CEE Centro de Estudios Económicos
www.colmex.mx El Colegio de México, A.C.

Serie documentos de trabajo

CHILD LABOR, SCHOOL ATTENDANCE, AND POVERTY IN MEXICO AND VENEZUELA

Luis F. López-Calva and Samuel Freije

DOCUMENTO DE TRABAJO

Núm. I – 2001

CHILD LABOR, SCHOOL ATTENDANCE, AND POVERTY IN MEXICO AND VENEZUELA*

Samuel Freije
Cornell University
sf27@cornell.edu

and

Luis F. Lopez-Calva
El Colegio de México and
Universidad de las Americas-Puebla
lflopez@colmex.mx

Abstract

This paper uses cross sectional and longitudinal data for Mexico and Venezuela from 1994 to 1998 in order to test several theoretical findings regarding the determinants of child labor. Four hypothesis are stated and tested, investigating the interaction between child labor and the poverty status of the household, the adult unemployment rate, adult and children´s wages, and "social acceptance" of child labor, measured by incidence of child labor in the town. Several specifications of the model are tested, consistent with different assumptions in terms of the decision-making process of the household, in order to verify the robustness of the findings. Poverty and local incidence of child labor have a robust positive effect on child labor in both countries. Wages and unemployment do not show a significant effect, which contradicts several theoretical findings in the literature. Finally, transition from and into work and school are also analyzed. Child labor shows some persistence and children who are attending school are systematically less likely to start working. The main policy conclusion derived from the analysis is that fighting poverty is the best cure against child labor.

JEL codes:
Keywords: Child labor, schooling, poverty.

* This paper was funded by the IDB-World Bank-LACEA Network on Inequality and Poverty. We would like to thank seminar participants at El Colegio de México, Universidad Iberoamericana-Santa Fe, and the 2000 Annual Meeting of the NIP that took place at Fundacao Getulio Vargas in Rio de Janeiro. Special acknowledgment is made to Francois Bourguignon, Pierre Emmanuel Couralet, Andre P. Souza, and Graciela Teruel for their comments and suggestions to improve the paper, as well as to Erica Soler for providing excellent research assistance. The usual disclaimer applies.

Child Labor, School Attendance, and Poverty in Mexico and Venezuela

1. Background

Child labor has increasingly become an issue of serious concern among the general public. Photographs of children carrying bricks, shoe shining or working in factories are found in media of wide circulation which has increased the awareness of the general public on third world children's plight. Policy officials have responded to this concern by introducing proposals for curtailing child labor. The current debate in the WTO and ILO on Labor Standards and some countries proposals to enforce an international ban on child labor (like the Harkin's bill in the U.S.A.) are part of this general concern.

However, as Basu (1998, 1999) warns, this concern is sometimes driven not only by emotional and ethical considerations but also by vested interests and hidden protectionism. The need for a formal and objective inquiry into the causes and consequences of child labor has driven the economics profession to study this issue. Seminal studies were done by Rosenzweig and Evenson (1977), Rosenzweig (1978) and Goldin (1979). More recently, there is been a wealth of studies on the economics of child labor, both theoretical and empirical.[1] However, as Basu (1999) concludes in his survey of the literature:

> *"Theoretical writings on the subject are relatively few (…) The empirical writings on child labor are numerous but they are usually not founded on any theory. By bringing together the main theoretical ideas, this survey hopes to encourage (…) empirical work that is analytically better founded"*

Some recent studies such as Akabayashi and Psacharopoulos (1999), Ravallion and Wodon (2000) and Ray (2000) have responded to Basu's request of empirical research that test the hypotheses of the theoretical literature instead of simply identifying statistic regularities among working children. Accordingly, this paper aims at testing various hypotheses of the theoretical literature with respect to two main questions: What

[1] Thorough reviews of the literature are Grootaert and Kanbur (1995) and Basu (1999).

determines that a child supplies his or her work in the labor market?, and Which factors explain the transitions between occupational states for children?

There is a set of factors that have recurrently been found to be associated to child labor: child's age and sex, education and age of the parents, household size and type. These explanatory variables have been included in former studies, based on a broad interpretation of the variables that affect children labor supply. In general, it is argued that these personal and household characteristics control for preferences towards child labor.

However, there is a new set of explanatory variables that recent theoretical models have identified as key determinants of child labor. These are:

1. Poverty status of the household. The main results of the model of multiple equilibria by Basu and Van (1998) rest on what they call the "luxury axiom". This states that a household would not send its children out to work if its income from non-child labor sources is sufficiently high.

2. Adult unemployment rate. Basu (1999, 2000), based on an extension of Basu and Van (1998), states that a rise of adult unemployment should be associated with increasing incidence of child labor. Basically, the idea is that if adult and child labor are substitutes, adult wages rigidities that entail adult unemployment may induce child labor. This effect depends on the "substitution axiom", again from Basu and Van (1998), and on the relationship between wage rigidities and unemployment. If any of this assumptions fails, then the effect may not be as predicted.

