*Journal of International Development*
*J. Int. Dev.* **21**, 137–155 (2009)
Published online 6 October 2008 in Wiley InterScience
(www.interscience.wiley.com) DOI: 10.1002/jid.1479

# A REVERSAL OF EDUCATIONAL FORTUNE? EDUCATIONAL GENDER GAPS IN BANGLADESH

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**Abstract:** Historically, educational gender gaps in Bangladesh persisted as households invested more in the education of boys than girls. Recent anecdotal and descriptive reports, however, claim that Bangladesh has achieved gender parity in education. Using advanced empirical methods and nationally representative data, this study finds that urban and rural boys (relative to urban and rural girls) have a 7.4–27.4% lower likelihood of being enrolled in school, 0.4–1.5 fewer years of educational attainment and 9.7–30.8% lower likelihood of being literate. These findings draw attention to the causes of the reversal in the educational gender gap in Bangladesh. Copyright © 2008 John Wiley & Sons, Ltd.

**Keywords:** gender gap; education; Bangladesh; economics of education

## 1 INTRODUCTION

Throughout much of the developing world, the education of girls is neglected (UNICEF, 2005). Consequently, pro-male educational gender gaps remain in many developing countries, as illustrated by lower school enrolment, educational attainment, and literacy of girls relative to boys (Hannum and Buchmann, 2005; Sutton, 1997; UNESCO, 2003). There are numerous household- and social-level reasons for the persistence of pro-male educational gender gaps. From the household's perspective, educational gender gaps persist because of poverty, low monetary returns from girls' education, safety concerns and lack of availability of schools. Furthermore, negative social stigma against educating girls based on culture, ethnicity, religion and race exacerbate educational gender gaps in developing countries (Stromquist, 2005; Lewis and Lockheed, 2006). Only a handful of

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countries have met the educational gender parity goals of the year 2005, and Bangladesh is reportedly one of these countries (UNICEF, 2005).[1]

This study examines the precise nature of educational gender gaps in Bangladesh. The motivation for the study comes from the fact that the reports that claim educational gender parity are anecdotal and descriptive (Filmer *et al*., 1998; Chowdhury *et al*., 2002; UNICEF, 2005). Accordingly, this study uses advanced empirical methods and nationally representative data to examine the nature of educational gender gaps among children in Bangladesh.

The rest of this paper is structured as follows. Section 2 provides of literature review of educational gender gaps in Bangladesh. Section 3 describes the data and presents some descriptive statistics. Section 4 explains the empirical methodology. Section 5 presents the results and discusses the limitations of the analysis. Section 6 concludes and draws attention to the causes of the changes in the educational gender gap in Bangladesh.

## 2 LITERATURE REVIEW

Bangladesh is a small and densely populated country in South Asia. In the year 2000, the sectoral composition of GDP by sector was mainly services (one-half of GDP), followed by agriculture (one-quarter of GDP) and manufacturing (also one-quarter of GDP; World Bank and Asian Development Bank, 2003, p. 3). Average annual growth rates in per-capita income accelerated from about 1.6% per annum in the first half of the 1980s to 3.6% by the latter half of the 1990s, and 5.0% from the late 1990s to the early 2000s (Mahmud, 2003). A booming export-oriented ready-made garments industry and a slowdown in population growth are often credited with the improvements in economic growth rates. Poverty, however, remains a major concern in Bangladesh (Wood, 1995; Ahmad and Townsend, 1997; Cameron, 1998; Halder and Mosley, 2004). Of the over 135 million people in Bangladesh, 62.7 million remain poor (of whom 9.3 million reside in urban areas, and 53.4 million reside in rural areas), though overall poverty rates have fallen by 9.0% during the 1990s (World Bank and Asian Development Bank, 2003, pp. 5–6).

### 2.1 Persistence of a Pro-male Educational Gender Gap?

Despite Bangladesh's experiences with economic development and cultural change, there are several reasons to suspect that a pro-male educational gender gap remains. First, an educational gender gap may persist if the household returns to investing in boys' education are greater than the returns to investing in girls' education. The extent of earnings discrimination is substantial in Bangladesh; after controlling for educational attainment, experience, region of residence and religion, Asadullah (2006) finds that females earn 65.3% less than males. Moreover, Salmon (2002) reports that female labour force participation in Bangladesh is only 22.8%; it is possible that labour markets have an

[1]UNICEF (2005) reports that net enrolment rates in Bangladesh is 82.5% for boys and 85.7% for girls. UNICEF (2005) also provides the following net enrolment rates for South Asia: in Afghanistan, 65.5% for boys and 39.6% for girls; in India, 90.0% for boys and 84.8% for girls; in Nepal, 74.6% for boys and 66.0% for girls; in Pakistan, 67.5% for boys and 50.0% for girls; in Bhutan, 53.3% for boys and 48.0% for girls. Some figures from predominantly Muslim countries are the following: in Ethiopia, 55.2% for boys and 46.9% for girls; in Nigeria, 73.9% for boys and 60.2% for girls; in Yemen, 83.6% for boys and 59.4% for girls.



DOI: 10.1002/jid

adequate supply of educated males and therefore refuse to alter patriarchal preferences (Brinton *et al*., 1995; Behrman *et al*., 1999; Cameron *et al*., 2001). These findings on labour market discrimination imply that household monetary returns from investing in boys' education are greater than the monetary returns from investing in girls' education. This pro-male gender gap in monetary returns to education may widen if households consider that girls eventually remit a large portion of future earnings to their husband's household, whereas boys traditionally provide financial support for parents during old age. Poor households are particularly likely to be sensitive to the gender gap in returns to education and underinvest in the education of girls.

The persistence of cultural and religious stigmas towards females also supports a pro-male educational gender gap. For example, some Muslim households in Bangladesh insist on the 'purdah' for adolescent girls, which not only involve covering oneself in a veil, but also refraining from coeducation after puberty, avoiding labour market participation and engaging in the upkeep of the household (Mahmud, 1997; Cain, 1977; Delap, 2000).

### 2.2 Elimination of the Pro-male Educational Gender Gap?

Broadly, Bangladesh's economic growth, poverty alleviation and trade experiences since the 1990s are likely to have narrowed the pro-male educational gender gaps. Indeed, evidence from developing countries and historical evidence from today's developed countries indicate that rising incomes and trade are associated with gender parity in education (Ilon, 1998; Rury, 2005; Schultz, 2006).

The numerous social benefits of educating girls are widely acknowledged in the economic literature (Schultz, 2002). Bangladesh's recent support for girls' education through a series of campaigns, laws, school construction and cost-reduction interventions may have altered the pro-male educational gender gap (World Bank, 2000). The nationwide campaigns focused on building social capital by replacing the negative stigma of educating girls with the positive stigma of educated girls making better wives and mothers.

