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The Effect of Parents' Occupation on Child Labor and

School Attendance in Brazil

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Summary

This paper investigates how child labor and schooling are responsive to opportunities to work, in particular to opportunities provided by children's own parents. The paper demonstrates that after controlling for household, parental, regional, and child characteristics, children whose parents are self-employed or employers are more likely to work than children of employees, irrespective of the sector of parent activity. Furthermore, the paper also confirms a recent finding that children from areas with high average adult employment rates are more likely to work than children from areas with low average adult employment rates. Finally, since twice as many children of the self-employed and employers both work and go to school as those of employees, the paper suggests that child labor does not necessarily represent a trade off with schooling as it depends on the occupation of the parents.

Keywords: child labor, schooling, Latin America, Brazil

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I. Introduction

From farm laborers in the academic literature to street-smart drug peddlers in the film "City of God", working children in Brazil have received much attention in recent years. In particular, Brazil has been subject to economic investigations regarding the nature and determinants of child labor which have, in many cases, provided us with new ways of thinking about the issue (as is discussed in the next section). One such finding is that child labor is positively related to the level of activity of the labor market and economy (Duryea and Arends-Kuenning, 2003; Neri and Thomas, 2000). In line with this new literature, this paper investigates how child labor and schooling are responsive to opportunities to work (as opposed to need that stems from poverty). Since both the market and parents provide opportunities for child labor, the analysis of opportunities is two fold. The paper demonstrates that after controlling for household, parental, macroeconomic, and child characteristics, children whose parents are self-employed or employers are more likely to work than children of employees, irrespective of the sector of parent activity. Furthermore, the paper also confirms a recent finding (made by several other authors in different contexts) that children from areas with high average adult employment rates are more likely to work than children from areas with low average adult employment rates.

In 1992, the incidence of child labor was alarmingly high, with as many as 55% of rural boys 10-14 years old working. As Table 1 shows, twice as many boys work as girls, child labor is almost four times more prevalent in rural areas than in urban areas, and a large proportion of children only work or do nothing. Typically, a child's time allocation is split between school, work, and leisure and hence, the reason why child labor concerns most policy makers is that it is usually associated with time away from school. The time allocation between the activities is determined by numerous variables such as parents' income, education, their preferences for each activity, etc. It is therefore only natural to ask how the type of work a parent does contributes towards the propensity for a child to work and/or go to school. Do some types of work allow more productive use of child labor? Do some types of work provide more opportunities for children to work? The next section discusses the theoretical motivation for asking such questions.

II. Theoretical Motivation

Until very recently, models of child labor have rested on one basic axiom – the "luxury axiom" – which implies that parents make their children work when driven by poverty (non-work is, therefore, a luxury good). The understanding is that the poor, some in face of shocks and other just for daily survival, require their children to be sources of income (Basu and Tzannatos, 2003). A lower family income could lead children into the labor market or to assist with household chores, often at the cost of schooling.

Although primarily a function of poverty, child labor is also determined by other socio-economic factors. Factors such as access to school, intergenerational expectations, opportunities for work, and employment opportunities have been shown to be important components of the child labor puzzle. Much of the recent work on child labor explores these non-income determinants and, in the case of Brazil, their effects are particularly acute. For instance, Barros et al. (1994) found that child labor in urban Brazil tends to be higher not in the poorest cities but in cities rich in income and in opportunities for child work such as Curtiba and Porto Allegre. Children tend to work more in cities with flourishing labor markets (Levison, 1991) than in cities with high poverty. Similarly, time series studies have shown that years with the highest rates of child labor did not necessarily coincide with years of highest poverty (Barros et al, 1994). Others, such as Neri and Thomas (2000), show that during times of economic growth both child labor and the probability of repeating a grade were above the fitted trend line. In a rigorous study spanning 12 years, Duryea and Arends-Kuennings (2003) have shown that employment rates for 14-16 years old in urban Brazil increase as local labor market conditions improve. Child labor, therefore, clearly responds to opportunities provided by the market.