3. Adult and children wages. According to bargaining models of the type developed by, Chiappori (1988), Bourguignon and Chiappori (1994), Moehling (1995), and Galasso (1998), the labor supply of each member of the household is affected by own wages and the wages of all other participating members. The sign of the own and cross wage elasticities, however, will depend on income and substitution effects as well as on the complementarity or substitutability of household production between household members. As it is usual in the theory of labor

supply, there is no a priori expected sign for the gross elasticities and so the actual effect of these wages on child labor is an empirical matter.

4. Children participation rate in the labor market, as a measure of social stigma against child labor. Models that use social norms as forces that influence household decisions on child labor, for instance Lopez-Calva (1999), suggest that social stigma against child labor, and thus the propensity to send children to work, declines with he incidence of it. Social interactions are difficult to measure but some recent techniques can be applied (Glaeser and Sheinkman, 1999).

No study on child labor would be complete without taking into consideration how labor participation is associated to school attendance. Actually, some argue that the most undesirable effect of child labor is that it hinders or prevents schooling. Skoufias (1994), Grootaert and Patrinos (1999), Akabayashi and Psacharopoulos (1999), Ravallion and Wodon (2000) have explored this issue. Consequently, we evaluate how the different factors listed above not only influence child labor but school attendance as well.

We use recent cross-sectional and longitudinal data from Mexico and Venezuela to examine the hypothesis and predictions of the most influential models on child labor and to find empirical regularities that may enhance further theoretical research. In this sense we take advantage of the previous literature and test different hypotheses making use of several methodologies in order to check the robustness of our findings.

The study has six sections. In section 2 we explain the econometric techniques we use. Section 3 includes a general description of the sources of data and while section 4 describes the status of school attendance and child labor for both countries in recent years. In section 5 results from econometric estimations are summarized and discussed. Section 6 concludes.

2. Methodology

The initial econometric approach to study child labor and school attendance was the use of logit/probit models to estimate the probability of a child going to school or to work (see, for instance, Psacharopoulos, 1996 and Psacharopoulos and Patrinos, 1995).

However, these models miss the relationship between the school and work decisions. Actually they assume that the school and the labor supply decision are independent, which is an untenable assumption. More recent approaches try to deal with the interrelated nature of these events.

There are four additional econometric models for dealing with the work/school multiple choice problem: bivariate probit, multinomial logit, sequential probit and multinomial probit. The first has been applied in previous work by Canagarajah and Coulombe (1997) and the next two have been used in a comparative study coordinated by Grootaert and Patrinos (1999), whereas the multinomial probit is not found in the literature yet. Apart from their respective technicalities, these models differ in the way the work/school decision is assumed to take place in the household.

The bivariate probit model assumes that school attendance and child labor participation are separate but interrelated decisions that the household makes. This interrelation takes place through a bivariate normal error structure so that, after controlling for explanatory variables the two outcomes are related to each other. More formally, the bivariate model is:

$y_{i,1} = \beta_1' X_{i,1} + \varepsilon_1$ where: $y_1 = 1$ if child attends school, and 0 otherwise

$y_{i,2} = \beta_2' X_{i,2} + \varepsilon_{i,2}$ where: $y_2 = 1$ if child has a paid work, and 0 otherwise

$E[\varepsilon_1] = E[\varepsilon_2] = 0$

$Var[\varepsilon_1] = Var[\varepsilon_1] = 1$

$Cov[\varepsilon_1, \varepsilon_2] = \rho$

The residuals are assumed to follow a bivariate-normal distribution, so the probability of a given combination of school and work is a function of the explanatory variables and the parameters β_1, β_2, and ρ. This model has the advantage of being flexible enough to have separate equations, and therefore different explanatory variables, for each choice. On the other hand it has the drawback of assuming the same correlation structure between school and work for all individuals (i.e., the same rho, ρ, for everybody). It may

be plausible to assume that the correlation between school and work, after controlling for other factors, has the same sign for almost everybody but it is less convincing to say that it also has the same magnitude.

The multinomial logit and probit models assume that the household faces a single decision process choosing among a set of options. In this study we define four mutually exclusive options by combining the school attendance and paid work choices: work/no-school, work/school, no-work/school and no-work/no-school. More formally:

$$y_k = 1 \text{ if } u^*_{i,k} = Max(u^*_{i,1}, u^*_{i,2}, ..., u^*_{i,K}), \text{ and 0 otherwise}$$

$$u^*_{i,k} = \beta_k' X_{i,k} + \varepsilon_{i,k} \quad \text{(i.e., a linear utility function)}$$

where $u_{i,k}$ is the utility provided by the choice k to individual i. In the case of the multinomial logit, the assumed distribution of the residuals involves what is known as "independence of irrelevant alternatives" (IIA) which in our study implies, for instance, that the probability of choosing the work/no-school option is independent of the probability of sending the child to school only. On the other hand, the multinomial probit assumes a multivariate normal distribution of residuals which does not imply the IIA assumption.[2]

Finally, a sequential probit model consists in assuming that households make choices about the four options in a sequential manner. For instance, they first choose whether to send the child to school only. If they do so, the selection mechanism stops. If not, they proceed to decide whether to send it to school and work or not. If not, they then choose between work/no-school and no-work/no-school. Parameters in each equation are estimated using only the relevant data of the sample. The sequential logit model does not assume independence of alternatives but its results depend on the ordering of the alternatives. If households do indeed choose sequentially, the order may be different across households, regions or countries and then the results would be sensitive to the ordering chosen by the researcher.