Bangladesh followed international initiatives on universal primary education and the elimination of child labour by adopting a compulsory primary school attendance law and a child labour ban. There is no empirical evidence on the effectiveness of the schooling law and child labour ban in Bangladesh, but the experiences of today's developing countries indicate that enforcement of the law and ban are impractical, particularly in rural areas (Humphries, 2003).

Several initiatives have reduced households' direct cost of educating girls in rural Bangladesh, such as free primary education, Food-For-Education, Cash-For-Education, the Female Secondary School Assistance Programme and several Non-Government Organisation (NGO) initiatives.[2] Researchers generally agree that households have responded to cost-reduction interventions, resulting in increased girls' school enrolment, attainment and literacy (Nath *et al*., 1999; Ravallion and Wodon, 2000; Arends-Kuenning and Amin, 2004; Khandker *et al*., 2003); moreover, the same researchers argue that these cost-reduction interventions have benefited girls more than boys. School construction

[2]The Food-For-Education programme provided rural households with food in exchange for sending children to primary school; after claims of corruption, the programme was changed to the Cash-For-Education programme. The Female Secondary Stipends programme provides households cash in exchange for sending girls to secondary school. NGO initiatives include BRAC schools, which provide girls with low cost informal education. For more details on each of these programmes, see World Bank (2000).



DOI: 10.1002/jid

initiatives have not only increased the supply of schools for girls, but have reduced transportation costs and have provided households with a safe educational and socialisation option for their daughters.

Households in Bangladesh also face lower indirect costs of schooling for girls. The *Report on National Child Labour Survey 2002–03* finds that the monthly labour market earnings of boys are 28% more than girls in Bangladesh (Bangladesh Bureau of Statistics, 2003, p. 159).[3] Once in school, evidence from developed countries shows that relative to boys, girls mature earlier, and are more likely to show patience and seriousness with homework (Duckworth and Seligman, 2006); moreover, girls are less likely to have school disciplinary and behaviour problems, and far less likely to suffer from Attention Deficit Hyperactivity Disorder (ADHD) (Silverman, 2003; Cuffe *et al*., 2005). Accordingly, these behavioural traits imply lower indirect costs of girls' schooling for households in terms of time and effort.

Changes in the marriage market are likely to have contributed to shrinking the pro-male educational gender gap in Bangladesh. Specifically, there is evidence that patterns in the marriage market are associated with increasing household returns from having educated girls rather than uneducated girls. Arends-Kuenning and Amin (2001) find evidence that parents educate their daughters because female education is valued in the marriage market, and marriage is the best way to secure their daughters' well-being. In addition, households retain a larger share of their daughters' earnings because of the rising average age of marriage—which allows girls to participate and earn in the labour market for a longer duration. Furthermore, the increase in age of marriage, together with increased access to birth control, facilitates are the pursuit of education for girls.[4]

New and improved opportunities for educated girls from greater access to microfinance and labour market opportunities may have also reduced the pro-male educational gender gap (Hashemi *et al*., 1996; Schuler and Hashemi, 1997; Khandker, 1998; Newby *et al*., 1998; Pitt and Khandker, 1998; Ahmed and Chowdhury, 2001; Kabeer, 2004; Pitt *et al*., 2006; Osmani, 2007). For households, each of these opportunities raises the potential households return from educating girls not only because of increased earnings for educated females, but also because educated females with greater bargaining power are likely to remit a larger proportion of returns to their own parents. Furthermore, mothers with greater bargaining power are likely to increase investment in the education of their daughters (Schultz, 2002).[5] Curiously, the persistence of labour market discrimination towards

[3]The Report also notes that 0.94 million girls work outside their households, compared to 4.91 million boys (Bangladesh Bureau of Statistics 2003, p. 96). The superior labour market opportunities for boys may be freeing up household resources for the education of girls, and the income of working boys may be supporting the education of their sisters. For economic studies on child labour and schooling in Bangladesh, see Amin *et al*. (2004, 2006), Ravallion and Wodon (2000).

[4]The conditions of uneducated and poor married women without strong kin networks, however, remain unstable and dangerous (Jesmin and Salway 2000).

[5]The availability of microfinance services provides females with income-generating opportunities. The availability of birth-control allows females to limit fertility rates, and increase labour market participation, earnings and returns to education. Falling fertility also implies greater resources per child, from which girls may be benefiting more. However, Sinha (2005) finds no empirical evidence of investment in girls' schooling increasing with fertility reductions in the Matlab area in rural Bangladesh. In another of the Matlab area, Joshi and Schultz (2007) find modest and statistically insignificant coefficients on the inter-generational schooling benefits for girls among participants of a family planning programme. Regarding labour markets, the standard economic theory predicts that if unearned income (from husbands) does not rise as rapidly as earned income (from female labour market participation), then female labour participation rises. Though no studies examine changes in labour market income of males and females in Bangladesh over time, anecdotal evidence suggests that discrimination towards females are falling, which in turn improves expectations on educational returns and labour market participation.



DOI: 10.1002/jid

females may be a source of pro-female educational gender gap if females need a higher level of education than males to compete for the same jobs.

There are undoubtedly numerous other plausible hypotheses on what may alter the traditional pro-male educational gender gap in Bangladesh. Before researchers begin examining the reasons for change, however, it is necessary to establish the precise nature of current educational gender gaps in Bangladesh—which is the purpose of this study.

## 3 DATA DESCRIPTION AND PRELIMINARY EVIDENCE

The data for this study come from the Bangladesh Household Income and Expenditure Survey 2000, henceforth referred to as HIES 2000. The HIES 2000 was a joint project of the Bangladesh Bureau of Statistics and the World Bank. The HIES 2000 is a nationally representative dataset, with detailed individual-level and household-level information (including detailed income, consumption and expenditure data). The HIES 2000's urban sample consists of 2400 households and 12 287 people; the rural sample consists of 5040 households and 26 229 people.

The HIES 2000 sample of adults (that is those aged 18 and above) is 21 134. Table 1 presents the educational attainment and literacy by gender of the following age-cohorts: 18–24, 25–29, 30–34, 35–39, 40–44, 45–49, 50–54, 55–59, 60–64 and 65 and above. As expected, educational attainment and literacy rates have steadily risen across cohorts. Table 1 also presents gender gaps in educational attainment and literacy rates. As an indication of economic development, the educational attainment and literacy values are higher for younger cohorts. The values also illustrate a consistent pattern of pro-male gender gap in educational attainment and literacy rates across all the cohorts; however, this pro-male gender gap is smaller for younger cohorts. For example, the gender gap in educational attainment and literacy rates is 1.22 years and 10.7% for 18–24 age-cohort, compared to educational gender gaps in attainment and literacy rates of 2.27 years and 29.4% for the 65 and above age-cohort. Overall, the descriptive statistics indicate the presence of a pro-male educational gender gap among adults in Bangladesh.