The poverty explanation of child labor has been challenged by studies in other countries as well. These studies show the importance of parent employment characteristics on child labor. Bhalotra and Heady (2003) in their study of Pakistan note that children from larger land-owning households work more than children from smaller land-owning homes, implying that child labor does not decrease with wealth. Similarly, Edmonds and Turk (2004) find that Vietnamese households that own their own businesses tend to make their children work more. In both cases, the results can be explained by the fact that controlling your means of production or source of income allows you to make more productive use of household labor and especially child labor. This, as Basu and Tzannatos (2003) point

out, does not indicate that poverty is not a cause of child labor but "simply that child labor, like all other inputs, responds also to incentives and opportunities." It is clear then that child labor is responsive not only to income but to opportunities to work and the opportunity cost of not working.

The theories mentioned above can be simply summarized as follow: each household maximizes its utility, a function of household consumption C, child schooling S, and child leisure l, subject to budget and time constraints:

$$\max_{C,S,l} U\left(C,S,l\right)$$
$$s.t. \quad \begin{aligned} p_C C + p_S S &\leq Y_P + wL \\ S + L + l &= \bar{T} \end{aligned}$$

where p_C, p_S, w are consumption goods price, schooling cost, and child wage, Y_p is parental income, and L and $\bar{T}$ are child's labor and total time.

In this simplified model, adult work or leisure and hence parental income are assumed exogenous, meaning that when adults are unemployed or underemployed, it is not of their choice but largely due to external market conditions. Solving the model gives four hypotheses: firstly, when returns to adult labor are low (i.e., low parental income) there will be less child leisure, less school, and more child work. Secondly, when schooling is expensive there will be less school, more leisure, and more work. Thirdly, in the case that child labor has high returns (more opportunities to work, good wages) schooling and leisure decrease, and work increases – both income and price effects are present but the result with probably be dominated by the price effect. Fourthly, there will be more schooling, less leisure, and less work if expected returns (or utility) to schooling are high. Finally, there is the issue of preference, i.e., children will work if parents have a high preference for work. Using this framework and the above mentioned theories, this paper shows how child labor in Brazil is a function of not only income but also of regional wealth and parent's occupation.

III. Data Set and Sample Selection

The data used are the *Pesquisa Nacional por Amostragem a Domicilio* (PNAD) from the *Institute Brasilerio de Geografia a Estatistica* (IBGE). The PNAD is an annually repeated cross-sectional household survey. It covers employment/unemployment information for all individuals in the household over the age of 10 and spans approximately one hundred thousand households all over Brazil. The survey considers work to be any amount of

paid or unpaid activity per week. While this is a rather generous definition of child labor, it prevents underestimation of girls' work, which generally requires large corrections (Basu and Tzannatos, 2003).

The sample used consists of all children between ages of ten and fourteen from two parent households for the year 1992. Children over the age of fourteen are excluded since Brazilian law and the UN define child laborers as children under fourteen who work (Wright et.al, 2002). Like Emerson and Souza (2003), all single headed families and children with no parents were excluded since decisions regarding child work are different for households without two full adult income opportunities. The final sample includes 28,819 children –14,613 boys and 14,206 girls from all over Brazil.

IV. Econometric Approach and Estimation Strategy

The following probit model was estimated:

$$P\ (Y_{ids}=1) = \ F\ (\beta_1\ Child_i + \beta_2\ House_i + \beta_3\ Parent_i + \beta_4\ Income_i + \beta_5\ Macro_d + State_s)$$

Y_{ids} represents whether child i from district d in state s works. $Child_i$ represents characteristics of the child such as age, rank, and gender. $House_i$ is household characteristics such as the number of boys and girls in the family. $Parent_i$ corresponds to parents' characteristics including those highly correlated with income such as education and literacy, whether they themselves worked as children, their employment status (employed, unemployed), their sector of employment (agriculture, industry, service, or commerce), and occupational status (employer, self-employed, or employees). $Income_i$ is household per capita income from parents' earnings (assumed exogenous to child's decision to work). $Macro_d$ represents general district-level macroeconomic conditions such as average employment rate, average income, and average schooling in the district. Following Duryea and Arrends-Kuenning (2003), state effects ($State_s$) have been included to account for unobservable cross-sectional effects. Since the regressions provided statistically different results for urban and rural areas, all analyses have been conducted separately for both, with 22,304 and 6,515 children respectively.

Since information regarding parents' sector of activity and occupation is available in great detail, estimating the impact of parents' employment on the probability that a child will work is fairly straightforward.

