Extended Abstract

CHILDREN'S WORK AND MOTHERS' WORK – WHAT IS THE CONNECTION?

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Does employment of mothers in poor countries pull children into the labor force? Does employment of mothers increase children's domestic work? These questions have not been explored in the various literatures focused on women's employment and on child labor. In this study, we consider the above questions in the context of Brazil.

Why are these questions interesting? In many parts of the developing world, statistics show fairly rapid increases in women's labor force participation. *A priori*, it is not clear whether this trend has any effect on children's work activities. There is a long history of using microdata to analyze the determinants of women's employment and, more recently, a sizeable literature has focused on child labor. However, while studies of women's employment often include measures of household composition, including numbers of children by age and sex, they do not explicitly consider the activities of children as being jointly determined with those of the women. Similarly, studies of children's activities – mainly child work and schooling – typically include characteristics of the mother, such as her education and age, but not her labor force status, as exogenous explanatory variables. They generally consider mother's work activities to be endogenous: families may make trade-offs between children's time and women's time. This endogeneity, however, is not modeled; it simply implies that variables that measure mothers' work characteristics are considered problematic as regressors (Bhalotra and Tzannatos 2003).[1] As a result, neither literature explicitly examines the relationship between mothers' employment and children's work.

We use the term child work broadly to include activities that have been classified as labor force work as well as activities that are often called chores or domestic tasks.[2] "Employment" is used to refer to labor force work, including paid and unpaid work in family enterprises and family farms, and will be the primary focus of the first part of this study and our PAA submission.

In studies of labor supply, economists typically consider changes in hours worked and/or participation to be the net result of income and substitution effects arising from changes in wages and/or employment opportunities. An income effect means that as earnings increase, the worker or other family members would increase the consumption of leisure and other goods, implying a decrease in hours worked. A substitution effect, in contrast, implies that the person whose employment opportunities have improved would work more and other family members may work less. Thus, an income effect alone would lead to a positive relationship between children's and

[1] We have been able to find only a few exceptions to this statement, all in manuscript form. These are Bhalotra (2000), Dayioglu (2003), Giorguli Saucedo (2003a, 2003b, 2004), Manacorda (2002), and Nankhuni and Findeis (2003).

[2] In this study, we do not adopt the practice of defining "child labor" as that which is "bad" for children, while "child work" includes activities that are not harmful.

mothers' employment, whereas a substitution effect considered alone would lead to a negative relationship.

In previous work, we have generally expected a negative relationship between mother's employment and children's employment; i.e., a substitution effect would be dominant. When households have to generate subsistence levels of income as well as maintain subsistence-level household production (e.g., meals, clean clothes, health care, etc.), then who does what depends on who has the best labor force opportunities and comparative advantage in household production. Thus a substitution effect implies that mothers may do labor force work while girls do housework, or teenagers' employment may allow mothers to be out of the labor force.

But it is really more complex than this. There are many circumstances in which one could observe a positive relationship between mother's employment and children's employment, other than through a traditional income effect. We list a few examples here. First, women are increasingly being targeted by income generating programs, many of which involve self-employment schemes, often based in or around the home. Outsourced piece-work has also become common in some areas; for example, women in Istanbul collect cloth from a distributor to sew into clothing at home (Dedeoğlu 2003). It is easy to imagine children becoming involved in these work activities. Indeed, Nandana Reddy, an organizer of programs to help child workers in India, has noticed an increase in child labor as microcredit programs proliferate; she observes that women use their children in microcredit-funded enterprises.[3]

Second, for farming families, one would expect work of family members to be positively related due to crop or animal seasonality or simply the existence of assets with which one can work (Mueller 1984). Similarly, many studies that focus on either women's or children's employment have found a positive effect of family enterprises (Assaad, Levison and Zibani 2004; Dedeoğlu 2003; Levison 1991, for example).

Third, if someone in the household has a mental or physical illness or disability (including addiction), this could lead to a positive relationship between mother's and children's employment because both are heavily engaged in caregiving and not in the labor force. Alternatively, both could be needed as substitutes for the ill person in the labor force.

Fourth, perhaps an employed mother can help her child find a job. Through her own job she will have established networks that may provide information about job opportunities or actual job offers. There is a presumption among many activists and some researchers that child work is "bad." But women who have been excluded from many labor force opportunities may see things differently, for themselves and for their children. They may place more value on "getting a foot in the door," social networks that come with employment, and investment in work-related skills.

In any situation, the relationship between mother's employment and a child's employment is likely to depend on the sex of the child. Because women and girls are closer substitutes in domestic work, there may be a bigger effect of mothers' employment on their sons' employment and on their daughters' domestic work. On the other hand, mothers' employment may have a

[3] Personal communication to Deborah Levison, May 2004, Berlin.

larger effect on daughters' employment if, for example, women's networks better circulate information about jobs that females tend to do.

The above examples are not well represented by traditional income and substitution effects. While they could be framed in terms of opportunity costs, externalities, information asymmetries, and trade-offs between short-run versus long-run costs and benefits, these issues have received little attention in the economics literature.

