CHILD WORK AND SCHOOLING IN BANGLADESH: THE ROLE OF BIRTH ORDER

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Summary. Using data from Bangladesh, this paper examines how the birth order of a child influences parental decisions to place children in one of four activities: 'study only', 'study and work', 'neither work nor study' and 'work only'. The results of the multinomial logit model show that being a first-born child increases the probability of work as the prime activity, or at least a combination of school and work, rather than schooling only. The results confirm that later-born children are more likely to be in school than their earlier-born counterparts.

Introduction

Evidence from low-income countries suggests that work and schooling are not equally shared among all children in a household (Patrinos & Psacharopolus, 1997; Grootaert & Patrinos, 1999). The birth position of a child in the household also matters in determining whether and how much a child works and attends school. Parents view a first-born child differently from middle-born and/or last-born children, and as a result parental decision-making about work/school arrangements for their children may, *inter alia*, be a function of birth order. This study examines the effect of birth order on parental decisions to place children into work and study.

Existing evidence indicates that birth order has a significant effect on a child's development and achievement. Intra-household allocation of resources to children can also differ according to their birth order. This has important effects on child outcomes, such as labour market activities, schooling and earnings. When household resources are scarce, there may be intra-household competition among siblings for those resources. In such situations, parents may favour a particular birth order or gender when making decisions about schooling and labour force participation.

While different attributes (for example child's age or gender) have received much attention as potential determinants of child labour and schooling, the question of how the birth position of a child affects parental decision-making about child labour and schooling has received surprisingly little attention. Recently, several studies (Emerson & Souza, 2004; Edmonds, 2005) have explored this issue in the context of child labour. This study contributes to the growing literature by examining the child work and schooling question in Bangladesh.

Conceptual framework

Parental preferences and attitudes

Differences in child labour supply between siblings are often attributed to parental preference. The question is, why do altruistic parents differentiate between children?

The wider literature demonstrates that parents are, in general, averse to inequality among children (Behrman, 1988). Becker (1981) and other economists have hypothesized that altruistic parents care about the welfare of their children as well as their own welfare. However, Parish & Willis (1993) argued that this altruistic parental attitude might not mean that they care equally about all children in the household. If parents are more altruistic towards a particular birth order or gender, the total transfer of resources will be larger for that birth order or gender. Also, the child who can better use the resources directed to her or him is more likely to get the higher transfer. Parents' investment decisions, therefore, could be motivated by the endowment of a child and the return from investment.

Comparative advantages or child specialization

Recent studies have highlighted the comparative advantage or specialization of a child for a particular activity (see, for example, Horowitz & Wang, 2004; Edmonds, 2005). If the productivity of household or market work differs by the sex and birth position of a child in the household, then there must be a correlation between child labour and birth order (Edmonds, 2005). Therefore, if any particular birth order (for example, first born) can earn higher wages (Emerson & Souza, 2004) or is more productive in household production (Edmonds, 2005) and market work, then altruistic parents could allocate them into paid work or household production and send the others to school. Thus, comparative advantages could dictate how parents make differential decisions over allocating labour activities to some children and schooling for others. Horowitz & Wang (2004) described such decision-making as intra-household specialization of heterogeneous children between the labour market and human capital accumulation.

Resource dilution

The resource dilution theory posits that parental resources are finite and diluted as the number of children increases. Additional siblings reduce the parental resources available for any one child (Blake, 1981, 1989). Birdsall (1991) also argued that if there is a constraint on equalizing household spending on every child, then the first-born and last-born child would benefit from the higher average level of earning of the household because they spend more time in a small family than do the middle-born children. Resource dilution theory thus points out that a lack of resources may conflict with an altruistic parental attitude.

As family resources are stretched by having many children at home, some children are forced out of school and into the work force (Parish & Willis, 1993, p. 866). However, Parish and Willis argued that 'a large number of children in the family can lead not to universal resource dilution but to improved opportunities for the later

born' (p. 868), particularly in the presence of strong kinship networks and family obligation, which tend to create a large inter-temporal transfer between siblings. Thus older siblings may supplement family resources and offer a greater opportunity for schooling for younger siblings (Ejrnæs & Pörtner, 2004).

Credit constraint

Credit constraint faced by parents at different stages in their lives may create birth-order effects. Parents may be unable to equalize spending between children due to capital market imperfection, or they may simply fail to consider financial constraints over the lifecycle (Ejrnæs & Pörtner, 2004).

