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ABSTRACT

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

JEL Classification: D1, I2, J2, O15

KEYWORDS: Birth order, Child labour, School Attendance.

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1. Introduction

Evidence from low-income countries suggests that work and schooling are not equally shared among all children of the household (Grootaert and Patrinos, 1999; Patrinos and Psacharopolus, 1997). The birth-position of the 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 the middle-born children and/or last-born child, 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 the children into work and study.

Existing evidence indicates that birth order has a significant effect on child's development and achievement. Intra-household allocation of resources can also be different across children 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 age or gender) have gained 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 - Edmonds (2005), Emerson and Souza (2004) - 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.

The remainder of this paper proceeds as follows: Section 2 outlines the conceptual framework and literature review. Section 3 describes data and presents some selected descriptive statistics. Section 4 presents estimation issues. The empirical results are reported in section 5. Finally, concluding remarks are given in section 6.

2. Conceptual Framework

Parental Preference or Attitude

The evidence about differences in child labour supply across siblings is often proposed as the result of parental preference. Now, the question is: why do altruistic parents differentiate between children?

The wider literature demonstrates that parents are, generally, averse to inequality among children (Behrman 1988). Becker (1981) and other economists hypothesised that altruistic parents care about the welfare of their children as well as their own welfare. However, Parish and Willis (1993) argued that this altruistic attitude of parents might not dictate that parents 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 of investment.

Comparative Advantages or Child Specialisation

Recent studies have highlighted the comparative advantage or specialisation of a child for a particular activity (see, for example, Edmonds, 2005; Horowitz and Wang, 2004). If the productivity in household production 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 and 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 the parents to take differential decisions over allocating labour activities for some children and schooling for others. Horowitz and Wang (2004) described such decision making as intra-household specialisation 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 equalising 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 altruistic attitude of parents.

As family resources are stretched by having many children at home, some children are forced out of school and into the work force (Parish and 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 that tend to create a large inter-temporal transfer among siblings. Thus older siblings may supplement family resources and offer a greater opportunity of schooling for younger siblings (Ejrnæs and Pörtner, 2004).

Credit Constraint

Credit constraint faced by the parents at different stages of their lives may create birth order effects. Parents may be unable to equalise spending over children due to capital market imperfection, or parents may simply fail to consider financial constraints over the life cycle (Ejrnæs and Pörtner, 2004).

At the early stage of their career, 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 the later-born children to school (Parish and 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 the 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 the 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 to 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 of the possible explanations of biological factors. Children with a higher birth-order are naturally from older mothers, therefore, 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 example that the oldest son is important in funeral rites and is treated favourably (p. 344).

Another potential reason for the birth order effect is the old-age security motivation of parents (Ejrnæs and Pörtner, 2004; Horton, 1988). As the oldest child becomes economically active first, compared to other children in the household, she/he may therefore have more resources directed to her or him. However, there may have 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 life cycle income (low income relative to average life time 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.

3. Data and Descriptive Statistics

The data set used in this study comes from a survey titled "Micronutrient and Gender Study (MNGS) in Bangladesh" administered by the International Food Policy Research Institute (IFPRI). The MNGS survey is a 4-round panel survey. This study restricts the sample only to the children of 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.

This study considers only the children (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 father and mother. There are 1,391 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 aspect of family planning might give biased estimates. However, to overcome this problem, a separate model is estimated, considering the mothers who fall in the 40 years old or older group and so are assumed to have completed their fertility.

To classify children's activities, this study focuses on the occupation of children reported by the household head. Work is broadly defined to include non-wage work and housework. This study considers two occupations (primary and secondary occupation) 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 they are 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. The "neither

work nor study" category considers the rest of the children in the survey. They are neither going to school nor engaged in work, although they are in the school going age.

4. Estimation Issues

To explore the birth order effect on the children's activities, several multinomial logit models have been estimated, where the dependent variable is the activity status of children. There are four dependent variables; school only, work and schooling, neither school nor work and work only. This study proceeds by taking an unrestricted sample of children where the household has at least one child within the range of 5-17 years old.

In order to capture the birth order effect on the children's activities, a set of dummy variables has been constructed in this study. These are:

- The first variable, Birth Order 1 takes the value one if the child is the first-born

- The second variable, Birth Order 2, takes the value one if the child is the second-born

- Birth Order 3 which equals 1 if the child is third-born

- Birth Order 4 which equals 1 if the child is fourth-born, and

- Birth order 5 or more which 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 are found to be the 'only child' of the households. These children have been treated as birth order 1 because if they (only child) are treated

differently from birth order 1 or omitted from the regression analysis, the estimated coefficients show almost similar trend and magnitude. Therefore, these children are considered as birth order 1 in the regression analysis.