Data. In 2001, Brazil's annual household survey, the *Pesquisa Nacional por Amostra de Domicílios* (PNAD-2001), included a supplement on child work. The PNAD-2001 is a nationally representative sample survey including 126,898 households and 378,837 individuals. Our analysis focuses on children ages 10 to 14 (n=34,378) and youth ages 15 to 17 (n=19,613) and their mothers. Unusual variables in the PNAD-2001 supplement will allow us to describe, for example, the ages at which children and mothers first worked in the labor force, the types of jobs held by working children and their mothers, in what kinds of locations they are working, how far from home these locations are, and hours of domestic work performed by women and children. In each case we are especially interested in describing relationships between these characteristics for employed children and employed mothers. For example, Giorguli Saucedo (2003a) finds that, in Mexico, children of women employed in non-waged jobs are more likely to be employed.

The PNAD-2001 uses standard conventions regarding the definition of employment, so individuals who usually work at least one hour per week are included among the employed. Because we believe that very low hours of labor force work are unlikely to lead to family trade-offs in time use, we define a higher threshold of at least 14 hours of labor force work per week. Under this definition, employed women and children have a substantial time commitment to employment. The small percentage of women and children who were unemployed are defined as not employed.

We find positive and significant correlations between mother's employment and the employment of children, for both boys and girls in both age groups, of between 5 and 12 percent. Tables 1 and 2 show the percentages of children employed by age, urban/rural, sex and mother's employment status. With the exception of males ages 15 to 17 in urban areas, the Pearson correlation (not shown) between mother's employment status and child's employment status is statistically significant at less than the one percent level. Note that in each case except that of rural males ages 15 to 17, children of employed mothers are more likely to be employed themselves.

Table 1: Percent of Children Ages 10 to 14 Employed by Sex, Urban/Rural and Mother's Employment Status

	Children Ages 10 to 14			
	Urban		Rural	
Mothers	Male	Female	Male	Female
Employed	7.1	4.5	42.9	21.1
Not Employed	5.6	2.0	25.3	5.9
n	14040	13887	2954	2766

Table 2: Percent of Children Ages 15 to 17 Employed by Sex, Urban/Rural and Mother's Employment Status

	Children Ages 15 to 17			
	Urban		Rural	
Mothers	Male	Female	Male	Female
Employed	29.6	19.2	75.4	42.2
Not Employed	27.9	14.7	86.9	15.9
n	8472	7579	1701	1327

Methods. Our interest is in family labor supply decisions, in particular the relationship between employment of mothers and their children, in Brazil. We consider women's and children's time use to be part of an overall family strategy for generating income and meeting the various needs of family members. While evidence exists that families are not unitary, i.e., that there is some bargaining and individual agency of women and children (Quisumbing 2003), we have no information that would allow us to incorporate these dynamics. We thus assume that these employment decisions result from a family optimization process in which the family utility function includes family consumption and the well-being of children. This process is constrained by family resources and the time and needs of family members.

The dependent variables, as described above, are employed-or-not for both children and their mothers. Recall that the employed include only those who usually work at least 14 hours per week. The explanatory variables include individual characteristics of the children and their mothers, family characteristics, family composition, and region of residence. While it would be optimal to jointly model aspects of children's schooling, children's domestic work, and women's domestic work along with children's and their mothers' employment, these processes have proven to be very complex to model simultaneously. Here, we focus first on the pair of outcomes whose relationship has been least studied and about which very little is known. Time permitting, we will also consider girls' domestic work in conjunction with mothers' employment.

We use a bivariate probit approach to jointly estimate children's employment and that of their mothers, correcting for household-level clustering. The advantage of the bivariate probit approach is that it allows us to assess whether explanatory variables have opposing or similar effects on the two employment decisions, while taking account of the simultaneity of these decisions by using information on the correlations of the unobserved characteristics of the individuals. Resulting coefficients will be transformed into marginal effects to interpret magnitudes.

Another estimation approach that also takes into account the simultaneity of outcomes, the multinomial logit (MNL), will be attempted. The dependent variable will combine information on mother's and children's employment status in four categories: both employed, mother employed and child not-employed, mother not-employed and child employed, and neither employed. We will test for the independence of irrelevant alternatives, which is the usual concern about MNL

estimation. Ease of interpretation of MNL results, when transformed into odds ratios, is one of the advantages of the MNL.

We will run separate regressions for girls 10-14, boys 10-14, girls 15-17, and boys 15-17. Girls and boys face very different returns to labor market work in Brazil, and girls are more likely to devote substantial amounts of time to domestic work (Connelly, DeGraff and Levison 1996). The 10 to 14 age group is considered separately from the 15 to 17 year-olds for two reasons. First, under International Labour Organization conventions, children under 15 years should be excluded from many kinds of work. Second, in Brazil, 15 to 17 year-olds are much more likely to be considered grown-up by the adults in their lives, and this is reflected by substantial changes in activity patterns (see Tables 1 and 2).

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