At the early stages of their careers, parents may not be able to afford schooling for their oldest child due to borrowing constraints, as borrowing against human capital may not be possible in low-income countries; but they may be able to send their later-born children to school (Parish & Willis, 1993, p. 867). This is because by this time parents have either accumulated savings, or their current earnings are high and the earlier-born children have entered into the labour market (ibid, p. 867). Therefore, when families are credit-constrained, educational decisions will be heavily influenced by the interests of the whole family, rather than the interests of the child only.

Other reasons

Other factors may also help explain observed birth-order differences in work participation and schooling of children. Birdsall (1991) developed a model that generated a birth-order effect on child productivity due to the time constraints of the mother. First-born and last-born children may be better off because they have more time from their parents during those periods in their lives when competition from siblings is absent or diminished. Zajonc (1976) documented that the intellectual environment of the household is an important determinant of children's education. Zajonc (2001) also argued that older children are more likely to be intelligent, as they have the opportunity to act as a tutor for later-born children. On the other hand, the last-born and the only child will never act as tutors and thus may be intellectually disadvantaged compared with their older siblings (Zajonc, 2001, p. 491).

Besides these above-mentioned factors, biological and cultural factors may also create birth-order effects. Maternal depletion is one possible biological factor. Children with a higher birth order have older mothers, and older mothers tend to give birth to low-weight children. Again, in some societies, the oldest child is considered as a symbol of dynasty. Horton (1988) gave the example that the oldest son is important in funeral rites and is treated more favourably (p. 344).

Another potential reason for the birth-order effect is old-age security motivation of parents (Horton, 1988; Ejrnæs & Pörtner, 2004). As the oldest child becomes economically active before other children in the household, she/he may have more resources directed to her or him. However, there may be counter-arguments within the child labour context. For example, old-age security motivation could be partly offset by the immediate gain from child labour, as parents are in an early stage of

their lifecycle income (a low income relative to their average lifetime income), when they have lots of family obligations, such as poor parents to look after and young children for whom they must provide food and education. Hence, immediate gain from child labour may be preferred over old-age security motivation, which in turn could force the earlier-born child into the labour market rather than education.

Against the background of the literature discussed above, this study is particularly interested in birth-order effects on schooling and child work in poverty-prone households. Typically such households cannot afford education for all children. Hence the aim of the study is to test the hypothesis that later-born children receive more education and are engaged in less child labour than their earlier-born siblings.

Data and Methods

The data set used in this study comes from the Micronutrient and Gender Study (MNGS) in Bangladesh, which is administered by the International Food Policy Research Institute (IFPRI). The MNGS is a four-round panel survey. The sample of this study is restricted to children from the first round of the survey, because the second, third and fourth rounds included only those adult household members who were away from home at the time of the first round of the survey. These household members were very few in number; hence it is expected that they do not affect the analysis. The sample of data used in this study is broadly representative of rural households.

The study considers only the children (aged 5–17 years) of the household head in order to find out the exact birth order of the relevant child from the same household, and these children have both a father and mother. There are 1391 observations for children in this age cohort. The basic statistics of the sample are presented in Table 1.

One potential problem with the data is that there may be households that have not completed their fertility, as the average age of the mothers is 37 years. Therefore, the children considered as the last-born may not really be the last children, and this might give biased estimates. However, to overcome this problem, a separate model is estimated, considering the mothers who fall in the 40-years or older group, who are assumed to have completed their families.

To classify children's activities, the study focuses on the occupation of children reported by the household head. Work is broadly defined to include non-waged work and housework. Two occupations (primary and secondary occupations) are considered as the key indicators defining child work.

Work and study are not mutually exclusive categories; some children are reported as attending school, while at the same time performing some form of paid or unpaid work. Therefore, four mutually exclusive categories are created to define a child's activity. These categories are: study only, work only, work and study, neither work nor study. In this paper children are included in the 'study only' category, if their primary and secondary occupations are both 'student' or they do not have a secondary occupation. Similarly, the 'work only' category includes those children whose primary and secondary occupations are both 'work' or they do not have any secondary occupation but their primary occupation is definitely 'work'. If a child works and attends school as well, he/she is included in the 'work and study' category.