However, understanding how child labor responds to opportunities provided by the market is more complicated. The regressions considered various proxies for opportunities provided by the market (often to do with the level of activity of the adult labor market). One proxy is the district-wide adult employment rate and another is district-wide average income, both of which are good proxies for the dynamism of the economy.

V. Results

Table 2 reports the basic estimation for the probability that a child works. In both the urban and rural cases, we see, albeit to different extents, similar relationships between the probability of a child working and the independent variables. The likelihood of a child working is higher if the child is male, earlier born (Emerson and Souza, 2004), and older, all with stronger effect in rural areas. Children of large families are also more likely to work. The probability of working is also higher when parents are less educated and illiterate, as well as if they themselves worked as children (Emerson and Souza, 2003). Note that 32% and 63% of the mothers and 68% and 88% of the fathers worked as children in urban and rural areas, respectively[1]. The children of these parents are, everything else equal, about 3% more likely to work in urban areas, and 11-14% more likely to work in rural areas than children of parents that had not worked as children.

After controlling for the education of the parents, child work is not correlated with the household income per capita (columns (1) and (3)). We verify however that, when parents' education is excluded from the regression, the effect of income is as expected negative and significant (column (2) for the urban estimation). This implies that the income effect is largely captured by parents' education (a result also generally found by Ersado, 2004, for Nepal, Peru, and Zimbabwe). Therefore, income could be seen as transitory (Duryea and Arrends-Kuenning, 2003). The income effect is in any case very small. For a variation from .18 to .95 millions Cruzeiros per capita (from $40 to $211 per capita), which represents the inter-quartile range in the sample, the probability to work decreases by 0.5%.

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[1] We added a variable "missing information" to avoid having to drop all the observations for which the information was missing on whether the mother worked as a child or not (46% of the urban sample and 24% of the urban sample). Results are however similar in the small sample, indicating no particular bias in the selection of households with full information.

Economy wide variables, district level average adult employment rate and district level average schooling among 10-14 years old children, are both strongly related to the probability of a child working, particularly in urban areas. District level average schooling is a proxy for the availability and quality of schools in the district. The negative and significant coefficient suggests that children are more likely to work if the average attendance to school in the area is low since the opportunity cost of not going to school is low. Note however that the effect is quite small in the urban areas: a difference of 10% in district level enrollment rate (the inter-quartile range) corresponds to a .14% difference in child employment probability. By contrast in the rural areas, a 10% difference in enrollment rate corresponds to a 8% difference in child employment rate. The probability of a child working is higher in district with higher average adult employment rates. To a difference of 10% of the mothers' or fathers' employment rates corresponds, all things equal, a difference of 1.7-2.9% employment rates of children in urban areas and 8% in rural areas. If we consider these two employment rates as good proxies for the dynamism of the labor market, then we can conclude that child labor is positively related to opportunities provided by the market. These results are in line with existing literature as they suggest that child labor is still determined by lack of parental income but that children are more likely to work in areas that are employment rich as they have more opportunities to work. We, however, find child work in the urban areas to be negatively correlated with the average income in the district, and this holds true even when we do not control for the district employment rates.

Looking at Table 3, which shows a bivariate probit model for employment and schooling, we notice a clear trade off between school and work. Most of the significant variables have opposite signs indicating that what drives children into work also drives them out of school. This is hardly a surprising result. However, there are three variables that push children both into work and into school or out of work and out of school. These variables are whether the father was a child worker and the parents' employment status. Parental unemployment sends children both out of work and out of school. This makes sense because the unemployed will have fewer resources for their children to go to school and will also be unable to find opportunities for children to work.

So far, we have seen that child labor is indeed positively related to different proxies for the opportunity to work. The next step will be to explore the idea that children whose parents are self-employed or employers are more likely to work than children whose parents are employees. Table 4 shows that the percentage of children working if parents are self-employed and employers is higher than if parents are employees. At first this seems particularly odd

since employers and the self-employed tend to be wealthier than employees as they often own land/businesses and do not face the need to send their children to work in the same way as the very poor do. The non-parametric regressions reported in Figures 1 and 2 show more specifically that children of employers and self employed work far more often that children of employees, at all levels of parental incomes.