The remainder of this study examines educational gender gaps among children. The appropriate age-cohort sample for the analysis are children in the 6–17 age-cohort because six is the age when children are encouraged to begin schooling, and 17 is the age when children are expected to complete secondary education (provided there is no grade-repetition). Persons over the age of 17 are not included in the rest of the study because children generally leave home for post-secondary levels of education; incorporating this cohort into the analysis would restrict the analysis to the small share of college-going children who remain at home after age 17, therefore causing biased estimates. Furthermore, the study restricts the analysis to boys and girls who reside in their own households because the household may not determine the educational decisions for a relative or adopted child. As a result, the urban and rural samples shrink by 525 and 1050 observations. The resulting urban and rural samples are 3224 and 7204 of children in the 6–17 age-cohort.[6]

[6]The education structure of Bangladesh involves five years of primary school, five years of junior-secondary school, two years of higher-secondary school and at least three years of higher education. I restrict the analysis to primary and secondary school-going children in public, private and non-government organisation operated schools.



DOI: 10.1002/jid

Table 1. Educational attainment and literacy rates of adults in Bangladesh by gender and age-cohort

| Age-cohort | Educational attainment (years of education) | | | Literacy rate (%) | | |
|---|---|---|---|---|---|---|
| | Males | Females | Gender gap | Males | Females | Gender gap |
| 18–24 | 6.04 | 4.81 | 1.22[a] | 71.84 | 61.10 | 10.74[a] |
| 25–29 | 5.07 | 3.22 | 1.86[a] | 58.96 | 44.27 | 14.70[a] |
| 30–34 | 4.33 | 2.50 | 1.83[a] | 52.88 | 34.95 | 17.93[a] |
| 35–39 | 3.94 | 2.56 | 1.38[a] | 49.47 | 37.08 | 12.39[a] |
| 40–44 | 4.13 | 2.11 | 2.02[a] | 49.64 | 30.15 | 19.50[a] |
| 45–49 | 4.60 | 2.01 | 2.59[a] | 55.09 | 28.99 | 26.10[a] |
| 50–54 | 3.91 | 1.45 | 2.46[a] | 45.92 | 23.56 | 22.36[a] |
| 55–59 | 3.86 | 1.04 | 2.82[a] | 48.75 | 18.20 | 30.55[a] |
| 60–64 | 3.05 | 0.82 | 2.23[a] | 41.13 | 14.55 | 26.58[a] |
| 65+ | 2.78 | 0.50 | 2.28[a] | 38.13 | 8.71 | 29.42[a] |
| Average | 4.50 | 2.74 | 1.75[a] | 54.57 | 37.69 | 16.87[a] |
| Sample size | 10 517 | 10 617 | | 10 517 | 10 617 | |

*Source*: HIES 2000, based on author's calculations.
*Notes*: A person is determined to be literate if he/she responded that they can both read and write a letter.
[a]Significant at 5%.

Table 2 presents the school enrolment rates, attainments and literacy rates of children in Bangladesh by age, gender and region. For urban children between the ages of 6 and 10, the educational gender gaps vary in direction, are small in magnitude, and are not statistically different. For urban children between the ages of 11 and 16, however, there is consistent evidence of a reversal of education fortune: educational gender gaps favour girls. This pro-female educational gender gap exists for rural children between the ages of 8 and 17. In general, educational gender gaps are larger in magnitude for rural children, but urban children have slightly greater levels of enrolment, attainment and literacy. By and large, the descriptive statistics in Tables 1 and 2 support the claims (discussed in the introduction) that the pro-male educational gender gap in adults has not only disappeared, but has reversed in favour of girls.

## 4 EMPIRICAL METHODOLOGY

The purpose of the empirical analysis is to determine whether the educational gender gap exists in Bangladesh, after isolating the effects of other child-level characteristics and household-level characteristics. This study measures the educational gender gap in terms of school enrolment (0 if not enrolled, 1 if enrolled), educational attainment (in years of education) and literacy (0 if illiterate or partially literate, 1 if fully literate), implying maximum likelihood and ordinary least squares models. The basic reduced-form empirical model (that is, the model reflects the net effects of demand and supply) is a regression equation of the following type:

$$S_{ij} = \alpha + \beta C_{ij} + \gamma H_j + \varepsilon_{ij} \quad (1)$$



DOI: 10.1002/jid

Table 2. Educational attainment, enrolment rate and literacy rate of children in Bangladesh by age, gender and region

| Age | Enrolment rate (%) | | | Educational attainment (years of education) | | | Literacy rate (%) | | |
|---|---|---|---|---|---|---|---|---|---|
| | Urban boys | Urban girls | Urban gender gap | Urban boys | Urban girls | Urban gender gap | Urban boys | Urban girls | Urban gender gap |
| 6 | 58.73 | 59.06 | −0.32 | 0.07 | 0.03 | 0.04 | 8.73 | 7.09 | 1.64 |
| 7 | 76.47 | 73.38 | 3.09 | 0.10 | 0.16 | −0.05 | 13.73 | 13.67 | 0.06 |
| 8 | 78.47 | 86.57 | −8.09[b] | 0.56 | 0.57 | −0.01 | 25.00 | 29.85 | −4.85 |
| 9 | 87.30 | 88.03 | −0.73 | 1.00 | 0.97 | 0.03 | 34.13 | 35.90 | −1.77 |
| 10 | 81.11 | 90.07 | −8.96 | 1.97 | 1.96 | 0.01 | 54.44 | 53.64 | 0.80 |
| 11 | 73.19 | 89.74 | −16.55[a] | 2.24 | 3.28 | −1.04[a] | 50.00 | 75.21 | −25.21[a] |
| 12 | 72.62 | 82.29 | −9.67[a] | 3.13 | 3.92 | −0.80[a] | 63.69 | 76.00 | −12.31[a] |
| 13 | 67.88 | 82.93 | −15.04[a] | 4.20 | 5.20 | −0.99[a] | 70.80 | 86.18 | −15.38[a] |
| 14 | 67.39 | 71.71 | −4.32[a] | 4.96 | 5.72 | −0.76[a] | 75.36 | 83.5 | −8.19[b] |
| 15 | 50.69 | 68.60 | −17.90[a] | 5.28 | 6.68 | −1.39[a] | 70.83 | 86.78 | −15.94[a] |
| 16 | 47.66 | 61.32 | −13.66[a] | 6.77 | 7.17 | −0.40 | 84.38 | 83.96 | 0.41 |
| 17 | 50.00 | 60.00 | −10.00 | 6.46 | 7.51 | −1.05[b] | 79.09 | 84.26 | −5.19 |
| Average | 68.44 | 77.15 | −8.71[a] | 2.97 | 3.38 | −0.42[a] | 52.19 | 58.62 | −6.43[a] |
| Sample size | 1692 | 1532 | | | | | | | |
| | Rural boys | Rural girls | Rural gender gap | Rural boys | Rural girls | Rural gender gap | Rural boys | Rural girls | Rural gender gap |
| 6 | 55.49 | 50.65 | 4.84 | 0.05 | 0.04 | 0.10 | 2.13 | 3.25 | −1.11 |
| 7 | 71.67 | 74.19 | −2.52 | 0.10 | 0.15 | −0.05 | 6.90 | 9.43 | −2.53 |
| 8 | 80.33 | 84.94 | −4.61 | 0.23 | 0.38 | −0.15[a] | 11.63 | 16.19 | −4.56[b] |
| 9 | 85.36 | 56.31 | −0.95 | 0.82 | 0.77 | 0.05 | 27.5 | 26.70 | 0.50 |
| 10 | 79.07 | 83.67 | −4.59[b] | 1.15 | 1.42 | −0.26[a] | 34.36 | 42.46 | −8.10[a] |
| 11 | 74.79 | 84.00 | −9.21[a] | 1.77 | 2.32 | −0.54[a] | 46.22 | 55.20 | −8.98[a] |
| 12 | 66.19 | 78.19 | −11.99[a] | 2.58 | 3.06 | −0.48[a] | 56.02 | 63.24 | −7.21[a] |
| 13 | 61.04 | 70.33 | −9.28[a] | 3.31 | 4.06 | −0.75[a] | 61.85 | 75.20 | −13.36[a] |
| 14 | 56.69 | 72.11 | −15.42[a] | 4.57 | 5.35 | −0.77 | 70.77 | 82.31 | −11.54[a] |
| 15 | 38.62 | 57.28 | −18.66[a] | 4.09 | 5.49 | −1.40[a] | 61.98 | 80.68 | −18.70[a] |
| 16 | 44.93 | 59.44 | −14.51[a] | 5.24 | 6.39 | −1.15[a] | 69.59 | 83.89 | −14.29[a] |
| 17 | 30.30 | 57.14 | −26.84[a] | 5.17 | 6.25 | −1.08[b] | 67.88 | 75.32 | −7.45 |
| Average | 64.01 | 73.77 | −9.75[a] | 2.17 | 2.40 | −0.23[a] | 40.26 | 45.60 | −5.34[a] |
| Sample size | 3818 | 3386 | | | | | | | |