Table 1. Variable names, definitions and means and standard deviations

Variable	Definition	Mean (SD) (N=1391)
Child's characteristics		
Female	Gender of child (1 if female, 0 otherwise)	0·38 (0·48)
Age	Age of child	11·00 (3·50)
Age^2	Age of child, squared	134·9 (78·00)
Birth order 1	1 if first-born, 0 otherwise	0·30 (0·45)
Birth order 2	1 if second-born, 0 otherwise	0·31 (0·46)
Birth order 3	1 if third-born, 0 otherwise	0·19 (0·39)
Birth order 4	1 if fourth-born, 0 otherwise	0·11 (0·30)
Birth order 5 or more	1 if fifth–tenth-born, 0 otherwise	0·08 (0·28)
Household characteristics		
Children (5–17)	Number of children aged 5–17	2·78 (1·14)
Children (0–5)	Number of children aged 0–5	0·46 (0·66)
Total land	Total land in decimals (1 decimal=408 ft^2)	147·60 (197·70)
Operated land	Operated land (in decimals)	93·80 (111·60)
Homestead	Homestead (in decimals)	19·50 (21·60)
Father's characteristics		
Age	Age of father	45·80 (9·20)
Illiterate	1 if illiterate, 0 otherwise	0·30 (0·40)
Can sign only	1 if can sign only, 0 otherwise	0·30 (0·40)
Can read only	1 if can read only, 0 otherwise	0·02 (0·10)
Can read and write	1 if can read and write, 0 otherwise	0·40 (0·40)
Farming	1 if occupation is agriculture, 0 otherwise	0·40 (0·40)
Service	1 if occupation is service, 0 otherwise	0·10 (0·30)
Trade	1 if occupation is business, 0 otherwise	0·17 (0·40)
Day/wage labourer	1 if day labour and wage labour, 0 otherwise	0·20 (0·40)
Other occupation	1 if engaged in occupation other than that stated above, 0 otherwise	0·03 (0·20)
Mother's characteristics		
Age	Age of mother	37·00 (7·60)
Illiterate	1 if illiterate, 0 otherwise	0·30 (0·40)
Can sign only	1 if can sign only, 0 otherwise	0·40 (0·50)
Can read only	1 if can read only, 0 otherwise	0·04 (0·20)
Can read and write	1 if can read and write, 0 otherwise	0·20 (0·40)
Housework	1 if does housework, 0 otherwise	0·90 (0·20)

The 'neither work nor study' category constitutes the rest of the children in the sample: they are neither going to school nor engaged in work, although they are of school-going age.

To explore the effect of birth order on children's activities, several multinomial logit models were estimated, where the dependent variable is the activity status of the child. There are four dependent variables: school only, work and schooling, neither

Table 2. Multinomial logit estimates for all children (reference category is study only)

Variable	Study and work			Neither			Work		
	Coefficient	p value	Odds ratio	Coefficient	p value	Odds ratio	Coefficient	p value	Odds ratio
Child's characteristics									
Female	1·051	0·000	2·861	−0·234	0·342	0·791	−0·029	0·905	0·971
Age	1·069	0·000	2·912	−1·685	0·000	0·185	2·037	0·000	7·668
Age^2	−0·030	0·002	0·970	0·049	0·040	1·050	−0·051	0·018	0·950
Birth order 1 (Ref.)									
Birth order 2	−0·236	0·246	0·790	0·305	0·442	1·357	−0·334	0·234	0·716
Birth order 3	−0·893	0·001	0·409	0·449	0·389	1·567	−0·945	0·010	0·389
Birth order 4	−1·108	0·001	0·330	0·580	0·400	1·786	−1·204	0·011	0·300
Birth order 5 or more	−1·236	0·002	0·291	0·081	0·921	1·084	−0·963	0·080	0·382
Household characteristics									
Children (5–17)	−0·028	0·719	0·972	0·149	0·429	1·161	0·087	0·406	1·091
Children (0–5)	0·201	0·097	1·223	0·228	0·209	1·256	0·192	0·279	1·212
Total land	0·001	0·090	1·001	−0·001	0·277	0·999	0·000	0·863	1·000
Operated land	0·000	0·571	1·000	−0·003	0·166	0·997	−0·002	0·068	0·998
Homestead	−0·011	0·013	0·989	0·020	0·019	1·020	−0·006	0·351	0·994