[2] A discussion of the multinomial logit and probit models and its relation to the IIA assumption can be found in Maddala (1983).

In this study we do not adopt a priori any of the underlying assumptions. We use the three models in order to check whether the results are robust to different estimation techniques.[3] It is important, however, to highlight that the estimated parameters of these models are not directly comparable. They refer to either conditional probabilities (sequential probit model), to marginal probabilities (bivariate probit model) or to joint probabilities (multinomial models). We will refer to the direction and significance of the effect and compare whether the direction of the effect, not its size, is the same across models.

The control variables sitting in $X_{i,k}$ are the same in the three models and can be classified into four groups. The first group consists of children individual characteristics, the second includes characteristics of the head of the household and the third contains household characteristics. Some of these variables, such as employment and marital status of the household head as well as number of family members are themselves endogenous. We estimated the equations excluding these variables and since there were no major changes among the remaining coefficients, we concluded that the potential endogeneity bias was not important.

The fourth group of independent variables is of special importance because by testing its significance we test the validity of the hypotheses listed in the introduction. One of these variables is a set of poverty dynamics dummies. Summing all members' income, except income provided by children, and comparing it to a poverty line define the poverty status of a household. When using the two-point panel data available we can classify families into four categories: fell into poverty, escaped poverty, and stayed in or out of poverty. The significance of this variable is a direct test of Basu and Van (1998) "luxury axiom". Also, we include the adult unemployment rate, in order to test for Basu and Van (1998) "substitution axiom". Finally, we include the incidence of child labor in the locality as a measure of social norms and test Lopez-Calva (1999) hypothesis on child labor and social stigma.

In order to test the significance of the effect of children and adult wages on child labor we use a different specification. The models that posit the relationship between

[3] We do not present results for the multinomial probit model. We attempted to run a multinomial probit

child labor and wages are not only models of labor participation but of labor supply or time use, so an estimation of hours of work will be more adequate. Running an hours of work equation on wages would miss observations from non-participant children and then would incur in serious selectivity bias. Additionally, since wages are simultaneously determined with hours of work, the wage coefficients may be affected by endogeneity bias. In order to correct these issues we follow a two-step procedure. First, a maximum likelihood selection correction regression is run for estimating a wage equation. Second, another selection correction regression is run for estimating an hours equation, but using fitted wages from the first step, instead of observed wages.[4]

Finally, we take advantage of the availability of panel data for these countries and venture into the short-term dynamics of child labor. In this case, we simply run a logit equation for four cases of interest: the probability that the child starts working, stops working, starts schooling and stops schooling. Hence, the dependent variable is a dichotomous variable that takes value 1 if the event occurs to the child and 0 otherwise. Most of the independent variables are the same than in the multi-choice models but some new dynamic variables are included. Particularly, changes in labor and marital status of the head, changes in number of household members and changes in schooling attendance or in labor participation. In this case we do not aim at testing a given hypothesis, but simply try to identify some regularities about short-term child labor dynamics.

Before proceeding with estimation results, the next section describes the sources of data and provides a general description of schooling and child labor in Mexico and Venezuela during the late nineties.

3. Data Characteristics

For Mexico we use the National Urban Employment Survey (ENEU) for the period 1994-1998. This survey is representative of the 41 largest urban areas in Mexico

---

model, but the program failed to converge.

[4] We also run an OLS hours equation without selection correction, but using fitted wages for all observations as well as a selection corrected hours equation assuming wages are exogenous . The results for child and household head wages do not differ from what we present in the tables. A discussion on the estimation of labor supply equations is in Killingsworth (1983).

since 1993. It includes micro-data on household characteristics, work status, wages, and demographic characteristics of the household, with individual information for all family members 12 years old and above. A working child will be defined as a family member who is between 12 and 16 years old and worked positive hours, for a salary, during the week of reference. Compulsory schooling in Mexico goes up to secondary school, the equivalent, on average, to 15-16 years of age. Also, the Law does not allow to work until such age.

The source of data from Venezuela is the "Encuesta de Hogares por Muestreo" (Sampling Household Survey). This is a multipurpose survey conducted twice a year by the Oficina Central de Estadística e Informática, OCEI, which is the Venezuelan Government agency for collection of official statistics. These surveys provide general household information and detailed personal and labor market characteristics for every person aged 10 or more. The minimum legal age for work in Venezuela is 18, but children age 14 is allowed to work provided parents' authorization. In addition, nine-grade primary school is compulsory (i.e., around age 14 or 15). The unit of analysis for the Venezuelan sample are individuals between ages 10 and 17, who worked for a salary a positive number of hours, during the week of reference.

Both samples have a rotation mechanism that enables researchers to produce panel data. In Mexico, five one-year panels are produced using the surveys from 1993 to 1998. In Venezuela, we produce three one-year panels from the late nineties: 1994-1995, 1995-1996 and 1997-1998. Mexican households from the third quarter of each year (from second semesters for Venezuelan data) are matched according to a unique identification code and remain in the panel provided that at least one of its members is the same from one period to the next.

