Extended Abstract

How Much Work Is Too Much?
Thresholds in the Effect of Child Work on Schooling – The Case of Egypt

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How much work is "too much" for children? In this paper, we examine how many hours of work can be undertaken before negative effects on school attendance are observed, using 1998 data from Egypt.

There is general agreement that children should not be doing any work that is clearly harmful, hazardous, or morally objectionable, as evidenced by the rapid rate of ratification of the International Labour Organization's (1999) Convention C182 on the "worst forms" of child labor. There is less agreement about work that is not so clearly problematic – and these disagreements can be found among policy makers, child advocates, and analysts. Some believe that children should not work at all, while others believe that work in moderation can be helpful in developing skills, confidence, and good habits. Part of the problem arises in the definition of "in moderation," which is both subjective and context-specific. Our narrow interpretation of "work in moderation," for the purposes of this paper, is "work that does not interfere with school attendance."

Large proportions of adolescents in industrialized countries are employed in labor force work (e.g., Mortimer 2003, White 1994). While many U.S. experts view work over 20 hours per week as deleterious for an adolescent's education, Mortimer (2003) finds that a minority of youth benefit from longer work hours. She also documents positive aspects of part-time (< 20 hours/week) work. In industrialized countries, while some children and youth work "under the table," the majority appear to be in formal sector employment, and thus subject to labor regulations.

In contrast, in developing countries, most of children's work takes place outside the formal employment sector. Much of it is found in the informal economy and, for girls, in the home. The degree to which children's work interferes with school attendance can vary greatly, depending on the institutional structure of the sector of work and also depending on the structure of the school day. In some areas, schools function in two or three shifts per day, and it may be possible for a child to fit a substantial amount of informal-sector or domestic work around a 4-hour school day.

In a previous paper (Assaad, Levison, and Zibani 2004), we jointly estimated Egyptian children's and adolescents' participation in work and attendance at school. We counted girls' domestic chores among girls' work[1], but boys and girls who worked less than 14 hours per week were included in the "not working" group. That is, we were interested in whether substantial hours of work, broadly defined, affected schooling. The standard

[1] Information on boys' domestic chores was not collected by the survey because pre-tests showed that asking questions about males' domestic tasks did not generate useful answers.

labor force definition whereby a person is employed if he/she worked at least one hour in the reference week did not seem useful in this case.

Using this binary definition of work, we established that working for 14+ hours per week has a negative impact on schooling for both boys and girls, when girls' work included time spent on household tasks. These results did not inform us, however, about the effect of an additional hour of work on the probability of school attendance, nor did they let us examine the possibility that there are thresholds – in terms of numbers of weekly hours worked – beyond which work interferes substantially with school attendance.

In this paper, we jointly estimate hours worked and school attendance using methods that will allow us to test for the presence of thresholds in the effect of child work on schooling.

Data. The data for this study are obtained from the Egypt Labor Market Survey (ELMS-1998), which is a nationally-representative household survey carried out on a sample of 5,000 households in late 1998. Ragui Assaad was principal investigator, responsible for the sampling design, instrument, training of enumerators, and fielding of the survey. The ELMS-1998 survey instrument comprised a household questionnaire, an individual questionnaire, and a family enterprises questionnaire. The household questionnaire was administered to the head of each household or his/her spouse, and an individual questionnaire was administered to each member of the household aged 6 and above. The individual questionnaire included modules on parents' characteristics, education, work status in a reference week and reference three months, unemployment, characteristics of employment, detailed work histories, and earnings from work for wage workers. If any of the members of the household reported being self-employed or an employer, the household also answered a family enterprises questionnaire.

Completed questionnaires were obtained for 4,816 households and 23,997 individuals, of whom 5,003 were children between the ages of 6 and 14 and another 1,801 were adolescents aged 15 to 17. Table 1 presents a number of summary statistics on children's and adolescents' participation in school and work, as well as hours worked, if any. Note in particular that 6-17 year olds engaged in market work averaged over 40 hours per week, while girls doing "inclusive work" (market, subsistence agriculture, and/or domestic work) averaged over 20 hours per week. All the means for hours worked have large standard deviations, and the distributions also show substantial variation in hours worked.

Methodology. We model the labor supply decision of children jointly with the schooling decision as a simultaneous equation model with both continuous and discrete endogenous variables. The framework to estimate discrete/continuous choice models was developed by Heckman (1978). Since then, this framework and variations on it were applied in various contexts including consumer demand (Hanemann 1984), water demand (Hewitt and Hanemann 1995), housing choice (Blackley and Ondrich 1988), production theory (Duncan 1980), family labor supply (Ransom 1987), the effect of marriage on wages (Mroz 1999), and contraceptive use and desired family size (Bollen, Guilkey, and Mroz

1995). Our version of the model takes into account the non-negativity constraint on the child's labor supply decision. Because we are interested in the effect of work hours on schooling, we jointly estimate a reduced-form hours equation and a structural schooling equation. Work hours are entered non-linearly in the schooling equations to allow for threshold effects of work hours on schooling.