The results of the regression analysis reported in Table 5 show that, controlling for other factors, this contrast still holds true. All else being equal, urban children whose fathers are self-employed and employers on average are 4% more likely to work than those with parents that are employees or unemployed (with no difference between these two occupations). Children whose mothers are self-employed are 4.9% more likely to work than children of unemployed mother, while children of employees are 1.6% less likely to work than children of unemployed mother. The mother's employer status corresponds to a very large level of child employment, but applies to a very small fraction of children (1.3% of the sample). In rural areas, data on occupation are largely missing (34% of women, 76% of men), but the results however hold, with children of self-employed fathers and mothers 12% and 11% more likely to work than children of unemployed or employees. In essence, as parents that are self-employed and employers own their means of production, their children's work is more valuable to them since they directly reap the benefits.[2].

Interacting sectors with occupations shows the same pattern to hold within each sector, i.e., the probability that a child works is greater if the parent is an employer or self-employed in any sector than if the parent is an employee in the same sector. Results reported in Table 6 show that urban children whose parents are employees in industry, service, or commerce are no more likely to work that children whose parents are unemployed (all coefficients are close to zero and non significant, except for mother being employee in the service sector, whose children are 2% less likely to work than children of unemployed mother). However, children of self-employed and employers in any of the three sectors work in much higher proportions. Children of mothers that are self-employed in service or commerce are 5.8% and 4.3% more likely to work than those whose mothers are employees in the same sectors. Similarly, for father's occupation, children of self-employed in industry, service or commerce are 7.2%, 2.4% and 7.2% more likely to work than those of employees in the same sectors. The status of a father employer is

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[2] The results are robust to excluding the variables "parents worked as children", indicating that it is not strictly a matter of preferences

particularly important in the commerce sector, with children 10.6% more likely to work than when the father is a commerce employee. There are a fair number of fathers who work in agriculture, even in urban areas, and their children are 6.5% more likely to work than if they were unemployed (or employees in any of the other sectors). In the rural areas, agriculture dominates, with 32.7% of the mothers and 73.3% of the father working in that sector. Their children are 27 and 22% more likely to work than those of unemployed parents. The only other activities that are sufficiently important to deserve analysis are employees and self-employed in the service sector. One finds again the same pattern of children of self-employed mothers and fathers 7.2% and 11.1% more likely to work than children whose parents are employees in the same sector.

The analysis confirms that children of parents who are self-employed and employers are indeed more likely to work than children of parents who are employees. But what does this mean in terms of the tradeoff between school and work? If parents who are self-employed and employers are more likely to have their children work than employees, does this mean that they are also more likely to keep their children out of school? Table 7 shows that this is not the case. In the rural areas, we see that children of self employed are more likely to both work and go to school and less likely to go to school only than children of employees (employers are less than 1% and ignored in this analysis). In aggregate, the total proportion of children going to school is about the same across occupations. In the urban areas, children whose fathers are self-employed or employers are also far more likely to combine school and work, but not to work only at the cost of missing school.

VI. Conclusion and Policy Implications

In light of trade negotiations, discussions regarding international child labor laws have been particularly heated. Some are afraid that banning child labor would only lead to worse outcomes like child prostitution and other illegal and dangerous activities. Others have suggested that child labor is symptomatic of other market failures and that policy must be geared towards targeting those market failures and not children themselves. In both cases, child labor has been thought of negatively as something to combat. Hazardous and exploitative work notwithstanding, this has largely due to the perception that of a trade-off with schooling. In the case of this paper, it is clear that child work (or parents' decisions on their children's time allocation) is responsive to opportunities to work and that work

and school are not necessarily incompatible. An issue not addressed in this paper, however, is that children that work may receive a lower quality education as a result of their dual commitments, as observed by Heady, 2003, for Ghana.

That parents provide primary opportunities for children to work is hardly surprising. Parents who are self-employed and employers can make productive use of their child labor. In that sense, our study points to a potential drawback of the standard recommendations of providing credit and other asset building mechanisms in face of poverty. This could actually increase child labor since it would allow parents to become self-employed, purchase land, etc., where they could employ their children. This is, however, not necessarily a terrible outcome if, as shown in this study, it does not come at the cost of schooling and children are less likely to be exploited and more likely to learn skills working with their parents. A crucial issue therefore in assessing the effect of child labor is to recognize heterogeneity and distinguish between work that can be seen as job training complementary to school and excessive work detrimental to schooling, health, and compromising the future welfare of the adult. For example, Dehejia, Beegle, and Gatti, 2005, find that child labor in rural Vietnam leads to a greater probability of wage employment and to higher daily labor and farm earnings, which more than fully offset the foregone earnings attributable to reduced schooling, at least for young adults.