Table 2. *Continued*

Variable	Study and work			Neither			Work		
	Coefficient	p value	Odds ratio	Coefficient	p value	Odds ratio	Coefficient	p value	Odds ratio
Father's characteristics									
Age	−0·004	0·808	0·996	−0·022	0·425	0·978	0·044	0·032	1·045
Education (Ref.: illiterate)									
Can sign only	0·099	0·658	1·104	−0·964	0·001	0·381	−0·345	0·234	0·708
Can read only	0·552	0·293	1·737	−1·724	0·089	0·178	0·526	0·476	1·692
Can read and write	−0·308	0·183	0·735	−1·242	0·000	0·289	−1·122	0·000	0·326
Occupation (Ref.: farming)									
Service	−0·460	0·087	0·631	−0·245	0·614	0·782	−0·552	0·201	0·576
Trade	−0·643	0·008	0·526	0·140	0·682	1·150	−0·111	0·733	0·895
Day/wage labourer	0·313	0·180	1·368	0·060	0·862	1·062	0·886	0·005	2·425
Other occupation	−0·581	0·225	0·559	−0·967	0·185	0·380	−0·354	0·541	0·702
Mother's characteristics									
Age	0·034	0·125	1·035	0·032	0·381	1·033	0·017	0·541	1·017
Education (Ref.: illiterate)									
Can sign only	−0·347	0·067	0·707	−0·406	0·138	0·666	−0·906	0·000	0·404
Can read only	−0·675	0·123	0·509	−0·292	0·679	0·747	−1·692	0·037	0·184
Can read and write	−0·532	0·024	0·587	−1·483	0·000	0·227	−1·535	0·000	0·215
Housework	−0·198	0·550	0·820	−0·378	0·495	0·685	−0·097	0·818	0·908
χ^2				1218·179 (df 75)					
Pseudo R^2				0·360					
No. observations				1391					

Table 3. Multinomial logit estimates for boys (reference category is study only)

Variable	Study and work			Neither			Work		
	Coefficient	p value	Odds Ratio	Coefficient	p value	Odds ratio	Coefficient	p value	Odds ratio
Child's characteristics									
Age	0·841	0·013	2·319	−2·021	0·000	0·133	2·098	0·005	8·150
Age^2	−0·020	0·151	0·981	0·065	0·016	1·068	−0·052	0·053	0·949
Birth order 1 (Ref.)									
Birth order 2	0·148	0·585	1·160	0·172	0·736	1·187	−0·412	0·221	0·662
Birth order 3	−0·349	0·339	0·705	0·307	0·647	1·360	−0·675	0·120	0·509
Birth order 4	−0·524	0·283	0·592	0·120	0·890	1·128	−0·841	0·141	0·431
Birth order 5 or more	−0·686	0·231	0·504	−0·542	0·594	0·582	−1·012	0·132	0·364
Household characteristics									
Children (5–17)	−0·012	0·904	0·988	0·177	0·460	1·194	0·073	0·555	1·076
Children (0–5)	−0·128	0·456	0·880	0·385	0·111	1·470	0·023	0·914	1·023
Total land	−0·000	0·330	0·999	−0·002	0·367	0·998	−0·001	0·250	0·999
Operated land	0·002	0·069	1·002	−0·003	0·283	0·997	−0·002	0·273	0·998
Homestead	−0·004	0·527	0·996	0·0205	0·055	1·021	0·002	0·835	1·002

Table 3. *Continued*

Variable	Study and work			Neither			Work		
	Coefficient	p value	Odds Ratio	Coefficient	p value	Odds ratio	Coefficient	p value	Odds ratio
Father's characteristics									
Age	−0·018	0·460	0·982	−0·025	0·496	0·975	0·045	0·071	1·046
Education (Ref.: illiterate)									
Can sign only	−0·146	0·620	0·864	−1·307	0·001	0·271	−0·606	0·083	0·546
Can read only	0·556	0·400	1·745	−1·963	0·132	0·140	0·776	0·395	2·173
Can read and write	−0·503	0·103	0·605	−1·324	0·003	0·266	−1·211	0·001	0·298
Occupation (Ref.: farming)									
Service	−0·484	0·202	0·616	0·561	0·385	1·753	−0·738	0·137	0·478
Trade	−0·911	0·009	0·402	0·267	0·565	1·306	−0·321	0·400	0·725
Day/wage labourer	0·592	0·059	1·807	0·140	0·765	1·150	0·771	0·050	2·163
Other	0·021	0·968	1·022	−1·587	0·109	0·204	0·142	0·822	1·152
Mother's characteristics									
Age	0·029	0·343	1·030	0·047	0·325	1·049	0·014	0·661	1·015
Education (Ref.: illiterate)									
Can sign only	−0·464	0·064	0·629	−0·526	0·152	0·591	−0·731	0·017	0·482
Can read only	−0·040	0·946	0·961	−0·094	0·924	0·910	−1·412	0·247	0·244
Can read and write	−0·944	0·004	0·389	−1·589	0·002	0·204	−1·315	0·001	0·269
Housework	0·066	0·877	1·069	−0·302	0·658	1·049	0·522	0·323	1·686
χ^2				762·254 (df 72)					
Pseudo R^2				0·367					
No. observations				858					