*Source*: HIES 2000, based on author's calculations.
*Notes*: A person is determined to be literate if he/she responded that they can both read and write a letter.
[a]Significant at 5%; [b]Significant at 10% for a two-sided *t*-test.


*J. Int. Dev.* **21**, 137–155 (2009)
DOI: 10.1002/jid

The dependent variable $S_{ij}$ refers to the school enrolment (a dummy variable), educational attainment (years of education) and literacy (a dummy variable) of child $i$ in household $j$. As for the right-hand side variables or independent variables, $C$ refers to child characteristics (such as gender, age and birth order), $H$ refers to household characteristics (including per-capita expenditure, parental education, household size and religion) and $\varepsilon$ is the error term. $C$ includes child $i$'s gender (1 if male, 0 otherwise; the main variable of interest in this study), age (in years), square of age (in years) and birth order within the household. $H$ includes the parental educational levels (dummy variables for primary and secondary levels for the father and mother), annual per-capita expenditure level (in Bangladeshi Takas), household size and religion (1 if Muslim, 0 otherwise) of child $i$'s household. Unfortunately, data limitations prevent the inclusion of independent variables that capture whether a child benefits, has benefited from, or will benefit from Bangladesh's many educational interventions.

For analysing school enrolment, a probit model is adopted. To analyse educational attainment, this study uses an ordinary least squares regression model and a Tobit model with individual censoring thresholds which right-censors observations of school-going children (Salehi-Esfahani, 2001). The censored Tobit estimation is appropriate because 72.0% of urban children (68.1% of boys and 76.2% of girls) and 68.5% of rural children (63.9% of boys and 73.7% of girls) were still attending school at the time of the HIES 2000. It is likely that the eventual educational attainment of school-going children is going to be greater than as reported in the HIES 2000. Lastly, to analyse literacy, a probit model is used. All of the empirical techniques assume that the distribution of the error term is normal.

An extension of the analysis involves the inclusion gender-interacted variables. Specifically, each of the explanatory variables is interacted with a gender dummy variable (1 for male, 0 for female). This extension provides an explanation for the educational gender gap: if a regression without gender-interacted variables shows a statistically significant coefficient for gender, then another regression with gender-interacted variables can explain the reasons for the gender gap. Further extensions of the analysis on gender gaps come in the form of including controls for cluster-level effects; this technique is sometimes referred to as fixed-effects regressions at the cluster-level. The HIES 2000 data contain limited information on school availability and no information in school quality at the cluster-level; since clusters should be more homogenous than the entire national sample, there may be potential bias arising from unobserved cluster-level heterogeneity. Indeed, Bangladesh is renowned for numerous government, non-government and private development interventions at regional levels (Stiles, 2002). In the urban sample, there are 84 clusters with an average of 38.4 children in each cluster; in the rural sample, there are 250 clusters with an average of 28.8 children in each cluster.

## 5 RESULTS

This section presents the empirical results for children who continue to reside with their parents. All the analyses are conducted separately for urban and rural children because of distinct policy experiences and circumstances.

### 5.1 Summary Statistics

Table 3 presents the summary statistics for the dependent and independent variables. The overall educational attainment of parents indicates that the majority have not completed



DOI: 10.1002/jid

Table 3. Summary statistics

| Variables (with descriptions) | Urban | Rural |
|---|---|---|
| | Mean (standard deviation) | Mean (standard deviation) |
| Dependent variables | | |
| School enrolment (1 if child is enrolled in school; 0 otherwise) | 0.726 (0.446) | 0.686 (0.464) |
| Illiterate (1 if child is illiterate; 0 otherwise) | 0.408 (0.491) | 0.538 (0.499) |
| Partially literate (1 if child can only read; 0 otherwise) | 0.040 (0.196) | 0.035 (0.183) |
| Literate (1 if child is literate; 0 otherwise) | 0.552 (0.497) | 0.428 (0.495) |
| Years of education (child's educational attainment) | 3.165 (3.498) | 2.282 (3.107) |
| Independent variables | | |
| Male (1 if child is a boy; 0 otherwise) | 0.525 (0.499) | 0.530 (0.499) |
| Age (child's age in years) | 11.297 (3.299) | 10.869 (3.237) |
| Age-squared (child's age in years squared) | 138.51 (75.59) | 129.45 (73.497) |
| Birth order (child's birth order) | 2.271 (1.268) | 2.298 (1.301) |
| Father primary education (1 if child's father completed as primary education but not secondary education; 0 otherwise) | 0.262 (0.440) | 0.317 (0.412) |
| Mother primary education (1 if child's mother completed primary education but not secondary education; 0 otherwise) | 0.275 (0.447) | 0.186 (0.389) |
| Father secondary education (1 if child's father completed secondary education or higher; 0 otherwise) | 0.086 (0.283) | 0.052 (0.222) |
| Mother secondary education1 if child's mother completed secondary education or higher; 0 otherwise) | 0.067 (0.250) | 0.013 (0.115) |
| Ln of Per-capita expenditure (log of monthly per-capita expenditure in child's household) | 6.845 (0.591) | 6.264 (2.083) |
| Household size (total number of people residing in child's household, including child) | 6.018 (1.937) | 6.481 (2.461) |
| Muslim (1 if child's household is Muslim; 0 otherwise) | 0.931 (0.254) | 0.919 (0.273) |
| Observations | 3224 | 7204 |