Identification of the effect of work on schooling relies on finding appropriate instruments for work hours that do not directly affect schooling. In Assaad, Levison, and Zibani (2004), where we modeled the work decision as binary (work-or-not), we relied on instruments that proxied the demand for market work in the community of residence and the demand for household work in the home. Since demand for either kind of labor will affect both the participation decision and the hours decision, the same instruments will also work well in this context. Because boys in our sample are mostly engaged in market work and girls are mostly engaged in domestic work, we expect that the instruments for market work will have power for boys and the instruments for domestic work will have power for girls.

To proxy the demand for market work, we use instruments that indicate the prevalence in the local community (village or neighborhood) of the occupations in which children are most often found, namely agriculture, craft, service and trade occupations. We conjecture here that most children work close to home, so that it is local labor market conditions that will determine the demand for their labor. The local prevalence rates are obtained by linking data at the locality level from the 1996 population census to each child, based on the child's locality code.

To proxy for the demand for domestic labor, we use the household's access to basic public services: piped water, piped sewage disposal, and garbage collection. The absence of such services is expected to substantially increase the domestic burden of women and girls without directly affecting the decision to send a child to school, once we have controlled for the wealth of the household. We also maintain that access to these services in Egypt is essentially a function of where the household resides rather than the result of a separate decision-making process about whether or not to purchase the service in question. Given the rigidity of the housing market in Egypt, and the resulting relative immobility of households, decisions about where to reside are at the very least pre-determined if not completely exogenous.

Other explanatory variables fall in the following broad categories: characteristics of the child such as age and relationship to the head of the household; characteristics of the child's father and mother, including whether or not they are present in the household, their ages and their education; the position of the household in the distribution of wealth, which is proxied by an asset score constructed using principal components analysis; residence in urban and rural areas by region of Egypt; and the proportion of the male and female population in the locality with secondary education or above. Mindful of the fact that household composition is sometimes considered endogenous to other household decisions, we include household composition variables only in a final model to assess the

impact of their exclusion on other variables. The household composition variables count the number of household members in various age/sex groups.

We anticipate that the results of this study will help to define the dividing line between "work in moderation" and "too much work" – at least with respect to weekly hours worked.

Table 1 Weighted Proportions of Children Working and Attending School and Average Hours Worked, Boys and Girls Ages 6-17, Egypt, 1998 (Standard Deviations in Parentheses)

	Boys		Girls			
	Market Work Definition^		Market Work Definition^		Inclusive Work Definition^	
	6 to 14	15 to 17	6 to 14	15 to 17	6 to 14	15 to 17
Proportion attending school	0.924	0.727	0.858	0.649	0.858	0.649
	(0.265)	(0.446)	(0.349)	(0.478)	(0.349)	(0.478)
Proportion working (if work hours/week >=14)	0.044	0.229	0.016	0.038	0.319	0.707
	(0.205)	(0.420)	(0.126)	(0.192)	(0.466)	(0.455)
Proportion working (if work hours/week >=1)	0.046	0.243	0.017	0.041	0.426	0.778
	(0.210)	(0.429)	(0.131)	(0.199)	(0.495)	(0.416)
Mutually Exclusive Categories (work >=14 hours/week):						
Proportion in school only	0.908	0.685	0.856	0.646	0.646	0.278
	(0.288)	(0.465)	(0.351)	(0.479)	(0.478)	(0.448)
Proportion who are both at work and in school	0.016	0.042	0.001	0.003	0.212	0.371
	(0.124)	(0.200)	(0.037)	(0.055)	(0.409)	(0.483)
Proportion who only work	0.028	0.187	0.015	0.035	0.107	0.336
	(0.166)	(0.390)	(0.120)	(0.184)	(0.309)	(0.473)
Proportion who are neither at work nor in school	0.048	0.086	0.128	0.316	0.035	0.015
	(0.213)	(0.280)	(0.334)	(0.465)	(0.185)	(0.121)
Aver. hours worked/week, if work hours > 0	44.2	45.8	49.4	47.3	21.3	29.3
	(22.3)	(20.3)	(22.4)	(20.0)	(16.2)	(17.4)
Aver. hours worked/week, if work hours >= 14	45.9	47.9	53.1	50.5	25.7	31.1
	(21.4)	(18.8)	(19.1)	(16.9)	(16.1)	(16.8)
Aver. hours worked/week for those who combine work and school, if work hours >0	24.8	29.3	--	--	15.7	20.2
	(11.4)	(15.4)	--	--	(8.7)	(11.0)
Aver. hours worked/week for those who combine work and school, if work hours >=14	26.8	32.7	--	--	19.5	22.3
	(10.4)	(14.3)	--	--	(7.9)	(10.4)
Number of Observations	2530	925	2442	865	2442	865

Source: Author's calculations from ELMS 1998

Notes:

^Maket work includes only work for purposes of market exchange.

Inclusive work includes market work, subsistence agriculture work and domestic work.

"--" denotes fewer than 10 observations.

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