015: Mind, Society, and Behavior*, World Bank, Washington, D.C., 2015.

World Food Programme, *Food and Nutrition Handbook*, World Food Programme, Rome, 2000.
World Health Organization, "Energy and Protein Requirements—Report of a Joint FAO/WHO/UNU Expert Consultation," Technical Report Series No. 724, World Health Organization, Geneva, 1985.
Zaman, H., "Resistance against Seclusion: Women, Work and Patriarchy in Bangladesh," *Canadian Journal of Development Studies*, Special Issue, 105–22, 1995.

Supporting Information

Additional Supporting Information may be found in the online version of this article at the publisher's website:

Appendix
Table A.1: Household Characteristics of Bangladeshi Sample
Table A.2: Wage Rates of Males and Females in Bangladeshi and Philippine Sample
Table A.3: Household Characteristics of Philippine Sample