primary education: 51.7% of urban fathers, 61.8% of urban mothers, 68.8% of rural fathers and 79.6% of rural mothers have not completed primary education. Parental education at the junior-secondary level and above (that is, 10 years of education or above) is rare: only 8.6% of urban fathers, 3.2% of urban mothers, 6.7% of rural fathers and 1.3% of rural mothers having completed junior-secondary education. These parental education figures are also consistent with the earlier statistics on pro-male educational gender gaps among adults. Household sizes are similar in urban areas (6.0 members) and rural areas (6.3 members), perhaps reflecting the birth-control initiatives discussed earlier. Lastly, over 90% of children in urban and rural areas are Muslim.

### 5.2 School Enrolment Results

Table 4 presents the probit results for urban and rural Bangladesh, with and without gender-interacted variables. Columns 1 through 4 show the probit results. The negative and statistically significant coefficient for gender shows that there exists a gender gap in favour of girls. The marginal effects of the coefficients indicate that boys are 7.4 and 7.7% less likely to be enrolled than girls in urban and rural areas, respectively. The magnitude of the educational gender gap increases dramatically once cluster-level controls are considered.



DOI: 10.1002/jid

Table 4. Probit regression results (dependent variable: school enrolment)

| | Urban | | Rural | | Urban | | Rural | |
|---|---|---|---|---|---|---|---|---|
| | Column 1 | | Column 2 | | Column 3 | | Column 4 | |
| | Coefficient (standard error) | Marginal effect | Coefficient (standard error) | Marginal effect | Coefficient (standard error) | Marginal effect | Coefficient (standard error) | Marginal effect |
| Male | −1.154[a] (0.189) | −0.074 | −1.022[a] (0.119) | −0.077 | −2.738[a] (0.056) | −0.274 | −0.234[a] (0.035) | −0.234 |
| Age | 2.254[a] (0.208) | 0.212 | 1.850 (0.132) | 0.227 | 0.802[a] (0.063) | 0.802 | 0.709[a] (0.041) | 0.709 |
| Age-squared | −0.086[a] (0.009) | −0.011 | −0.068 (0.006) | −0.011 | −0.040[a] (0.003) | −0.041 | −0.036[a] (0.002) | −0.036 |
| Birth order | −0.143 (0.097) | −0.017 | 0.075 (0.061) | −0.004 | −0.057[a] (0.028) | −0.056 | −0.006 (0.018) | −0.006 |
| Father primary education | 1.288[a] (0.243) | 0.056 | 1.445 (0.163) | 0.105 | 0.157[a] (0.071) | 0.157 | 0.281[a] (0.048) | 0.281 |
| Mother primary education | 2.621[a] (0.270) | 0.135 | 2.513 (0.197) | 0.146 | 0.450[a] (0.079) | 0.450 | 0.439[a] (0.057) | 0.439 |
| Father secondary education | 1.818[a] (0.459) | 0.067 | 3.119 (0.362) | 0.159 | 0.158 (0.131) | 0.158 | 0.522[a] (0.103) | 0.522 |
| Mother secondary education | 5.114[a] (0.684) | 0.188 | 0.498 (0.956) | 0.232 | 0.825[a] (0.184) | 0.825 | 0.995[a] (0.273) | 0.995 |
| Ln (per-capita expenditure) | 4.007[a] (0.212) | 0.268 | 2.948 (0.150) | 0.222 | 1.172[a] (0.074) | 1.172 | 0.844[a] (0.052) | 0.844 |
| Household size | 0.225[a] (0.067) | 0.019 | −0.0126 (0.037) | 0.002 | 0.081[a] (0.021) | 0.081 | 0.036[a] (0.012) | 0.036 |
| Muslim | −0.918[a] (0.422) | −0.069 | −0.112 (0.215) | −0.022 | −0.407[a] (0.128) | −0.407 | −0.046 (0.074) | −0.046 |
| Constant | −34.719[a] (1.948) | | −24.562[a] (1.199) | | −10.724[a] (0.661) | | −8.076[a] (0.409) | |
| Cluster-level controls | No | | No | | Yes | | Yes | |
| Observations | 3224 | | 7204 | | 3224 | | 7203 | |
| Pseudo *R*-squared | 0.1624 | | 0.0948 | | | | | |

*Notes*: Sample of children in the 6–17 age-cohort in the HIES 2000. Standard errors in parentheses. For controls estimates, robust standard errors are corrected for clustering at the cluster level. Number of urban clusters: 84, number of rural clusters: 250. Average number of observations per urban cluster: 38.4, average number of observations per rural cluster: 28.8.

[a]Significant at 5%.





DOI: 10.1002/jid

Columns 5 through 8 show that boys are 27.4 and 23.4% less likely than girls to be enrolled in school in urban and rural areas, respectively.

### 5.3 Educational Attainment Results

Table 5 presents the empirical results of the OLS results. Columns 1 and 2 show pro-female gender gaps in educational attainment in urban and rural Bangladesh. After controlling for child-level and household-level characteristics, the results indicate that boys are likely to have 0.49 and 0.43 fewer years of education than girls in urban and rural areas, respectively. Columns 3 and 4 present the results after including cluster-level controls, which show that boys are likely to have 0.48 and 0.44 fewer years of schooling than girls in urban and rural areas, respectively. Columns 5 and 6 present the results from the right-censored Tobit regressions. As discussed earlier, this technique censors observations of school-going children (approximately 30% of urban and rural observations) because the eventual educational attainment of school-going children is likely to be higher than reported in the HIES 2000. The right-censored Tobit results indicate that boys have 1.15 and 1.02 fewer years of schooling than girls respectively in urban and rural Bangladesh. Thus, the right-censored Tobit technique shows that the magnitude of the pro-female gender gap in attainment is more than twice the gap implied by the OLS technique.

### 5.4 Literacy Results

Table 6 presents the probit results for literacy among children in the 6–17 age-cohort. Columns 1 through 4 show that relative to girls, boys have a 9.9 and 9.7% lower likelihood of being literate in urban and rural areas, respectively. The educational gender gap in literacy grows once cluster-level controls are considered, as presented in Columns 5 through 6. Specifically, the regressions with cluster-level controls indicate that boys are 28.7 and 30.8% less likely to be fully literate than girls in urban and rural areas, respectively. Thus, there is a large pro-female gender gap in literacy among children in urban and rural Bangladesh.