Behrman and Taubman (1986:S136-40) 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 the school-age siblings in the household as the controls for family size. Among the child characteristics, age, age squared, and the gender of the child are also included as explanatory variables.

5. Empirical Results

Table 2 presents the coefficient estimates, p-values and odds-ratios for the unrestricted sample. Table 3 and Table 4 report results for the boys' sample and the girls' sample respectively. Table 5 presents the coefficients estimates of the sample restricted to those households where the mother is aged 40 years and over. The constant term is included in the all regressions; however, the estimate of the constant has not been presented in the Tables.

Table 2 shows that being a first-born child increases the probability of working as the 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 (-.893)=) 2.44 times, 3.03 times, and 3.44 times as high as that from the third-born child, the fourth-born and the fifth-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 that from the

third-born child, the fourth-born and fifth-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 the findings of other developing countries noted by Edmonds (2005), Ejrnæs and Pörtner (2004) and Emerson and Portela (2002). However, these results are different from what other researchers found in developed countries. For example, Behrman and Taubman (1986) examined the effect of birth order on schooling and earnings of U.S. young adults. Their study indicated that an increase in the birth order (being relatively young) causes 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 only for girls and not for boys, as birth order variables are found to be statistically significant in girls' sample (Table 4) but not in 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 to the second-born girl, third-born, fourth-born and fifth-tenth-born girls respectively, as opposed to studying full-time (Table 4). The results from this study, therefore, indicate that birth order influences the parental decisions if the child is a girl. However, Illahi (2001) found opposite evidence in Peru. He documented that birth order effect is higher for boys.

When the sample is restricted to include only those with mothers who are 40 years or older, the coefficients of birth order variables are much stronger now than from the unrestricted sample. The probability (odds-ratio) that a first-born child will study with work or specialise 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's age is 40 years and over) further strengthen the view that the higher the sibling rank of a child (relatively later-born), the more likely that he/she will be sent to school.

Although the main focus of this study is the effect of birth order on parental decisions, there are some other results that deserve special attention too. 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. When this study considers the sample of completed families (where the mother's age is 40 years and over), the result shows that in a completed family, relative to boys, girls are 3.28 times more likely 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 father and mother has the greatest impact on child labour and schooling decisions. Empirical findings also reveal that a higher level of parental education increases the likelihood that a school-age child will specialise in study relative to the likelihood that the child will "work only" or do neither. The impact of the mother's education is stronger than the father's education. 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 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 for a child to 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 on boys (Table 3). As the boys' sample does not confirm this result, it therefore, indicates that pre-school children generate housework that is done, particularly, by girls. In that case the schooling of girls becomes part-time instead of full-time.

6. Conclusion

This study considers the effects of birth order on children's activities. To the knowledge of this study, there has so far been no attempt to explore the effects of birth order on children's activities in Bangladesh. The results from this study prove the hypothesis that the first-born child receives less schooling than their later-born siblings. These empirical findings from Bangladesh reveal that the effects of birth order are distinctly different in developing countries (from developed countries) where poverty and capital constraints are very common. The findings of this study complement and re-affirm 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 is not available, this study therefore 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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Table 1: Variable names and definitions, means and standard deviations (standard deviation in parentheses under means) of variables.