Table 4. Multinomial logit estimates for girls (reference category is study only)

Variable	Study and work			Neither			Work		
	Coefficient	p value	Odds ratio	Coefficient	p value	Odds ratio	Coefficient	p value	Odds ratio
Child's characteristics									
Age	1·110	0·003	3·035	−1·201	0·162	0·301	1·739	0·112	5·689
Age^2	−0·030	0·065	0·971	0·018	0·743	1·019	−0·040	0·385	0·965
Birth order 1 (Ref.)									
Birth order 2	−0·844	0·016	0·430	0·810	0·275	2·249	−0·220	0·716	0·805
Birth order 3	−1·530	0·001	0·217	1·142	0·234	3·132	−1·340	0·115	0·261
Birth order 4	−1·943	0·000	0·143	2·018	0·113	7·524	−1·380	0·176	0·252
Birth order 5 or more	−1·763	0·008	0·172	2·200	0·181	9·028	−0·550	0·617	0·575
Household characteristics									
Children (5–17)	−0·030	0·822	0·971	0·065	0·848	1·068	0·251	0·268	1·286
Children (0–5)	0·787	0·000	2·196	0·068	0·823	1·071	0·602	0·101	1·825
Total land	0·004	0·001	1·000	−0·002	0·481	0·998	0·004	0·042	1·004
Operated land	−0·002	0·196	0·998	−0·003	0·476	0·997	−0·002	0·357	0·997
Homestead	−0·023	0·001	0·977	0·018	0·282	1·018	−0·033	0·049	0·967

Table 4. *Continued*

Variable	Study and work			Neither			Work		
	Coefficient	p value	Odds ratio	Coefficient	p value	Odds ratio	Coefficient	p value	Odds ratio
Father's characteristics									
Age	0·024	0·437	1·024	−0·020	0·700	0·98	0·025	0·607	1·025
Education (Ref: illiterate)									
Can sign only	0·615	0·110	1·850	−0·550	0·266	0·577	0·414	0·488	1·514
Can read only	0·544	0·573	1·723	−1·165	0·558	0·312	1·294	0·382	3·649
Can read and write	0·220	0·573	1·246	−1·300	0·018	0·272	−0·950	0·138	0·386
Occupation (Ref.: farming)									
Service	−0·790	0·069	0·454	−1·697	0·071	0·183	−0·180	0·858	0·837
Trade	−0·507	0·213	0·602	0·041	0·940	1·042	−0·010	0·984	0·985
Day/wage labourer	0·140	0·711	1·151	−0·057	0·918	0·945	1·296	0·050	3·653
Other	−4·300	0·004	0·014	0·073	0·948	1·076	−33·40*	1·000	0·000
Mother's characteristics									
Age	0·039	0·285	1·040	0·002	0·971	1·002	0·035	0·547	1·036
Education (Ref.: illiterate)									
Can sign only	−0·387	0·235	0·679	−0·311	0·503	0·733	−1·590	0·002	0·205
Can read only	−2·078	0·003	0·125	−0·827	0·463	0·437	−3·420	0·223	0·033
Can read and write	−0·347	0·375	0·707	−1·477	0·028	0·228	−3·270	0·006	0·038
Housework	−1·075	0·090	0·341	−0·880	0·380	0·415	−1·670	0·060	0·188
χ^2				509·914 (df 72)					
Pseudo R^2				0·404					
No. observations				533					

*The unusual coefficient value and odds ratio are obtained because of too few observations in this category for this variable; however, the variable is insignificant for this category.

school nor work and work only. An unrestricted sample was taken of children from households with at least one child within the age range 5–17 years. A set of dummy variables was constructed:

- Birth order 1 equals 1 if the child is the first born
- Birth order 2 equals 1 if the child is the second born
- Birth order 3 equals 1 if the child is third born
- Birth order 4 equals 1 if the child is fourth born
- Birth order 5 or more equals 1 if the child is fifth to tenth born

The above approach to birth-order classification is preferable over creating dummy variables for first-born, middle-born and last-born children, particularly if the households have not yet completed their family planning decisions.