### 5.5 Interaction and Other Results

To examine the gender-specific impact of child-level and household-level characteristics on children's enrolment, attainment and literacy, all independent variables are interacted with a gender (male) dummy. The results, presented in Appendix Table 1, however show that the gender interacted estimates are generally not statistically significant. Thus, there is limited evidence of gender-specific impacts of child age, parental education, per-capita expenditure, household size and religion.

Finally, there are some consistent findings among the control variables in each of the regressions. Despite the various government educational initiatives, the empirical results in this study show that households play a key role in the educational attainment of children. In all the regressions, the coefficients for parental education and household income are large and statistically significant. For parental education, the coefficients of primary education (versus below primary education) are greater than the coefficients for secondary education



DOI: 10.1002/jid

Table 5. OLS and right-censored Tobit regression results (dependent variable: child years of education)

| | OLS | | | | Right-censored Tobit | |
|---|---|---|---|---|---|---|
| | Urban | Rural | Urban | Rural | Urban | Rural |
| | Column 1 | Column 2 | Column 3 | Column 4 | Column 5 | Column 6 |
| | Coefficient (standard error) | Coefficient (standard error) | Coefficient (standard error) | Coefficient (standard error) | Coefficient (standard error) | Coefficient (standard error) |
| Male | −0.490[a] (0.801) | −0.434[a] (0.053) | −0.480[a] (0.078) | −0.437[a] (0.052) | −1.154[a] (0.189) | −1.022[a] (0.119) |
| Age | 0.511[a] (0.091) | 0.198[a] (0.061) | 0.521[a] (0.088) | 0.179[a] (0.060) | 2.254[a] (0.208) | 1.850 (0.132) |
| Age-squared | 0.008[b] (0.004) | 0.017[a] (0.003) | 0.007[b] (0.004) | 0.016[a] (0.003) | −0.086[a] (0.009) | −0.068[a] (0.006) |
| Birth order | 0.081[a] (0.039) | 0.030 (0.026) | 0.098[a] (0.038) | −0.010 (0.026) | −0.143 (0.097) | 0.075[a] (0.061) |
| Father primary education | 0.487[a] (0.098) | 0.477[a] (0.068) | 0.344[a] (0.099) | 0.308[a] (0.070) | 1.288[a] (0.243) | 1.445[a] (0.163) |
| Mother primary education | 0.989[a] (0.102) | 0.962[a] (0.076) | 0.780[a] (0.105) | 0.719[a] (0.078) | 2.621[a] (0.270) | 2.513[a] (0.197) |
| Father secondary education | 0.622[a] (0.152) | 1.163[a] (0.127) | 0.394[a] (0.155) | 1.002[a] (0.128) | 1.818[a] (0.459) | 3.119[a] (0.362) |
| Mother secondary education | 1.210[a] (0.174) | 1.020[a] (0.237) | 0.833[a] (0.176) | 0.509[a] (0.243) | 5.114[a] (0.684) | 0.498[a] (0.956) |
| Ln (per-capita expenditure) | 1.335[a] (0.077) | 1.162[a] (0.063) | 1.614[b] (0.089) | 1.465[a] (0.077) | 4.007[a] (0.212) | 2.948[a] (0.150) |
| Household size | 0.007 (0.025) | −0.018 (0.016) | 0.045[a] (0.026) | 0.064[a] (0.017) | 0.225[a] (0.067) | −0.0126 (0.037) |
| Muslim | −0.297[b] (0.158) | 0.104 (0.097) | −0.499 (0.166) | 0.065 (0.119) | −0.918[a] (0.422) | −0.112 (0.215) |
| Constant | −13.013[a] 0.754 | −9.670[a] 0.526 | −14.895[a] 0.807 | −11.693[a] 0.591 | −34.719[a] (1.948) | −24.562[a] (1.199) |
| Sigma | | | | | 3.775 (0.095) | 3.790 (0.060) |
| Cluster-level controls | No | No | Yes | Yes | No | No |
| Observations | 3224 | 7204 | 3224 | 7204 | 3224 | 7204 |
| Pseudo *R*-squared | 0.5824 | 0.4814 | 0.5792 | 0.4769 | 0.1624 | 0.0948 |

*Notes*: Sample of children in the 6–17 age-cohort in the HIES 2000. Standard errors in parentheses. For controls estimates, robust standard errors are corrected for clustering at the cluster level. Number of urban clusters: 84, number of rural clusters: 250. Average number of observations per urban cluster: 38.4, average number of observations per rural cluster: 28.8.

[a]Significant at 5%; [b]Significant at 10%.





DOI: 10.1002/jid

Table 6. Probit regression results (dependent variable: literate)

| | Urban | | Rural | | Urban | | Rural | |
|---|---|---|---|---|---|---|---|---|
| | Column 1 | | Column 2 | | Column 3 | | Column 4 | |
| | Coefficient (standard error) | Marginal effect | Coefficient (standard error) | Marginal effect | Coefficient (standard error) | Marginal effect | Coefficient (standard error) | Marginal effect |
| Male | −0.252[a] (0.054) | −0.099 | −0.256[a] (0.036) | −0.097 | −0.287[a] (0.058) | −0.287 | −0.308[a] (0.039) | −0.308 |
| Age | 0.962[a] (0.068) | 0.378 | 0.987[a] (0.048) | 0.375 | 1.105[a] (0.075) | 1.105 | 1.138[a] (0.054) | 1.138 |
| Age-squared | −0.032[a] (0.003) | −0.012 | −0.032[a] (0.002) | −0.012 | −0.037[a] (0.003) | −0.037 | −0038[a] (0.002) | −0.038 |
| Birth order | −0.018 (0.026) | −0.007 | −0.007 (0.018) | −0.003 | −0.021 (0.028) | −0.021 | −0.035[b] (0.020) | −0.035 |
| Father primary education | 0.344[a] (0.067) | 0.132 | 0.318[a] (0.015) | 0.123 | 0.298[a] (0.074) | 0.298 | 0.290[a] (0.050) | 0.290 |
| Mother primary education | 0.509[a] (0.071) | 0.193 | 0.554[a] (0.052) | 0.216 | 0.421[a] (0.079) | 0.421 | 0.473[a] (0.058) | 0.473 |
| Father secondary education | 0.226[a] (0.108) | 0.087 | 0.600[a] (0.088) | 0.235 | 0.128 (0.119) | 0.128 | 0.594[a] (0.098) | 0.594 |
| Mother secondary education | 0.619[a] (0.130) | 0.222 | 0.392[a] (0.167) | 0.154 | 0.462[a] (0.145) | 0.462 | 0.117 (0.182) | 0.117 |
| Ln (per-capita expenditure) | 0.788[a] (0.055) | 0.310 | 0.602[a] (0.043) | 0.229 | 1.037[a] (0.071) | 1.037 | 0.842[a] (0.056) | 0.842 |
| Household size | 0.032[b] (0.018) | 0.013 | −0.010 (0.011) | −0.004 | 0.071[a] (0.020) | 0.071 | 0.032[a] (0.012) | 0.032 |
| Muslim | −0.117 (0.111) | −0.046 | 0.182[a] (0.064) | 0.067 | −0.325[a] (0.128) | −0.325 | 0.182[a] (0.081) | 0.182 |
| Constant | −11.919[a] (0.590) | | −10.945[a] (0.409) | | −14.455[a] (0.713) | | −13.590[a] (0.507) | |
| Cluster-level controls | No | | No | | Yes | | Yes | |
| Observations | 3224 | | 7204 | | 3224 | | 7203 | |
| Pseudo *R*-squared | 0.3529 | | 0.3162 | | | | | |

