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The impact of parental health on child labor: the case of Bangladesh

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Abstract

In recent years, there has been a marked increase in the number of studies that examine the economics of child labor and more particularly the determinants of children's labor supply in developing countries. This paper provides a new angle on the causes of child labor force participation by showing that parents' health affects child labor through family labor supply decisions. Using a survey with detailed information on health matters for Bangladesh, we find that child labor supply is sometimes takes the form of an added worker effect in reaction to certain types of health shock.

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1. Introduction

In recent years, there has been a marked increase in the number of empirical studies that examine the determinants of children's labor supply (see Edmonds, 2007, for a recent survey). Much of this literature finds that parents send their children into the labor market only if they are unable to meet basic needs of the household (Basu and Van, 1998). In the presence of credit constraints and the absence of formal insurance, child labor tends to increase when the household is affected by economic shocks. This relation has been studied in the case of crop failures (Beegle, Dehejia and Gatti, 2006), and financial crises (Yang, 2008, and Skoufias and Parker, 2006). However, one issue that has not been addressed in this literature is the effect that health shocks for adult members of the household could have on child labor. Using Bangladeshi data from the 2000 Household Expenditure Survey (HES), we examine the relationship between parental health and family labor supply decisions using a bivariate probit model. We find evidence of added worker effects resulting from father's health problems both on children's and (to a lesser extent) spouse's labor supply. Our results suggest that income replacement measures through sickness benefit could significantly reduce child labor. We begin by a descriptive analysis of child labor in section 2, followed by a more thorough analysis using a bivariate probit model in section 3. Our conclusions and assessment of the policy implications are presented in the final section.

2. Child Labor and Parental Health in Bangladesh

Several papers have analysed the determinants of child labor supply in Bangladesh. Amin *et al* (2007), Shafiq (2007) and Khanam (2006) show that Bangladeshi children are often prevented from attending school due to market and household work. The number of child workers (aged 5 to 14 years old) in Bangladesh is estimated to be 4.6 million or 11.5% according to the Household Expenditure Survey (HES) which is used in this paper[1]. It is important to note that in the HES, parents reported that their child worked only when labor constituted a significant activity and certain economic activities undertaken within and for the household are thus omitted. The proportion is higher for boys (14% compared to 9% for girls) and there is very little difference between rural and urban areas. Children present in the household but who are not members of the nuclear family have a higher participation rate

[1] The Labor Force Survey which uses an *extended* definition of the labor – which includes unpaid labor – suggests the figure may be as high as 8 million.

but they tend to work as maids or servants. As there is no information available on these children's parents in the HES, they are not studied in this paper.

The effect of a parent's bad health on the labor supply of other family members is generally studied as an "added worker effect" but in theory the effect of a negative health shock on other members' labor supply is ambiguous. The added workers effect occurs when healthy members of the family increase their labor supply as a result of reduced income. This is particularly important in developing countries where there is almost no insurance provision (Gertler et al, 2003). However, a healthy family member may decrease their labor supply if the health shock results in a change in home production opportunities and caring for the patient.

In Bangladesh, where there is almost no insurance provision, a negative health shock concerning the head of the family could be an important determinant of the labor force participation not only of the mother but also of the children. Based on declared state of health and expenditure on health treatment, women are more prone to health problems than men: 24% of women and 21% of men aged 15 or over declare that they suffer from a chronic illness. Nearly one-fifth of the adult population report having been ill in the past 30 days and around 15% had treatment.

Table I shows the relationship between the health status of the parents and the labor market participation of family members. The participation rate of mothers is particularly low (around 7.5%). Parents declaring chronic illness have a lower participation rate than generally healthy parents but there is no correlation between the health status of the father and the participation rate of the mother. However children's participation is generally higher than the mother's. Furthermore, it would appear that it is the son, rather than the mother who replaces the father when he is actually ill. The participation rate of the daughter only increases when either parent receives treatment or when the mother is ill. However this latter possibility appears minor – the difference in girl's participation when the mother is ill is only significant at the 10% level. Nevertheless, this descriptive analysis suggests that parental health may have an impact on child labor. The effect appears more pronounced when it is the father's rather than the mother's health that is problematic and it is this hypothesis that is examined in the subsequent econometric analysis.

Table I Parents' health status and labor force participation of members of the household

		Labor force participation rate			
		sons	daughters	father	mother
Health status :					
mother sick[a]					
	No	12.91	**7.81**	96.49	7.96
	Yes	13.85	**9.13**	97.45	7.07
		ns	*	ns	ns
mother received treatment[a]					
	No	**12.77**	**7.53**	96.23	7.76
	Yes	**15.04**	**11.80**	96.45	7.59
		**	***	ns	ns
mother chronically ill	No	13.07	7.90	96.58	**8.14**
	Yes	13.39	8.79	95.28	**6.68**
		ns	ns	ns	*
father sick[a]					
	No	**12.02**	7.97	**97.10**	7.39
	Yes	**15.89**	8.61	**94.04**	8.57
		***	ns	***	ns
father received treatment[a]					
	No	**12.69**	**7.61**	96.37	7.85
	Yes	**15.43**	**10.15**	95.53	7.17
		**	**	ns	ns
father chronically ill	No	**12.21**	7.96	**97.11**	7.45
	Yes	**15.21**	8.57	**94.21**	8.36
		***	ns	***	ns

Note : Bold case indicates rejection of null hypothesis of identical proportions.