In both data sets, in addition to the number of hours worked and salaries received, children can be grouped into four categories: a) only going to school, b) going to school and working, c) only working, and d) neither studying nor working. These shall be the categories used throughout this study.[5] Since the number of children in categories b to d is small, we pool the panels to gain degrees of freedom and introduce a year dummy to

control for possible year effects. We keep the country regressions separate so as to evaluate whether the findings are similar across countries.

4. How Intensively do Children Work and for How Much?: Descriptive Statistics

Child labor incidence among Venezuelan children was very stable for the period under study. Table 1 shows that child labor incidence stays around 2% for children aged 10 to 13 and around 16% for children aged 14 to 17. Girls have lower work incidence rates than boys, especially among 14-to-17-year-olds, but both gender groups have stable trends. On the other hand, Mexican children (see table 7) have increasing, instead of stable, labor participation. Since the age groups are not the same between the two countries a direct comparison is not feasible, however the much higher incidence of child labor among Venezuelan boys aged 14-17 with respect to Mexican boy aged 14-16 is evidence that child labor is more common among Venezuelans in this group. Clearly, in Mexico and Venezuela, child labor incidence is lower among girls when compared to boys, but it should be remarked that this is due to the fact that staying at home is considered here as "no work" (perhaps more properly, no wage work). A broader definition of work, which includes domestic work, would change this result, increasing child labor incidence in girls (see Levison, et. al. 2000).

Average hours of work are around 40 hours per week for Venezuelan children aged 14-17 and around 35 hours for Mexican children aged 14-16 (see tables 2 and 8, respectively). There is no difference between sex groups but younger children work fewer hours in both countries (around 5 hours less in Venezuela and 10 hours less in Mexico). It seems then that there is more child labor incidence in Venezuela than in Mexico and that Venezuelan children work longer hours.

Monthly earnings show a declining trend and then grow again, but are still lower in 1998 than in 1994 for both countries (see tables 3 and 9). It is important to mention that real wages fall disproportionately in Mexico due to the 1994 crisis and high inflation during 1995 and 1996. There is a slight recovery in real terms after 1997. Monthly

[5] We are basically concerned with wage child labor. We acknowledge, though, that children that fall into the category no school/no work, may be exerting serious effort in housework or farm activities.

earnings are higher for older children in both countries, and for boys in Venezuela. In addition, the long working hours of Venezuelan children have an effect on their average schooling, making their average years of education between one and two year less than among non-working children, as seen in table 5.[6] In Mexico, the difference between the two groups is always less than 1 year (see tables 4 and 10).

Finally, tables 5 and 6 show the transitions from a school attendance/work state in the initial period to the next period for the most recent Venezuelan panel.[7] For children bellow age 14, most of those who work in the initial period, return to a school only state in the second period. Among those aged 14 and above, more than 50% of the children that start in a given position end up in the same position. The exception is among those in the "work/school" state, who usually move to another situation, usually the "no-work/ school" state. This means that the labor activities are short-lived for younger children, who eventually return to school. But as children grow it is more unlikely to return to school if they participate in the labor market. In contrast, tables 12 and 13 for Mexican children transitions show that the majority of children from all categories (with the exception of children aged 15-16 that only work) return to a school-only state in the second period. The evidence suggest that there is more permanence (i.e., less mobility) in a given work/school state in Venezuela than in Mexico.

All the differences shown above notwithstanding, the intention of this work is to find stable relations among variables in the decision-making process of the family. This is what we explore in the next section through the econometric analysis.

5. Econometric Results

5.1 What Determines Child Labor?

After estimating the regressions with Venezuelan data, we do not find important differences in the predictive ability of the three models (see table 13). The percentage of correct predictions in the Multinomial Logit and the Bivariate Probit is slightly above

[6] A similar result was reported in Psacharopoulos and Patrinos (1997)
[7] These transition matrices were also computed for the other two panels. The general trends are very similar for the three periods.

83%. On the other hand, the Sequential Probit correctly predicts more than 85% of the school/no-work and school/work choices, but short of 75% of the no-school/work cases. There is no reason to choose one model above the other if it is not in terms of their implicit assumptions. Consequently, comparing the different results allows us to check the robustness of the results to these assumptions. The same pattern of measures of fit was found for the Mexican data.

The results from the multinomial logit are in table 15 for Venezuela and 18 for Mexico. These results are expressed in terms of odd ratios for a unit change in the respective explanatory variable. The sequential probit estimates are in tables 16 and 19 for Venezuela and Mexico, respectively, and are expressed in terms of first derivatives, which facilitates its interpretation as the change in probability due to an infinitesimal change (or dichotomous change if it is a dummy variable) in the respective explanatory variable, i.e., the marginal effect on probability. Finally, tables 17 and 20 show the estimates for the bivariate probit. Results are in coefficients so their sign express the direction of the change in probability to a given change in the explanatory variable.