That being said, given that in the recent years Brazil has seen increasing returns to higher education, it becomes clear that the solution to the schooling problem lies in increasing the incentives to go to school and in the quality of education. *Bolsa Escola*, a large program of cash transfer conditional on school attendance that reward school attendance have been put into place in Brazil, and shows, in early evaluations, to be successful in increasing school attendance, yet without decreasing child labor (Cardoso and Portela Souza, 2003).

In sum, there may be circumstances under which child labor is not necessarily detrimental to the child's welfare. This is more likely when school days are short and there is a good opportunity for a child to acquire on the job training with its parents, which allows combining work and school.

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Table 1. Summary of work and school statistics for children ages 10-14, Brazil 1992

School/work	Urban		Rural	
	Male	Female	Male	Female
Number of observations	11,240	11,064	3,373	3,142
Distribution (percent)				
School only	79.9	87.1	36.0	59.7
Work only	3.6	1.7	18.5	9.7
School and work	10.9	5.1	37.0	16.8
Neither school nor work	5.6	6.1	8.5	13.8
Total Working	**14.5**	**6.8**	**55.5**	**26.5**

Source: PNAD 1992

Table 2. Probit of employment of children 10-14 years old

	Mean	Urban dF/dx	P>|z|	dF/dx	P>|z|	Mean	Rural dF/dx	P>|z|
		(1)		(2)			(3)	
Child characteristics								
Rank	4.28	-0.007	0.000	-0.006	0.001	4.66	-0.012	0.013
Female	0.49	-0.065	0.000	-0.068	0.000	0.48	-0.343	0.000
Age	11.9	0.032	0.000	0.033	0.000	11.9	0.089	0.000
Household characteristics								
Number of sons in household	1.76	0.008	0.000	0.009	0.000	2.38	0.021	0.001
Number of daughters in household	1.63	0.008	0.000	0.009	0.000	2.08	0.019	0.000
Parent characteristics								
Mother is literate	0.83	-0.008	0.261	-0.033	0.000	0.59	0.034	0.220
Father is literate	0.85	0.000	0.956	-0.018	0.011	0.55	-0.054	0.021
Mother's education	6.00	-0.005	0.000			3.16	-0.013	0.010
Father's education	6.10	-0.004	0.000			2.78	-0.002	0.649
Mother was child worker	0.32	0.035	0.000	0.048	0.000	0.63	0.136	0.000
– information missing	0.46	-0.014	0.103	-0.008	0.338	0.24	-0.027	0.488
Father was child worker	0.68	0.028	0.000	0.035	0.000	0.88	0.109	0.000
– information missing	0.06	0.035	0.036	0.047	0.008	0.02	0.105	0.108
Mother is employed	0.45	0.017	0.024	0.014	0.077	0.51	0.188	0.000
Father is employed	0.88	0.025	0.002	0.025	0.003	0.95	0.186	0.000
Per capita income (million Cruzeiros)	1.11	0.0013	0.421	-0.0046	0.054	0.32	-0.013	0.132
District and state characteristics								
District level mothers' employment	0.44	0.169	0.000	0.171	0.000	0.45	0.866	0.023
District level fathers' employment	0.89	0.287	0.003	0.294	0.003	0.90	0.741	0.171
District mean income (million Cruzeiros)	0.91	-0.040	0.000	-0.047	0.000	0.50	-0.023	0.748
District mean schooling	0.82	0.014	0.812	-0.001	0.981	0.75	-0.828	0.015
State dummies (included but not shown)								
Mean of the dependent variable		0.107		0.107			0.415	
Number of observations		22,304		22,304			6,515	
Pseudo-R2		0.172		0.162			0.221	