*** significant at less than 1%, ** at 5%, * at 10%, ns : non-significant

[a] Someone is said to be sick if he/she suffered from certain symptoms such as diarrhea, fever, pain, injury, blood pressure, palpitation, breathing trouble, weakness or dizziness in the past 30 days. Someone is said to suffer from a chronic illness if the illness lasted for at least a year.

3. Modelling the determinants of child labor

In view of Bangladeshi traditions and customs[2], family labor supply decisions can be considered in a hierarchical manner. We confine the sample to the 4442 families (95%) where the father works[3]. We model mother's and children's labor market participation as separate but dependent processes using a bivariate probit model. Each participation decision is the outcome of a latent process :

$$y^*_{Mi} = x_{Mi}'\beta_M + u_{iM}$$

$$y^*_{Ci} = x_{Ci}'\beta_C + u_{iC}$$

where M and C refer to mother and child respectively, x is a vector of explanatory variables and u is an error term. In each case, y^*_i is unobserved, but if $y^*_i > 0$ then the person works. In the bivariate probit model, the error terms are assumed to have a bivariate normal distribution and are (potentially) correlated between a mother and her children :

$$\begin{pmatrix} u_{Mi} \\ u_{Ci} \end{pmatrix} \sim N\left(\begin{pmatrix} 0 \\ 0 \end{pmatrix}, \begin{pmatrix} 1 & \rho \\ \rho & 1 \end{pmatrix}\right)$$

where ρ is the correlation coefficient. The model is estimated for a sample of 8627 children.

The explanatory variables are chosen on the basis of what would be expected to be relevant in the context of a household labor supply model. Characteristics such as household size, housing status, income quintiles, and whether the family lives in an urban area or not, are included in the labor force participation equation for both children and mothers. We include in both equations mother's education and the individual's age. In addition, for mothers, the presence of children under the age of five is also included. In order to control for the hierarchical nature of labor supply decisions (adults first, then older children, boys before girls and so forth) the proportions of males and females in the household along with the age

[2] In Bangladesh, the Purdah is widely respected.
[3] In the 218 cases where this is not the case, only in 16 cases does the mother work.

rank of the child in the family (eldest, middle, youngest child) and child's sex are included in the labor force participation equation for children.

We use three indicators of the health status of both parents. In the first model (Table II, columns 1 and 2) we examine the effect of the general health of the parents on labor force participation. We define a dummy variable (ILL) which takes the value one if the person has had a chronic illness in the last twelve months, had treatment in the last 30 days, is handicapped in some way, or experienced one or more of pre-determined set of symptoms. The general health of her husband and her own general health are found to have no significant impact on a mother's participation. The t statistics are both less than than 0.5. On the other hand, a father's health problems are found to increase child labor force participation in a statistically significant manner. Mother's health is not significant factor.

As there may be unobserved environmental variables affecting father's health which are correlated with unobserved factors that influence the labor force participation of his children and his spouse, we test the hypothesis that the father's health is exogenous in this context using a likelihood ratio test (see Monfardini and Radice, 2008). The LR statistic is 2.8 and well below the 5% critical value of 5.99. Father's health status can therefore be regarded as exogenous for these participation decisions. However, unobserved factors that influence mother's labor supply are positively (though weakly) correlated ($\hat{\rho} = 0.16$) with the unobserved factors influencing her children's labor supply.

The control variables have the expected effects in the context of household labor supply decisions in a developing country. Boys have a higher probability of working than girls and child labor force participation increases with age and age rank (being the eldest sibling for example). However, child labor is less likely in households where the mother is highly educated and where there are older male members present. Mother's labor force participation is higher in low income households, in urban areas, when she has undergone higher education and in smaller households. The presence of young children and home ownership are factors that reduce her labor supply, and age is found to have no significant impact.

Table II Bivariate probit estimates of mothers' and children's labour force participation