Three per cent of children were found to be the 'only child' in the households. These children were treated as birth order 1 in the regression analysis because if they (only child) were treated differently from birth order 1, or omitted from the regression analysis, the estimated coefficients showed almost an identical trend and magnitude.

Behrman & Taubman (1986) argued that family size might confound birth-order effects with family background and family size effects. This study, therefore, uses age, the education and occupation of parents, and land size as controls for family background, and the number of pre-school siblings and school-age siblings in the household as controls for family size. Among the child characteristics, age, age^2 and the gender of the child are also included as explanatory variables.

Results

Table 2 shows that being a first-born child increases the probability of work as the child's prime activity, or at least combining school with work rather than schooling only. For example, the odds of combining study with work as opposed to study for a first-born child (used as reference) are (1/exp (− 0·893)=) 2·44 times, 3·03 times and 3·44 times as high as those of the third-born, fourth-born and fifth-or-higher-born child respectively (Table 2). On the other hand, the odds of sending a first-born child into work instead of school are 2·57 times, 3·33 times and 2·62 times as great as those of the third-born, fourth-born and fifth-or-higher-born child respectively (Table 2). The results, therefore, confirm that later-born children are more likely to be in school than their earlier-born counterparts. These findings are similar to those in other developing countries noted by Edmonds (2005), Ejrnæs & Pörtner (2004) and Emerson & Portela (2002), but different from what researchers have found in developed countries. For example, Behrman & Taubman (1986) examined the effect of birth order on the schooling and earnings of young US adults. Their study indicated that an increase in the birth order (being relatively young) causes a decrease of 0·26 years of schooling for males and 0·42 years of schooling for females.

When the sample is disaggregated by gender it shows that birth order matters for girls but not for boys, as birth-order variables are found to be statistically significant in the girls' sample (Table 4) but not in the boys' sample (Table 3). A first-born girl is at least two (2·32) times, at least four and a half (4·61) times, nearly seven (6·98) times and six (6·0) times more likely to combine study with work, compared with

second-born, third-born, fourth-born and fifth-to-tenth-born girls, respectively, as opposed to studying full-time (Table 4). The results from this study, therefore, indicate that birth order influences parental decisions if the child is a girl. However, Illahi (2001) found the opposite in Peru. He documented that the birth order effect is greater for boys.

When the sample is restricted to include only those children with mothers aged 40 years or older, the coefficients of birth-order variables are much stronger than those from the unrestricted sample. The probability (odds ratio) that a first-born child will study with work or specialize in full-time work increases in the restricted sample when parents are unlikely to have more children. Therefore, the results from this restricted sample (when the mother is 40 years or over) further strengthen the view that the higher the sibling rank of a child (relatively later-born), the more likely it is that he/she will be sent to school.

In addition to the main focus of this study, some other results deserve special mention. For example, the estimated results show that older and female children are more likely to combine study and work. Work participation increases with age, and younger children are more likely to be in the 'neither work nor study' category. In the sample of completed families (where the mother is 40 years or over), girls are 3·28 times more likely than boys to combine study with work as opposed to studying full-time (Table 5). The corresponding odds of combining study with work in the unrestricted sample (Table 2) are 2·86 times higher for girls.

Among the parental characteristics, the education of the father and mother has the greatest impact on child labour and schooling decisions. The higher the level of parental education, the greater the likelihood that a school-age child will specialize in studying relative to 'working only' or doing neither. The impact of mother's education is stronger than that of the father. Both the father's and mother's education significantly reduces the probability that a school-age child will be in neither category.

The occupation of the father is also important. If the father is engaged in a better occupation such as a trade, the child's probability of study is enhanced. Similarly, if the father is engaged in a vulnerable occupation, such as a day labourer or a wage labourer, it is more likely that the child will work full-time.

An increase in the number of pre-school children reduces the likelihood of full-time schooling and indicates that schooling will be part-time with work. The effect of the presence of pre-school children on the probability of combining study with work is high for girls (Table 4), but has no impact for boys (Table 3). As the boys' sample does not confirm this result, this indicates that pre-school children generate housework that is done, particularly, by girls, in which case girls' schooling becomes part-time instead of full-time.