In Mexico and Venezuela, age, gender and kinship of the children have a significant effect on schooling and work decisions under every model. Older children are more likely to work and not attend school. Girls are more likely to go to school and less likely to work. However, it must also be said that girls are also more likely to stay in the no-school/no-work state than to go to school only as shown by the negative coefficient for gender in the sequential model.

The kinship of the child to the household head has some interesting effects in Venezuela.[8] Grandchildren are less likely to work and more likely to go to school when compared to sons and daughters, whereas other filiations have the opposite relation. These effects are non-significant in some regressions (particularly for non-grandchildren) but the signs are robust to changes in estimation method. These results suggest the existence of a "predilection" of household heads towards children of closest kin. It may also be the result of children working as housemaids. Notice that, in the multinomial logit results, children that have no family relation to the head of the household (labeled as

[8] No variable identifying kinship to the household head is available in the Mexican data set.

"other" in the tables) are significantly more likely to work only or to do none (i.e., no school no work), which suggests these children either are sent to work or work at home. These children are not related at all to the household head but may live and work in the same household.

Among the characteristics of the household head, education and employment are significant across models for both countries. When looking at the results from the bivariate probit we see that the higher the education of the head, the more likely is the child to go to school and the less likely to go to work. The multivariate logit shows, in addition, that the odd ratios are below one for all options, which means that increasing education of the head is then a strong predictor for the child going to school and not working. This result indicates the preference for education among educated household heads as well as their capacity to afford educational expenditures, as long as head's education is a good predictor of household income. As Grootaert and Patrinos (1999) already noticed, this is not a useful policy variable because increasing the education of the head may not be feasible, but it may work as a targeting mechanism for identifying those children at higher risk of not going to school. The fact that this result is robust across models and for both countries is also consistent with evidence for other countries, like Brazil (Portela, et. al., 2000).[9] In addition, both in Venezuela and Mexico, the effect of the household head being employed in the public sector has the same sign and significance than education of the head, which may be consequence of the high correlation between these two variables, although they do not lose significance despite this. In Mexico, the fact that the head of the household works for the government or in the formal sector makes the kid less likely to work and more likely to go to school. This is so for all specifications. The schooling facilities that some public institutions have, such as nurseries and elementary schools, may be the origin of this effect.

Interestingly, a jobless household head is significantly and negatively associated with child labor in the sequential as well as in the bivariate model for both Mexico and Venezuela. This suggests evidence against the "substitution axiom" between the child

[9] Emerson and Portela (2000) also show that there is a "child labor trap," i.e., children of parents who worked when young tend to start working earlier in their lives.

and the household head. A plausible explanation for this is that household head and child labor may be complements rather than substitutes. When the adult is unemployed, so is the child.

The marital status of the head is sometimes significant in both countries. Children from households with a single/widowed/divorced head are more likely to work in the bivariate probit and in the sequential models. However, given that most of the single/divorced/widowed heads are females it may well be that the effect that we are capturing is the consequence of head's gender rather than of marital status. Actually, dropping the marital status variable, the sex of the head variable gains significance. Therefore, we cannot separate these two effects. In any case this result is evidence, together with the results for kinship from Venezuela, of the importance of family structure upon child labor and schooling. These results are consistent with claims from other social scientist that relate child labor and delinquency to unstable family structures and single parenthood. [10]

Household composition is another variable that shows significance in most cases and in both countries. Number of children and elderly members is negatively associated to schooling and positively associated to child labor in all models, after controlling for the relevant variables, like the poverty status of the household. On the other hand, number of adults (i.e., persons between 19 and 60 years of age) is always negatively associated to child labor. A pattern of household labor allocation seems to emerge from these results. The lack of adults and/or the excess of siblings propel children to work in order to provide cash income for the household. In addition, results from the multinomial logit as well as the bivariate probit, suggest that the presence of the elderly and of small children (less than age 10) also hinder school attendance, making it more likely that the child stays at home taking care of them.

Other household characteristics such as region, rural sector and year show a regular pattern of significance. In Venezuela, children from households in the rural areas are more likely to work whereas children from regions other than the Capital are less

[10] See, for the case of Venezuela, Marquez (1999)

likely to go to school. In Mexico, dummy variables were used to control for idiosyncratic effects of the city, but all the children are urban in this case.

When looking at the effect of poverty transitions on child labor and schooling, the results vary according to the econometric model in use. In Venezuela, poverty transitions have no significant effect in the sequential model estimation, with the exception of the "falling into poverty" transition, which is negatively associated to the school only option. All transitions make the "work only" state more likely than the "school only" in the multinomial logit model. In the bivariate probit model, staying and falling into poverty have a significant and negative effect on school attendance, whereas there is no transition with a significant effect on child labor. These results are evidence, although not robust across models, that falling into poverty makes school attendance less likely and child labor more likely. In the multinomial logit, there is also some evidence that even if the household escaped poverty, the "work only" state is still more likely than the "school only" state, which indicates the persistent effect of poverty on these outcomes. In Mexico, Being in poverty at least one period makes the school only option less likely in the multinomial and sequential models as well as the school option less likely in the bivariate model. The effect on child labor is less strong: only staying in poverty for two periods makes child labor more likely than the other options. All these suggest some evidence in favor of Basu's "luxury axiom" with respect to child labor participation. The causes of the effect on schooling, however, are difficult to identify and may be a combination of poor households not being able to afford schooling as well as lack of schools in poor areas.