Exchange rate in 1992: 4513 Cruzeiros per US$

Table 3. Bivariate probit of child employment and schooling

	Urban		Rural	
	Coef.	P>|z|	Coef.	P>|z|
EMPLOYMENT				
Child characteristics				
Rank	-0.051	0.000	-0.031	0.015
Female	-0.499	0.000	-0.931	0.000
Age	0.244	0.000	0.232	0.000
Household characteristics				
Number of sons in household	0.063	0.000	0.054	0.001
Number of daughters in household	0.060	0.000	0.048	0.000
Parent characteristics				
Mother is literate	-0.056	0.278	0.089	0.226
Father is literate	0.003	0.952	-0.144	0.019
Mother's education	-0.035	0.000	-0.033	0.012
Father's education	-0.027	0.000	-0.007	0.629
Mother was child worker	0.252	0.000	0.359	0.000
− information missing	-0.111	0.098	-0.080	0.430
Father was child worker	0.225	0.000	0.302	0.000
− information missing	0.225	0.040	0.258	0.122
Mother is employed	0.127	0.026	0.497	0.000
Father is employed	0.221	0.001	0.541	0.000
Per capita income (million Cruzeiros)	0.009	0.429	-0.030	0.160
District and state characteristics				
District level mothers' employment	1.290	0.000	2.315	0.020
District level fathers' employment	2.190	0.003	1.872	0.184
District mean income (million Cruzeiros)	-0.313	0.000	-0.081	0.671
District mean schooling	0.081	0.852	-2.064	0.021
State dummies (included but not shown)				
SCHOOLING				
Child characteristics				
Rank	-0.016	0.243	0.041	0.052
Female	0.038	0.328	0.090	0.000
Age	-0.169	0.000	-0.207	0.000
Household characteristics				
Number of sons in household	-0.069	0.000	-0.030	0.084
Number of daughters in household	-0.018	0.280	-0.027	0.119
Parent characteristics				
Mother is literate	0.216	0.000	0.153	0.006
Father is literate	0.191	0.000	0.268	0.000
Mother's education	0.043	0.000	0.061	0.000
Father's education	0.046	0.000	0.021	0.256
Mother was child worker	-0.031	0.572	-0.014	0.873
− information missing	0.008	0.921	-0.015	0.899
Father was child worker	0.052	0.082	0.033	0.653
− information missing	0.208	0.019	0.007	0.968
Mother is employed	0.037	0.588	0.016	0.769
Father is employed	0.033	0.680	-0.075	0.518
Per capita income (million Cruzeiros)	0.057	0.050	0.032	0.594
District and state characteristics				
District level mothers' employment	-0.027	0.940	-1.456	0.056
District level fathers' employment	-0.327	0.595	2.233	0.042
District mean income (million Cruzeiros)	-0.094	0.370	0.122	0.556
District mean schooling	1.755	0.000	2.873	0.001
State dummies (included but not shown)				
Rho (st. error)	-0.311	(0.022)	-0.227	(0.022)
Number of observations	22,284		6,506	

Table 4. Percentage children working by parent activity

	Rural		Urban	
	Male	Female	Male	Female
Mother's work				
Employee	45.0	15.5	9.2	4.5
Domestic worker	34.4	19.5	21.0	13.0
Self employed	55.9	25.3	21.3	14.1
Employer	0.0	50.0	24.0	16.1
Father's work				
Employee	24.3	12.9	9.4	4.8
Self employed	35.6	18.2	19.4	8.2
Employer	48.1	31.7	15.0	5.9