Conclusion

This study considers the effects of birth order on children's activities in Banglasdesh. To the authors' knowledge, there has so far been no attempt to explore the effects of birth order on children's activities in Bangladesh. The study shows that first-born children receive less schooling than their later-born siblings. These empirical findings from Bangladesh reveal that the effects of birth order are distinctly different in

Table 5. Multinomial logit estimates for children's activity (reference category is study only), considering children from household where mother is at least 40 years old

Variable	Study and work			Neither			Work		
	Coefficient	p value	Odds ratio	Coefficient	p value	Odds ratio	Coefficient	p value	Odds ratio
Child characteristics									
Female	1·188	0·000	3·280	−0·177	0·818	0·837	−0·177	0·625	0·838
Age	1·324	0·006	3·761	−2·686	0·007	0·068	3·199	0·002	24·51
Age^2	−0·041	0·029	0·960	0·086	0·103	1·089	−0·095	0·012	0·909
Birth order 1 (Ref.)									
Birth order 2	−1·149	0·021	0·317	14·225*	0·998	1506048·7*	−1·651	0·002	0·192
Birth order 3	−0·392	0·007	0·248	15·656*	0·998	6299620·8*	−1·848	0·001	0·157
Birth order 4	−1·343	0·016	0·261	16·994*	0·998	24010457*	−1·981	0·002	0·138
Birth order 5 or more	−1·368	0·023	0·255	16·360*	0·998	12736724*	−1·799	0·010	0·165
Household characteristics									
Children (5–17)	−0·187	0·105	0·829	−0·082	0·846	0·920	0·077	0·572	1·080
Children (0–5)	0·306	0·171	1·358	−0·435	0·482	0·647	0·058	0·832	1·060
Total land	0·002	0·012	1·002	−0·003	0·438	0·997	0·000	0·525	—
Operated land	−0·001	0·268	0·999	0·000	0·887	—	−0·002	0·143	0·998
Homestead	−0·011	0·079	0·989	0·0309	0·150	1·031	−0·005	0·458	0·994

Table 5. *Continued*

Variable	Study and work			Neither			Work		
	Coefficient	p value	Odds ratio	Coefficient	p value	Odds ratio	Coefficient	p value	Odds ratio
Father's characteristics									
Age	−0·018	0·522	0·982	−0·179	0·018	0·836	0·042	0·151	1·043
Education (Ref.: illiterate)									
Can sign only	0·153	0·668	1·165	−2·396	0·018	0·091	−0·439	0·289	0·645
Can read only	−0·913	0·448	0·401	1·725	0·473	5·614	0·460	0·658	1·584
Can read and write	−0·251	0·498	0·778	−1·169	0·221	0·310	−0·801	0·067	0·449
Occupation (Ref: farming)									
Service	−0·472	0·267	0·623	0·203	0·896	1·225	−0·951	0·130	0·386
Trade	−0·947	0·038	0·388	−2·911	0·070	0·054	0·052	0·915	1·053
Day/wage labourer	0·095	0·829	1·100	2·446	0·026	11·545	1·405	0·004	4·074
Other	−0·200	0·840	0·819	2·815	0·165	16·691	−0·096	0·921	0·909
Mother's characteristics									
Age	0·051	0·190	1·052	0·108	0·414	1·114	0·025	0·557	1·026
Education (Ref.: illiterate)									
Can sign only	−0·091	0·773	0·913	−1·404	0·118	0·245	−0·849	0·027	0·428
Can read only	−1·982	0·006	0·138	−0·579	0·730	0·560	−2·340	0·035	0·096
Can read and write	−0·672	0·130	0·511	−3·233	0·035	0·039	−1·423	0·020	0·241
Housework	0·768	0·321	2·155	−2·787	0·039	0·061	−0·173	0·812	0·841
χ^2				487·441 (df 75)					
Pseudo R^2				0·389					
No. observations				500					

*The unusual coefficient values and odds ratio are obtained because of too few observations in this category; however, these variables are insignificant for this category.

developing countries, where poverty and capital constraints are very common, to those in developed countries. The study complements and re-affirms the existing literatures on the effects of birth order on child labour and schooling. As detailed information of time allocation of the children into different activities was not available, the study merely focuses on the likelihood of a child participating in a particular activity. Further insight must await the collection of detailed time allocation data.

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