The adult unemployment rate shows significance in the multinomial logit and sequential probit models, but not in the bivariate probit model in Venezuela. In Mexico, adult unemployment rate is never significant. Even in the cases where it shows significance, its effect on child labor is very small: it appears to increase the probability of the "work and school" state as well as to reduce the probability of the "school only" and "work only" states. In any case, there is no strong evidence in favor of the "substitution axiom" which suggests that an increased adult unemployment rate would be accompanied by higher child labor incidence. This also goes against the idea that

minimum wages may have a positive effect on child labor incidence because of its link with unemployment (Basu, 2000).

School attendance in the initial period is always significant. It is positively associated with current school attendance and negatively associated with labor market participation. In Mexico, however, the effect is not so clear. Actually, this variable is only significant in the bivariate model. This result is consistent with the lack of mobility across states for Venezuelan children and the more transitory character of child labor in Mexico, described in the previous section. In fact, it suggests that, at least for Venezuela, schooling and child work are substitutes and that a strong predictor for labor market participation is school attendance. Finally, the rate of child labor incidence in the town is also significant across models. The higher the incidence of child labor the smaller the likelihood of school attendance (specially among children aged 14 to 17) as well as the higher the likelihood of labor participation. It is surprising that this variable is significant after controlling for other location characteristics. This is evidence that there is some town specific characteristic that is associated to child labor and school attendance. If child labor incidence is negatively correlated with the level of social stigma against child labor, then these results are evidence in favor of the effect of social norms on child labor. Child labor incidence can be interpreted as "social acceptance of child labor" (López-Calva, 1999). However, this variable may well proxy other town characteristics, such as school quality or availability, thus we cannot fully assert the significance of the social norms hypothesis.[11]

Tables 21 and 23, show the selection-corrected equations for children's wages while tables 22 and 24 the selection-corrected equations for hours of work. In both countries the coefficients for the participation equations are similar to those from the bivariate model. The hours equation, however, shows a different picture. Again, age and gender of the child significantly affect hours of work: the older the child, the longer his/her hours of work; but girls work less hours in the labor market. On the other hand, in Venezuela, characteristics of the head, poverty dynamics and household demographics are not significantly associated to hours of work. In Mexico the demographics of the

[11] One way to disentangle these effect would be to include an exogenous variable measuring school availability, quality or costs in the town. However, such a variable is not available in the surveys.

household do affect hours of work, in a way that is consistent with the previous models. Interestingly, staying in poverty also shows significance in explaining hours of work for Mexican children: if his/her household stayed in poverty, the child is more likely to wok less hours.

More importantly, both in Mexico and Venezuela, head and child hourly wages are not significant. Here we have evidence against the models that propose that child labor supply is affected by own wages and wages of other family members. Also important is the fact that the coefficient for adult unemployment rate is significant and negatively associated to hours of child labor in Venezuela and non-significant in Mexico. This is another piece of evidence against the "substitution axiom", because the parameter implies that higher unemployment rates are associated to less hours of work among participating children.

5.2 How Persistent is Child Labor?: Looking at the Transitions

Tables 25 and 27, show the probit equations for short-term dynamics of child labor while tables 26 and 28 for school attendance. In our evaluation of the factors associated to entering or exiting the labor market we find that, again, age and gender, have the usual effects. Among the new dynamic variables included we get some interesting findings for Venezuela. If the head of the household loses his/her job, the child is more likely to stop working (again, evidence against the "substitution axiom", although we do not find this effect in Mexico). In both countries, poverty dynamic variables are associated to start working: both if the household fell into poverty and escaped poverty, the child is more likely to start working. This reinforces the case in favor of the "luxury axiom". Finally, if the child did not attend school in both periods or if he/she stopped schooling, he/she will be more likely to start working and less likely to stop working. This confirms the substitutability between school attendance and child labor that we posited for the cases of Mexico and Venezuela data in previous paragraphs.

In Venezuela, the factors that are significantly associated to the dynamics of school attendance are slightly different to those discussed above. Child kinship with the head regains significance: grandchildren are less likely to stop schooling whereas non-

relatives are less likely to start schooling. This agrees with our previous findings on participation. Besides, if the head gets a job in the public or the private modern sector, then the child is more likely to start schooling, whereas if the head became jobless the child is more likely to stop schooling. Poverty dynamics is again significant: staying or falling into poverty makes dropping school more likely. In Mexico, however, neither head's employment changes nor poverty dynamics affect schooling dynamics.

Finally, the results on labor participation dynamics for both countries mirror what we already discussed in the paragraph above. If the child starts working or worked in both periods, then he/she is less likely to start schooling and more likely to stop schooling. In general, the results from dynamic data confirm the general trends that we remarked from the participation equations. This is evidence against the idea that the labor force of kids can be used without frictions to smooth consumption, as several works in the literature suggest (Jacobi and Skoufias, 1997). Though the latter is a plausible scenario, there are indeed frictions to go back to school after the kid has stopped attending to go to work. The decision of leaving school and going back to school is not symmetric.