Variable Name	Definition	Total (N=1391)
Child characteristics		
Female	Gender of child (1 if Female, 0 otherwise)	.38 (.48)
Age	Age of child	11.0 (3.50)
Age^2	Age of child, squared	134.9(78)
Birth order 1	1 if first-born child, 0 otherwise	.30(.45)
Birth order 2	1 if second-born child, 0 otherwise	0.31(.46)
Birth order 3	1 if third-born child, 0 otherwise	0.19(.39)
Birth order 4	1 if fourth-born child, 0 otherwise	0.11(.30)
Birth order 5 or more	1 if fifth-tenth-born child, 0 otherwise	0.08(.28)
Household Characteristics		
Children (5-17)	Number of children 5-17	2.78 (1.14)
Children (0-5)	Number of children 0-5	.46(.66)
Total land	Total land measured in decimal (1 decimal = 408 square feet)	147.60(197.70)
Operated land	Operated land measured in decimal	93.80(111.60)
Homestead	Homestead measured in decimal	19.50(21.60)
Parents Characteristics		
Father's age	Age of father	45.8(9.20)
Illiterate	1 if father is illiterate, 0 otherwise	.30(.40)
Can sign only	1 if father can sign only, 0 otherwise	.30(.40)
Can read only	1 if father can read only, 0 otherwise	.02(.10)
Can read and write	1 if father can read and write, 0 otherwise	.40(.40)
Farming	1 if father's occupation is agriculture, 0 otherwise	.40(.40)
Service	1 if father's occupation is service, 0 otherwise	.10(.30)
Trade	1 if father's occupation is business, 0 otherwise	.17(.40)
Day/wage labourer	1 if father is day labour and wage labour, 0 otherwise	.20(.40)
Other occupation	1 if father is engaged in other occupation than the occupation stated above, 0 otherwise	.03(20)
Mother's age	Age of mother	37(7.60)
Illiterate	1 if mother is illiterate, 0 otherwise	.30(.40)
Can sign only	1 if mother can sign only, 0 otherwise	.40(.50)
Can read only	1 if mother can read only, 0 otherwise	.04(.20)
Can read and write	1 if mother can read and write, 0 otherwise	.20(.40)
Mother's housework	1 if mother does housework, 0 otherwise	.90(.20)

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

Variable Names	Study and Work			Neither			Work		
	Coefficient	P-value	Odds-ratio	Coefficient	P-value	Odds-ratio	Coefficient	P-value	Odds-ratio
Child 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	0.0202	0.019	1.020	-0.006	0.351	0.994
Parents Characteristics									
Father age	-0.004	0.808	0.996	-0.022	0.425	0.978	0.044	0.032	1.045
Father's 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
Father 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 Age	0.034	0.125	1.035	0.032	0.381	1.033	0.017	0.541	1.017
Mother 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
Mother's Housework	-0.198	0.550	0.820	-0.378	0.495	0.685	-0.097	0.818	0.908
Chi squared				1218.179 (d.f.75)					
Pseudo R-squared				0.360					
Number of Observations				1391					

Table 3. Multinomial logit estimates for boys (The 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 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
Parents Characteristics									
Father Age	-0.018	0.460	0.982	-0.025	0.496	0.975	0.045	0.071	1.046
Father 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
Father 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 Occupation	0.021	0.968	1.022	-1.587	0.109	0.204	0.142	0.822	1.152
Mother Age	0.029	0.343	1.030	0.047	0.325	1.049	0.014	0.661	1.015
Mother 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
Mother's housework	0.066	0.877	1.069	-0.302	0.658	1.049	0.522	0.323	1.686
Chi squared				762.254(d.f.72)					
Pseudo R-squared				0.367					
Number of Observations				858					

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

Variable	Study and Work Coefficient	P-value	Odds-Ratio	Neither Coefficient	P-value	Odds-Ratio	Work Coefficient	P-value	Odds-Ratio
Child 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	-1.53	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
Parents Characteristics									
Father Age	0.024	0.437	1.024	-0.020	0.700	0.98	0.025	0.607	1.025
Father 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
Father 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 Occupation	-4.300	0.004	0.014	0.073	0.948	1.076	-33.40*	1.000	3E-15
Mother Age	0.039	0.285	1.040	0.002	0.971	1.002	0.035	0.547	1.036
Mother 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
Mother's housework	-1.075	0.090	0.341	-0.880	0.380	0.415	-1.670	0.060	0.188
Chi squared				509.914(72)					
Pseudo R-squared				0.404					
Number of Observations				533					

* This 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.

Table 5: Multinomial logit estimates for children's activity (The reference category is Study only). (Sample considering children from household where mother age is at least 40 years).

Variable	Study and Work Coefficient	P-values	Odds-Ratio	Neither Coefficient	P-value	Odds-Ratio	Work 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	-1.392	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
Parents Characteristics									
Father Age	-0.018	0.522	0.982	-0.179	0.018	0.836	0.042	0.151	1.043
Father 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
Father 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 Occupation	-0.200	0.840	0.819	2.815	0.165	16.691	-0.096	0.921	0.909
Mother Age	0.051	0.190	1.052	0.108	0.414	1.114	0.025	0.557	1.026
Mother 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	-2.34	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
Mother's housework	0.768	0.321	2.155	-2.787	0.039	0.061	-0.173	0.812	0.841
Chi squared				487.441(d.f.75)					
Pseudo R-squared				0.389					
Number of Observations				500					

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