*Notes*: Sample of children in the 6–17 age-cohort in the HIES 2000. Standard errors in parentheses. For controls estimates, robust standard errors are corrected for clustering at the cluster level. Number of urban clusters: 84, number of rural clusters: 250. Average number of observations per urban cluster: 38.4, average number of observations per rural cluster: 28.8.

[a]Significant at 5%; [b]Significant at 10%.





DOI: 10.1002/jid

or higher education (versus primary education). The coefficients for mother's education are typically larger than the coefficients for father's education, which is consistent with the conventional wisdom of mother's education being more beneficial for children's education (Strauss and Thomas, 1995). Moreover, parental education at the secondary-level and beyond is typically more helpful than parental education at the primary-level. The coefficients for household size are sometimes positive, suggesting there are beneficial spillover effects of having siblings, such as help with homework, housework and sharing school supplies. Finally, the coefficients for being Muslim are occasionally negative, which supports the qualitative research on the negative stigma of sending girls to school in certain Muslim communities.

### 5.6 Limitations

The major limitation of this study is the potential for sample selection bias from only considering children in the 6–17 age-cohort who reside with their parents. Specifically, sample selection bias is likely to exist because of the exclusion of homeless children and children who reside with people other than their parents; since characteristics of the parents' households are not collected for these children in the HIES, it is not possible to follow this study's empirical strategy of using parental and household characteristics as control variables. For example, sample selection bias emerges from the fact that older rural boys often leave their household to purse higher-secondary and post-secondary levels of education because of unavailability or low quality of educational institutions; this sample is excluded in this study because the HIES 2000 does not track children who no longer reside in their own households. It is quite possible that boys who leave their households finish with greater educational attainment than boys who stay in their households; as a result, the pro-female gender bias reported in this study may shrink or disappear after the inclusion of the sample of out-of-household boys that are pursuing an education. Conversely, this study's pro-female gender gap finding is strengthened if the majority of boys who leave their parents' household end up with lower levels of educational attainment than those boys who continue residing with their parents.

Similarly, a sample selection bias issue arises from the not including the growing number of unmarried teenage girls who leave rural households to pursue labour market opportunities in urban areas, especially in the ready-made garments and informal domestic care industries. Since pursuing an education is difficult while working, the enrolment, attainment and literacy rates of these girls are likely to be lower, and hence weaken this study's conclusion of pro-female gender gaps.

Another source of sample selection bias emerges from not capturing the sample of girls who are married and no longer reside with their parents. Anecdotal evidence suggests that there are married girls in the 12–17 age-cohort in Bangladesh, despite laws setting the minimum age of marriage for girls at 18. Out of fear of legal repercussions, households are likely to misreport married girls in the 12–17 age-cohort as women of age 18 or above. It is not possible to include the population of underage married girls not only because of the unavailability of parents' household data, but also because the HIES 2000 does not provide information to determine the actual ages of these girls. Since schooling is inconvenient or discouraged after marriage, the educational attainment of these married girls is likely to be low relative to unmarried girls. The inability to capture this population in the sample undermines this study's pro-female educational gender gap findings. Nonetheless, this study's finding applies for the majority of children in Bangladesh, and reflects a reversal in household educational decisions towards boys and girls.



DOI: 10.1002/jid

## 6 CONCLUSION

Like the vast majority of developing economies, a strong pro-male educational gender gap has persisted in Bangladesh for generations. This study, however, finds evidence that educational gender gaps for children have reversed. In urban Bangladesh, this study finds that boys are: between 7.4 and 27.4% less likely to be enrolled in school; likely to have between 0.4 and 1.5 fewer years of schooling; and between 9.7 and 20.8% less likely to be fully literate. In rural areas, this study finds that boys are: between 7.7 and 23.4% less likely to be enrolled; likely to have between 0.4 and 1.0 fewer years of schooling and between 9.7 and 30.8% less likely to be fully literate. Separate regressions with gender-interacted variables, however, provide only limited information on the child- and household-level reasons for the reversal of the education gender gap.

The findings of this study draw attention to the reasons behind the reversal of educational gender gaps in Bangladesh. The literature review (Section 2) discussed that economic growth, trade, improvements in labour market conditions, information campaigns, compulsory schooling laws, a child labour ban, educational cost-reduction interventions, low indirect costs of education, favourable marriage markets, access to birth control and microfinance are just some of the factors that may have eliminated or reversed the pro-male educational gender gap. Much qualitative and quantitative research (involving the use of panel data), however, is needed to assess the validity of these hypotheses. Fortunately, there exists a rich body of research on Bangladesh, as well as regions which have experienced reversals in pro-male educational gender gaps, such as Latin America, the United Kingdom and the United States; the relevant research includes Arends-Kuenning and Amin (2004), Arnot *et al*. (1999), Becker (1991), Fontana and Wood (2000), Humphries (2003), Goldin (1990, 1998, 2004), Goldin *et al*. (2006), Kabeer (1994, 2000), Kabeer and Mahmud (2003), Khandker (1987), Lam and Duryea (1999), Mahmud (1997), Mahmud and Amin (2006), Mammen and Paxson (2000), Schultz (2002, 2006), Seguino and Grown (2006), Tyack and Hansot (1990), and Parish and Willis (1993); these research, along with further qualitative and quantitative research on households' and girls' expectations are valuable for predicting and understanding future educational gender gaps among children in Bangladesh.

## ACKNOWLEDGEMENTS

I am very grateful to Mary Arends-Kuenning, Robert Arnove, Amita Chudgar, Timothy Diette, Suzanne Eckes, Donna Eder, Robert Toutkoushian and Donald Warren for helpful comments on earlier versions of this paper. My thanks also to Salman Zaidi and the Bangladesh Bureau of Statistics for the data, and to Akhter Ahmed, Amit Dar, Charles Griffin, Zahid Hussain, Carl Kaiser, Henry Levin and Harry Patrinos. However, I alone am responsible for errors that might have occurred.