6. Conclusions

Child labor seems to be indeed a characteristic of poverty. Our findings confirm such scenario and go against some of the theoretical results in the literature. There were four hypothesis investigated in this empirical work:

i) *Child labor is associated with the poverty status of the household*. This is indeed confirmed by the data in a robust manner.

ii) *Adult unemployment increases child labor*. Our investigation clearly rejects that result. One might think, instead, that adult and child labor are complements, rather than substitutes, on average.

iii) *Child labor responds to own-wages and adult wages*. This is also rejected by the data. Child labor shows no-significant response to either child wages or adult wages. It would thus seem that the decision to send a kid to work, due to the poverty status of the household, does not depend on current market wages.

iv) *Higher social acceptance of child labor reduces the stigma and increases child labor*. The data show evidence in favor of this hypothesis, though the variable constructed as a *proxy* for social acceptance might be capturing some other effect, as explained above. However, after controlling for all other variables, higher child labor incidence in the town does indeed have a positive effect on child labor.

Our study has two limitations that ought to be mentioned. First, we do not have information of children aged less than 10, for Venezuela, or 12, for Mexico. This means that we have left outside of our analysis a perhaps important and surely more dramatic part of the problem of child labor. Some would even argue that individuals above the age of 14 should not be considered children anymore. However, given the small incidence of children between 10 and 13 for both countries we think that children below this age are not a large proportion of the problem. Also, given the need for increasing human capital accumulation in the modern world of science and technology, dropping out of school during adolescence is as serious a matter of concern as child labor.

A second limitation is that our data do not include children living in the streets or out of their homes. It is difficult to measure the magnitude of this problem, but for those who have walked the streets of some developing countries, this is an evident problem. If family relationships is an important component of the problem of children of the streets, then the evidence we find on the effect on child labor of disrupted family structures and of kinship between the child and the household head, suggest the need to explore the link between these issues. This is an area that needs further research both theoretical and applied.

We do find evidence that child labor is associated to poverty; so fighting poverty in a sustained manner is the best cure against child labor. Given the lack of evidence for the sensibility of child labor to wages, it is difficult to state that banning child labor (actually enforcing a zero-wage for the activity) would have an effect. Making child labor socially reprehensible, however, appears to have an effect through social norms. But it is certain that providing affordable and productive schooling is the best way to induce

parents to sending their children to school. In any case, a final verdict on the effectiveness of legislation banning child labor requires further research.

References

Akabayashi, Hideo and George Psacharopoulos (1999) "The trade-off between Child Labour and Human Capital Formation: A Tanzanian case study" The Journal of Development Studies, Vol. 35, No. 5, pp120-140.

Baland, J.M. and Robinson, J. (1999); "Is Child Labor Inefficient", forthcoming in *Journal of Political Economy*.

Basu, Kaushik (1999); "Child Labor: Cause, Consequences, and Cure, with Remarks on International Labor Standards," *Journal of Economic Literature, Vol. XXXVII, pp 1083-1119*.

_____ (2000); "The Intriguing Relation Between Adult Minimum Wages and Child Labor," *The Economic Journal, 110 (March), pp. C50-C61*

_____ and Phan Van (1998); "The Economics of Child Labor," *American Economic Review* 88, pp.412-27.

Becker, Gary (1965); "The Theory of the Allocation of Time," *The Economic Journal*, v 75 n299 September, pp.493-517.

Cangarajah, Sudharshan and Harold Coulombe (1997) "Child Labor and Schooling in Ghana" World Bank, Human Development Technical Family, Africa Region.

Chiappori, P.-A. (1988); "Rational Hoursehold Labor Supply", Econometrica, 56.

Dunn, Thomas and John Phillips (1999); "Intergenerational Co-Residence and Children's Incomes," mimeo, Syracuse University.

Emerson, P. and A. Portela (2000), "Is There a Child Labor Trap?, Intergenerational Persistence of Child Labor in Brazil," Cornell University, Department of Economics Working Paper.

Galasso Emanuela (1998); "Intra-Household Allocation and Child Labor in Indonesia," mimeo, Boston College.

Galbi, Douglas A. (1997); Child Labor and the Division of Labor in the early English Cotton Mills," *Journal of Population Economics* v10 n4, pp.357-75

Glaeser, Edward and Jose Sheinkman (1999); "Measuring Social Interactions," mimeo, Harvard University.

Goldin, Claudia (1979); "Household and Market Production of Families in a Late Nineteenth Century American City," *Explorations in Economic History*, v16 n2 April pp.111-31

Grootaert, Christiaan and Ravi Kanbur (1995); "Child Labor: An Economic Perspective," *International Labor Review*.

Grootaert, Christian and Harry A. Patrinos (1999), eds., Policy Analysis of child labor: a comparative study. New York, St Martin's Press.

Jacobi, Hanan G. y Skoufias, Emmanuel (1997); "Risk, Financial Markets, and Human Capital in a Developing Country," *Review of Economic Studies* v64, no. 3, July, pp. 311-35.

