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Gender bias among children in India in their diet and immunisation against disease

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Abstract

This paper conducts an econometric analysis of data for a sample of over 4000 children in India, between the ages of 1 and 2 years, with a view to studying two aspects of the neglect of children: their likelihood of being immunised against disease and their likelihood of receiving a nutritious diet. The starting hypothesis, consistent with an universal interest in gender issues, was that girls were more likely to be neglected than boys. The analysis confirmed this hypothesis. In respect of vaccinations, the likelihood of girls being fully vaccinated, after controlling for other variables, was 5 percentage points lower than that for boys. In respect of receiving a nutritious diet, the treatment of girls depended very much on whether or not their mothers were literate: there was no gender discrimination between children of literate mothers; on the other hand, when the mother was illiterate, girls were 5 percentage points less likely to be well-fed relative to their brothers and the presence of a literate father did little to dent this gender gap. But the analysis also pointed to a broader conclusion which was that *all* children in India suffered from sharper, but less publicised forms of disadvantage than that engendered solely by gender. These were the consequences which stemmed from children being born to illiterate mothers and being brought up in the more impoverished parts of India.

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Introduction

A feature of developing countries that is particularly worrying is the adverse ratio of the number of women to that of men. Even though males outnumber females at birth (and even more at conception) women tend to outnumber men in North America and Europe with an average ratio of 1.05. By contrast, the female–male ratio is substantially below unity in many countries of the third world: 0.96 in North Africa; 0.94 in China, Bangladesh and West Asia; 0.93 in India; 0.91 in Pakistan. Dreze and Sen (1996), who present these figures, have termed these low female–male ratios as a “missing women” phenomenon: on the basis of

European ratios, the number of “missing women” in Asia and North Africa is between 60 and 90 million (Coale, 1991; Klasen, 1994).

In broad terms, the problem of “missing women” stems from the unequal treatment of women. This could take the form of “natal inequality” where the preference for sons, in conjunction with modern techniques to determine the gender of the foetus, results in sex-selective abortions. This type of inequality is particularly prevalent in countries of East and South Asia (Sen, 2001). It could also take the form of “mortality inequality” whereby there is, relative to boys and men, a general neglect of girls and women in respect of factors that contribute to physical well-being: for example, girls and women could be relatively deprived in terms of their diet and in terms of their access to, and utilisation of, health care facilities. Natal inequality and mortality inequality then combine to ensure that there are fewer women than men in countries where such forms of gender discrimination are particularly marked (Kishor, 1993, 1994).

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Against this background, this paper exploits information from a rich set of data for India to examine and to quantify two important aspects of the relative neglect of girls. The first is the degree to which girls between the ages of 1 and 2 years (inclusive), relative to boys of the same age, were ‘fully immunised’ (defined below) against: tuberculosis (by means of a Bacille Calmette Guerin (BCG) vaccination); polio; diphtheria–pertussis–tetanus (DPT); and measles. The second aspect (of the neglect of girls) is the extent to which, relative to boys, they received a ‘nutritious’ diet (defined below).

In this context, this paper attempts an econometric investigation of:

- (i) the likelihood of a child, between the ages of 1 and 2 years, being fully immunised and
- (ii) the likelihood of such a child receiving a nutritious diet.

As the title of paper suggests, the sex of the child is hypothesised to be a significant determinant of both probabilities. Underlying any gender bias in the likelihood of full immunisation and of a nutritional diet is the literacy status of the mother and/or the father of the child. This paper asks whether the relative neglect of girls can be blunted, if not eliminated, by parental literacy.

It is important to ask this question because a recurring theme in the literature on the welfare of children in developing countries is the importance of having literate parents and, in particular, of having a literate mother. There is a body of evidence to suggest that the number of children born to a woman is inversely related to her level of education (Borooah, 2000, 2002; Parikh & Gupta, 2001). Furthermore, there is considerable evidence to suggest that children’s health (including the likelihood of their surviving infancy and childhood), nutritional status and educational attainments are enhanced by having better educated parents, particularly the mother (Behrman & Wolfe, 1984; Thomas, Strauss, & Henriques, 1991; Sandiford, Cassel, Montenegro, & Sanchez, 1995; Lavy, Strauss, Thomas, & de Vreyer, 1996; Ravallion & Wodon, 2000; Gibson, 2001). Evidence also suggests that a farm-household’s total income depends upon the highest education level reached by a household member rather than by the mean educational level of the household or by the educational level of the household head (Foster & Rosenzweig, 1996). To add to this litany, education also raises the wages of both men and women (Kingdon & Unni, 2001).

Augmenting the theme of the benefits of literacy is another, more recent, issue relating to the nature of literacy. This argues that some of the disadvantages to a person of being illiterate may be mitigated if he/she lives in a household in which other members are literate since,

for many activities, having access to the ability of the literate members to read and write may serve as a form of ‘surrogate’ or ‘proximate’ literacy. In that sense, an illiterate person living with a literate person(s) may not, by virtue of his/her illiteracy, be so badly off as an illiterate person living in a household in which all are illiterate since, in the former situation, he/she is ‘proximate literate’ while in the latter situation, he/she is illiterate (Basu & Foster, 1998; Basu, Narayan, & Ravallion, 2002).

In order to take account of this aspect of literacy the children in this study were distinguished according to whether their mothers were:

- (i) literate;
- (ii) proximate literate, that is mother illiterate but father literate;
- (iii) illiterate, that is mother and father illiterate;

and an important feature of this study is an examination of whether gender bias in the likelihood of being fully immunised and in the likelihood of receiving a nutritious diet were different for these three different types of maternal literacy/illiteracy.

The econometric estimates which underpin the analysis are based on unit-record data for over 4000 children, between the ages of 1 and 2 years (inclusive), living in rural households drawn from the 16 major states of India. The features of the Survey which provided these data are described in the appendix of this paper. The data provided information on the vaccination history of each child as well as details of the nature of the food ingested by the child in the previous 2 days.

Using information on vaccination records, children between the ages of 1 and 2 years were said to be ‘fully immunised’ if they had received: three DPT doses; three polio doses; one BCG dose; and one measles dose. In terms of the diet of the children, the survey focused on whether the child had received milk, cereals and pulses, and green vegetables and/or fruit in the past 2 days. Using this information, a child was defined to have received a ‘nutritious’ diet if, in the 2 days prior to survey questionnaire being administered, he/she had been given *all* three of: milk; cereals and pulses; vegetables and/or fruit.

This information on vaccination and diet could then be related to inter alia: the household circumstances of the children, with particular reference to the region of India in which they resided; the circumstances of the mothers; the quality of the relevant infra-structure available to the households in which the children lived, with particular reference to the availability of health care facilities and mother-and-child centres (known in India as *anganwadis*); the occupations of the parents; and their caste and religion.

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