Source: PNAD 1992

Table 5. Child employment and its relation to parents' occupation

	Urban			Rural		
	Mean	dF/dx	P>|z|	Mean	dF/dx	P>|z|
Child characteristics						
Rank	4.28	-0.007	0.000	4.66	-0.014	0.008
Female	0.49	-0.064	0.000	0.48	-0.360	0.000
Age	11.9	0.031	0.000	11.9	0.093	0.000
Household characteristics						
Number of sons in household	1.76	0.008	0.000	2.38	0.019	0.001
Number of daughters in household	1.63	0.008	0.000	2.08	0.023	0.000
Parent characteristics						
Mother is literate	0.83	-0.007	0.286	0.59	0.031	0.308
Father is literate	0.85	0.003	0.637	0.55	-0.044	0.035
Mother's education	6.00	-0.004	0.000	3.16	-0.005	0.348
Father's education	6.10	-0.003	0.000	2.78	0.002	0.785
Mother was child worker	0.32	0.031	0.000	0.63	0.106	0.000
− information missing	0.46	-0.014	0.100	0.24	-0.039	0.299
Father was child worker	0.68	0.023	0.000	0.88	0.095	0.000
− information missing	0.06	0.027	0.079	0.02	0.104	0.197
Per capita income (million Cruzeiros)	1.11	-0.001	0.618	0.32	-0.007	0.424
District and state characteristics						
District level mothers' employment	0.44	0.146	0.000	0.45	0.749	0.037
District level fathers' employment	0.89	0.258	0.006	0.90	0.595	0.298
District mean income (million Cruzeiros)	0.91	-0.035	0.001	0.50	0.050	0.465
District mean schooling	0.82	0.036	0.497	0.75	-0.539	0.096
State dummies (included but not shown)						
Mother's occupation (base group = unemployed)						
Employee	0.204	-0.016	0.040	0.084	0.005	0.911
Employer	0.013	0.152	0.000	0.001	0.032	0.901
Self employed	0.111	0.049	0.000	0.053	0.111	0.016
Domestic work	0.076	0.002	0.863	0.027	-0.075	0.300
Unpaid	0.026	0.091	0.000	0.012	0.076	0.471
Employed but missing occupation	0.024	0.025	0.188	0.340	0.274	0.000
Father's occupation (base group = unemployed)						
Employee	0.502	0.003	0.725	0.113	0.007	0.907
Employer	0.056	0.040	0.032	0.007	0.362	0.005
Self employed	0.223	0.040	0.000	0.069	0.118	0.144
Employed but missing occupation	0.112	0.062	0.000	0.759	0.225	0.000
Mean of the dependent variable		0.107			0.415	
Number of observations		22,304			6,515	
Pseudo-R2		0.195			0.256	

Table 6. Child employment in relation to parents' sector and occupation (partial results)

	Urban			Rural		
	Mean	dF/dx	P>|z|	Mean	dF/dx	P>|z|
Mother's work (base group = uemployed)						
Agriculture	0.021	0.019	0.269	0.327	0.270	0.000
Industry employee	0.030	-0.003	0.776	0.010	-0.072	0.476
Employer	0.003	0.240	0.002	0.000	0.290	0.001
Self employed	0.006	0.220	0.000	0.009	0.280	0.017
Other / missing info	0.005	0.102	0.000	0.017	0.342	0.000
Service employee	0.153	-0.020	0.013	0.069	0.003	0.923
Employer	0.005	0.088	0.015	–	–	
Self employed	0.069	0.038	0.000	0.031	0.075	0.040
Other / missing info	0.085	0.009	0.422	0.029	-0.091	0.203
Commerce employee	0.017	-0.001	0.930	0.002	0.072	0.723
Employer	0.005	0.111	0.004	–	–	
Self employed	0.034	0.042	0.004	0.011	0.070	0.560
Other / missing info	0.013	0.066	0.000	0.006	-0.031	0.808
Father's work (base group = unemployed)						
Agriculture	0.091	0.065	0.000	0.733	0.222	0.000
Industry employee	0.140	-0.007	0.484	0.041	-0.030	0.632
Employer	0.011	0.023	0.254	0.004	0.406	0.026
Self employed	0.017	0.065	0.010	0.009	0.130	0.231
Other / missing info	0.012	0.035	0.053	0.019	0.113	0.237
Service employee	0.290	0.003	0.759	0.062	0.011	0.811
Employer	0.025	0.012	0.501	0.002	0.048	0.677
Self employed	0.140	0.027	0.003	0.036	0.122	0.137
Other / missing info	0.009	0.009	0.659	0.008	0.130	0.281
Commerce employee	0.060	-0.010	0.336	0.008	0.100	0.436
Employer	0.019	0.096	0.000	–	–	
Self employed	0.060	0.062	0.000	0.023	0.074	0.392
Other / missing info	0.000	0.032	0.698	–	–	

Control variables include child, household, parents, and district characerics as in Table 2
– indicates no observation in the sample.
"Other" work occupation includes unpaid and domestic work.