	Model 1			Model 2	
	Mother works	Child works		Mother works	Child works
Correlation coefficient (ρ)	0.160***			0.156***	
	(0.038)			(0.039)	
Age	-0.0005	0.158***		-0.0004	0.159***
	(0.004)	(0.008)		(0.004)	(0.008)
Boy		0.283***			0.286***
		(0.040)			(0.040)
Lowest quintile	0.532***	0.044		0.530***	0.043
	(0.058)	(0.052)		(0.058)	(0.052)
Second quintile	0.145***	0.069		0.143***	0.075
	(0.061)	(0.051)		(0.062)	(0.051)
House-owner	-0.405***	0.057		-0.414***	0.057
	(0.057)	(0.064)		(0.057)	(0.064)
Lives in urban area	0.304***	-0.065		0.304***	-0.067
	(0.054)	(0.051)		(0.054)	(0.051)
Mother's education level :					
None/only basic	Reference				
Level 1	-0.410***	-0.077		-0.411***	-0.082
	(0.082)	(0.057)		(0.083)	(0.057)
Level 2	-0.128*	-0.311***		-0.127*	-0.319***
	(0.071)	(0.067)		(0.071)	(0.067)
Level 3	0.814***	-0.613***		0.823***	-0.614***
	(0.121)	(0.22)		(0.121)	(0.22)
Household size	-0.075***	0.021		-0.075***	0.021
	(0.014)	(0.015)		(0.014)	(0.015)
Children under five	-0.142***			-0.142***	
	(0.051)			(0.051)	
Oldest child in family		0.084*			0.084*
		(0.043)			(0.043)
% males in household					
Aged 18-60		-0.079***			-0.081***
		(0.031)			(0.031)
Aged over 60		-0.152**			-0.155**
		(0.065)			(0.065)
% females in household					
Aged 18-60		0.005			0.008
		(0.036)			(0.036)
Aged over 60		-0.076			-0.083
		(0.064)			(0.064)
Health variables :					
Mother ill	0.022	0.028	Mother	-0.091*	-0.044
	(0.047)	(0.041)	chronically ill	(0.055)	(0.046)
Father ill	0.013	0.118***	Father	0.105**	0.047
	(0.047)	(0.04)	chronically ill	(0.051)	(0.044)
			Mother recently had treatment	0.073	0.130***
				(0.062)	(0.051)
			Father recently had treatment	0.038	0.111**
				(0.065)	(0.050)
Log likelihood	-4483			-4476	
Number of observations	8627			8627	

*** significant at 1% ; ** significant at 5%; *significant at 10%

In order to further explore the relationship between child labor and parents' health, we distinguish between chronic or long term health problems and short term health shocks. The former is captured by a dummy variable which takes the value one for persons having experienced a chronic illness in the last twelve months and zero otherwise. We define a second dummy variable which takes the value one if the person has received medical treatment in the last 30 days. The results (Table II columns 3 and 4) indicate that if the father has a chronic illness, the wife has greater likelihood of working, whereas if the wife has a chronic illness, not unexpectedly she is less likely to participate. That either parent has a chronic illness does not have an impact by itself on children's participation. What matters is if either parent has recently had medical treatment, in which case the child has a greater likelihood of working. This suggests that it is short run health shocks that give rise to an added worker effect through child labor, due to loss of income and possibly the need for resources to pay for treatment. The other explanatory variables have very similar effects to those found in the previous model.

4. Conclusions

The question of what determines the labor force participation of children in Bangladesh has been studied from a number of angles. In this paper, we have explored the effect of parental health on the labor force participation of family members, and interesting results have been found. Firstly, overall it is clear that father's ill-health increases the likelihood of labor force participation of children. Second, children have a greater tendency to work when either parent has recently had treatment. Thirdly, the probability that the mother works is increased only when the father has a chronic illness. It would appear that when illness is short-lived or if treatment is required, children's participation tends to increase. The results suggest that child labor is in part a short-term reaction to parental illness. One means of reducing the extent of child labor in Banglasdesh would be to set up a sickness insurance scheme paid for from payroll tax and/or employee contributions that provides temporary income replacement for sick adult workers.

References

Amin, S., M. Quayes and J. Rives (2004) "Poverty and other determinants of child labor in Bangladesh" *Southern Economic Journal* **70**, 876-892.

Amin, S., M. Quayes and J. Rives (2007) "Market Work and Household Work as Deterrents to Schooling in Bangladesh" *World Development* **34**, 1271–1286.

Basu, K. and P. Van (1998) "The economics of child labor" *American Economic Review* **88**, 412-427.

Beegle, K., R. Dehejia and R. Gatti (2006) "Child labor and agricultural shocks" *Journal of Development Economics* **81**, 80-96.

Delap, E. (2001) "Economic and cultural forces in the child labor debate: evidence from urban Bangladesh" *Journal of Development Studies* **37**, 1-22.

Edmonds, E. (2007) "Child Labor" NBER working paper number 12926

Gertler, P., D. Levine and E. Moretti (2003) "Do Microfinance Programs Help Families Insure Consumption Against Illness?" Center for International and Development Economics Research, University of California at Berkeley, working paper number 1045.

Khanam R. (2008) "Child labor and school attendance: evidence from Bangladesh" *International Journal of Social Economics* **35**, 77-98.

Monfardini, C. and R. Radice (2008) "Testing Exogeneity in the Bivariate Probit Model: A Monte Carlo Study" *Oxford Bulletin of Economics and Statistics* **70**, 271-282.

Salmon, C. (2005) "Child labor in Bangladesh: Are children the last economic resource of the household?" *Journal of Developing Societies* **21**, 33-54.

Shafiq, M. (2007) "Household schooling and child labor decisions in rural Bangladesh" *Journal of Asian Economics*, **18**, 946-966.

Skoufias, E. and S. Parker (2006) "Job loss and family adjustments in work and schooling during the Mexican peso crisis" *Journal of Population Economics* **19**, 163-181.

Yang D. (2008) "International migration, remittances and household investment: evidence from Philippine Migrants' Exchange Rate Shocks" *Economic Journal* **118**, 591-630.