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DOI: 10.1002/jid

# APPENDIX

Table 1 Regressions with interaction terms

| | Enrolment (probit) | | Attainment (OLS) | | Attainment (right-censored Tobit) | | Literate (probit) | |
|---|---|---|---|---|---|---|---|---|
| | Urban | Rural | Urban | Rural | Urban | Rural | Urban | Rural |
| | Column 1 | Column 2 | Column 3 | Column 4 | Column 5 | Column 6 | Column 7 | Column 8 |
| | Coefficient (standard error) | Coefficient (standard error) | Coefficient (standard error) | Coefficient (standard error) | Coefficient (standard error) | Coefficient (standard error) | Coefficient (standard error) | Coefficient (standard error) |
| Male | 3.896 (3.800) | 3.299 (2.388) | −0.715 (1.501) | −1.206 (1.049) | 3.896 (3.800) | 3.299 (2.388) | 1.660 (1.191) | −0.256 (0.824) |
| Age | 3.047[b] (0.315) | 2.074[b] (0.203) | 0.630[b] (0.133) | 0.074 (0.092) | 3.047[b] (0.315) | 2.074[b] (0.203) | 1.134[b] (0.105) | 0.923[b] (0.073) |
| Age-squared | −0.117[b] (0.014) | −0.077[b] (0.009) | 0.005 (0.006) | 0.025[b] (0.004) | −0.117[b] (0.014) | −0.077[b] (0.009) | −0.038[b] (0.005) | −0.029[b] (0.003) |
| Birth order | −0.148 (0.143) | −0.012 (0.091) | 0.048 (0.055) | 0.003 (0.038) | −0.148 (0.143) | −0.012 (0.091) | −0.045 (0.039) | −0.025 (0.026) |
| Father primary education | 1.833[b] (0.381) | 1.188[b] (0.245) | 0.529[b] (0.142) | 0.372[b] (0.098) | 1.833[b] (0.381) | 1.188[b] (0.245) | 0.420[b] (0.102) | 0.272[b] (0.066) |
| Mother primary education | 2.220[b] (0.394) | 2.897[b] (0.308) | 0.859[b] (0.145) | 0.932[b] (0.109) | 2.220[b] (0.394) | 2.897[b] (0.308) | 0.399[b] (0.106) | 0.519[b] (0.077) |
| Father secondary education | 3.178[b] (0.779) | 3.188[b] (0.563) | 0.774 (0.222) | 1.103[b] (0.179) | 3.178[b] (0.779) | 3.188[b] (0.563) | 0.201 (0.163) | 0.555[b] (0.129) |
| Mother secondary education | 3.801[b] (0.943) | 6.016[b] (1.658) | 1.140[b] (0.252) | 0.923[b] (0.320) | 3.801[b] (0.943) | 6.016[b] (1.658) | 0.484[b] (0.192) | 0.303 (0.235) |
| Ln (per-capita expenditure) | 3.765[b] (0.317) | 2.991[b] (0.224) | 1.180[b] (0.111) | 1.120[b] (0.090) | 3.765[b] (0.317) | 2.991[b] (0.224) | 0.797[b] (0.084) | 0.639[b] (0.064) |
| Household size | 0.120 (0.097) | −0.030 (0.057) | 0.003 (0.036) | −0.027 (0.024) | 0.120 (0.097) | −0.030 (0.057) | 0.037 (0.026) | −0.021 (0.016) |
| Muslim | −0.932 (0.647) | 0.084 (0.333) | −0.410[b] (0.240) | 0.140 (0.1460 | −0.932 (0.647) | 0.084 (0.333) | −0.188 (0.185) | 0.259[b] (0.099) |
| Male × age | −1.492[b] (0.414) | −0.582[b] (0.266) | −0.266 (0.182) | 0.154 (0.123) | −1.492[b] (0.414) | −0.582[b] (0.266) | −0.333[b] (0.139) | 0.058 (0.099) |
| Male × age-squared | 0.059[b] (0.018) | 0.020[a] (0.012) | 0.007 (0.008) | −0.012[b] (0.006) | 0.059[b] (0.018) | 0.020[a] (0.012) | 0.013[b] (0.006) | −0.005 (0.004) |
| Male × birth order | 0.011[b] (0.193) | 0.151 (0.123) | 0.073 (0.077) | 0.045 (0.053) | 0.011[b] (0.193) | 0.151 (0.123) | 0.060 (0.053) | 0.033 (0.036) |
| Male × father primary | −0.972[b] (0.494) | 0.406 (0.326) | −0.078 (0.197) | 0.180 (0.136) | −0.972[b] (0.494) | 0.406 (0.326) | −0.133 (0.135) | 0.085 (0.090) |
| Male × mother primary | 0.782[a] (0.536) | −0.659[a] (0.400) | 0.262 (0.204) | 0.057 (0.152) | 0.782[a] (0.536) | −0.659[a] (0.400) | 0.210 (0.144) | 0.069 (0.104) |
| Male × father secondary education | −2.268 (0.969) | −0.186 (0.737) | −0.296 (0.305) | 0.055 (0.253) | −2.268 (0.969) | −0.186 (0.737) | 0.053 (0.218) | 0.072 (0.177) |
| Male × mother secondary education | 2.443 (1.361) | −1.830 (2.048) | 0.165 (0.348) | 0.129 (0.475) | 2.443 (1.361) | −1.830 (2.048) | 0.253 (0.262) | 0.165 (0.335) |
| Male × Ln (per-capita expenditure) | 0.385 (0.414) | −0.098 (0.298) | 0.278 (0.154) | 0.070 (0.127) | 0.385 (0.414) | −0.098 (0.298) | −0.019 (0.112) | −0.063 (0.087) |
| Male × household size | 0.183 (0.132) | 0.025 (0.074) | −0.002 (0.051) | 0.016 (0.033) | 0.183 (0.132) | 0.025 (0.074) | −0.016 (0.035) | 0.020 (0.021) |
| Male × muslim | 0.040 (0.850) | −0.359 (0.436) | 0.214 (0.319) | −0.069 (0.195) | 0.040 (0.850) | −0.359 (0.436) | 0.120 (0.232) | −0.133 (0.130) |
| Constant | −37.105[b] (2.880) | −26.585[b] (1.811) | −12.716[b] (1/074) | −9.018[b] (0.757) | −37.105[b] (2.880) | −26.585[b] (1.811) | −12.886[b] (0.889) | −10.893[b] (0.598) |
| Sigma | | | | | 3.742 (0.123) | 3.776 (0.085) | | |
| Observations | 3224 | 7204 | 3224 | 7204 | 3224 | 7204 | 3224 | 7204 |
| Pseudo *R*-squared | 0.1667 | 0.0967 | 0.5862 | 0.4855 | 0.1667 | 0.0967 | 0.3565 | 0.3179 |

*Notes*: Sample of children in the 6–17 age-cohort in the HIES 2000.
[a]Significant at 10%; [b]Significant at 5%.


*J. Int. Dev.* **21**, 137–155 (2009)
DOI: 10.1002/jid