Table 7 Proportion of children in different activities per parent activity

	Work only	School only	Neither	Work and school	Total in school
Urban					
Mother's Work					
Employee	0.04	0.76	0.06	0.13	0.89
Self-Employed	0.03	0.78	0.04	0.15	0.93
Employer	0.02	0.79	0.01	0.18	0.97
Father's Work					
Employee	0.02	0.88	0.05	0.06	0.93
Self-Employed	0.03	0.80	0.06	0.11	0.91
Employer	0.01	0.88	0.02	0.10	0.98
Rural					
Mother's Work					
Employee	0.10	0.62	0.11	0.17	0.79
Self-Employed	0.11	0.51	0.08	0.30	0.81
Father's Work					
Employee	0.07	0.72	0.10	0.12	0.84
Self-Employed	0.09	0.65	0.08	0.19	0.84

Source: PNAD 1992
Children whose parents are unpaid, do domestic work, or are unemployed not inlcuded.
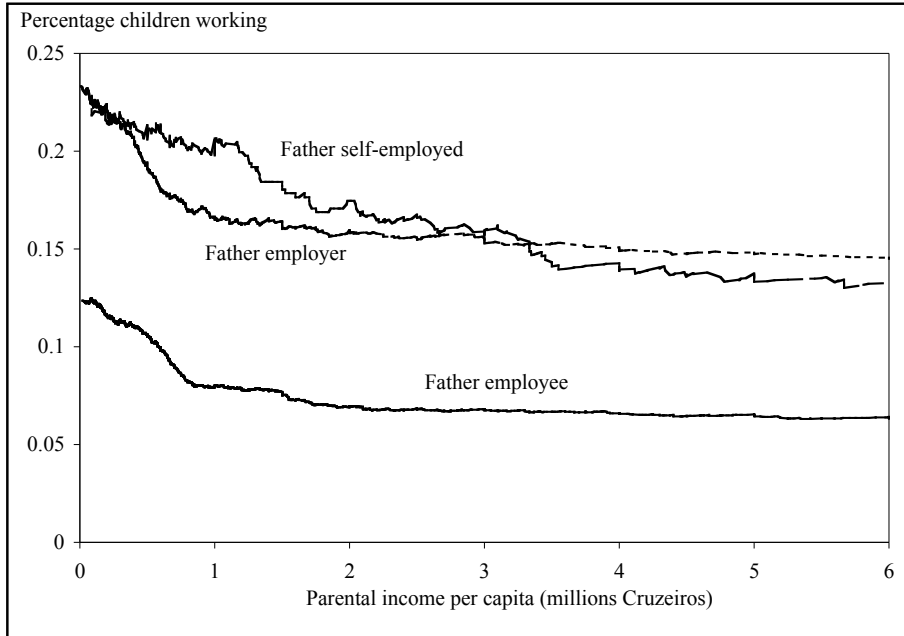
Figure 1. Urban male child labor incidence by income per capita and father's occupation
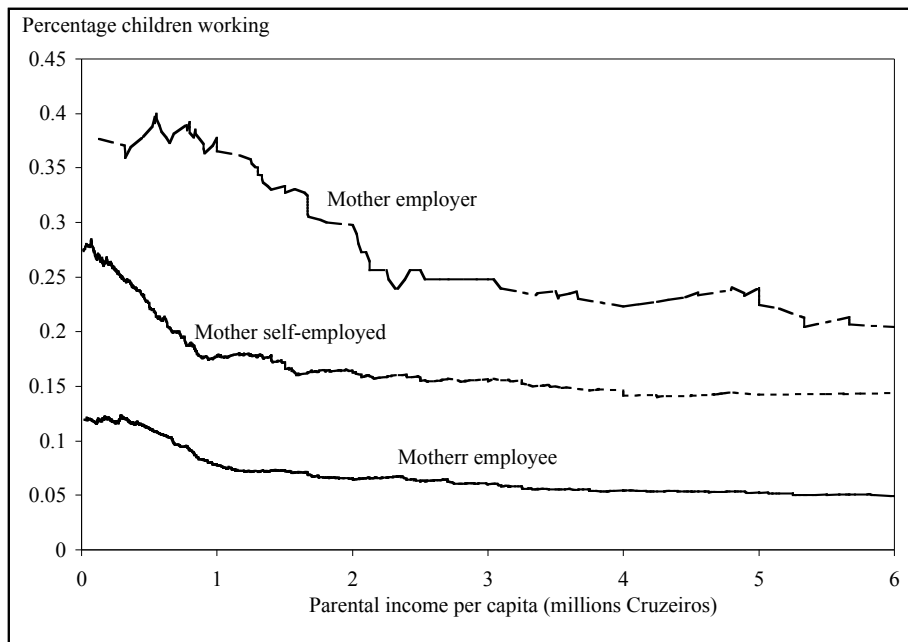
Figure 2. Urban male child labor incidence by income per capita and mother's occupation

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