Killingsworth, M.R. (1983) Labor Supply, Cambridge University Press.

Levison, Deborah, K. S. Moe, and F.M. Knaul (2000), "Youth Education and Work in Mexico," *World Development*, Vol.29, No.1.

López-Calva, Luis F. (1999); "A Social Stigma Model of Child Labor," *Center for Analytic Economics Working Paper* 99-13, Cornell University.

_____, Miyamoto, K., and A. Portela (1999); "Child Labor in Brazil," mimeo, Cornell University.

Maddala, G.S. (1983) Limited-dependent and qualitative data in econometrics. Cambridge University Press.

Márquez, Patricia (1999) "The street is my home: youth and violence in Caracas". Stanford University Press, Stanford, Calif.

Moehling, Carolyn (1995); "The Intrahousehold Allocation of Resources and the Participation of Children in Household Decision-Making: Evidence from Early Twentieth Century America," mimeo, Northwestern University.

_____ (1998); "State Child Labor Laws and the Decline of Child Labor," mimeo, The Ohio State University.

Moersch, Julius (1902); "The Wage-Earners in the Manufacturing and Mechanical Industries of the Northwestern States," *The Journal of Political Economy*, v11, 98-107.

Nardinelli, Clark (1980); "Child Labor and the Factory Acts," *The Journal of Economic History*, v40, 739-755.

Psacharopoulos, G (1997), "Family size, schooling and child labor in Peru. An empirical analysis", Population Economics, v 10, n 4

_____. and A. Patrinos (1997) "Child Labor versus educational attainment. Some evidence from Latin America", Population Economics, v 10, n 4

Ranjan, Priya (1999), "An economic analysis of child labor," *Economics Letters* v64 pp99-105

Ravallion, Martin and Quentin Wodon (2000); "Does Child Labor Displace Schooling?: Evidence on Behavioural Responses to and Enrollment Subsidy" The Economic Journal, 110(March), pp.C158-C175.

Ray, Ranjan (2000); " Analysis of Child Labor in Peru and Pakistan: A Comparative Study," Journal of Population Economics, 13, pp.3-19.

Rosenzweig, Mark (1978); "The Value of Children's Time, Family Size, and Non-household Child Activities in a Developing Country: Evidence from Household Data," *Research in Population Economics,* v1, 331-47.

_____ (1990); "Population Growth and Human Capital Investment: Theory and Evidence," *Journal of Political Economy*, 98(5).

_____ and Robert Evenson (1977); "Fertility, Schooling, and the Economic Contribution of Children in Rural India," *Econometrica* v45 n5 July.

Skoufias, Emmanuel (1993); Labor Market Opportunities and Intrafamily Time Allocation in Rural Household in South Asia," *Journal of Development Economics*, v40, 277-310.

Skoufias, Emmanuel (1994); "Time allocation of Children in Agricultural Households", Journal of Development Studies, Vol. 30, No.2, pp.335-360.

Table 1
Child Labor rates for the period, Venezuela

	1994	1995	1996	1997	1998
Total					
Ages 10 to 13	1.9%	1.9%	2.1%	1.7%	1.9%
Ages 14 to 17	16.0%	16.3%	14.3%	16.3%	16.3%
Boys					
Ages 10 to 13	3.1%	3.2%	3.9%	2.5%	2.9%
Ages 14 to 17	24.3%	25.6%	23.5%	25.5%	25.1%
Girls					
Ages 10 to 13	0.7%	0.5%	0.3%	0.9%	0.8%
Ages 14 to 17	7.4%	6.6%	4.7%	6.8%	7.2%

Table 2
Average hours per week for working children, Venezuela

	1994	1995	1996	1997	1998
Total					
Ages 10 to 13	36.5	36.9	31.7	38.5	30.8
Ages 14 to 17	41.2	41.1	40	40.5	39.4
Boys					
Ages 10 to 13	36.2	36.8	31.6	38.2	30.3
Ages 14 to 17	41.4	41.4	40.4	40.8	40.3
Girls					
Ages 10 to 13	37.8	37	32.4	39.5	32.3
Ages 14 to 17	40.4	39.6	37.9	39.2	36

Table 3
Average monthly earnings for working children (in 1998 Bs.), Venezuela

	1994	1995	1996	1997	1998
Total					
Ages 10 to 13	25491	32043	18390	34677	24849
Ages 14 to 17	61107	57646	47316	57335	55649
Boys					
Ages 10 to 13	23377	33479	17716	33133	25699
Ages 14 to 17	62291	59258	48618	58876	57145
Girls					
Ages 10 to 13	34869	21479	27960	39180	21795
Ages 14 to 17	57089	51040	40479	51444	50241

Table 4
Average years of schooling for working children, Venezuela

	1995		1998	
	working	not working	working	not working
Total				
Ages 10 to 13	3.9	4.8	4.0	4.8
Ages 14 to 17	5.7	7.7	6.1	7.7
Boys				
Ages 10 to 13	3.9	4.6	3.9	4.7
Ages 14 to 17	5.4	7.5	5.9	7.5
Girls				
Ages 10 to 13	4.8	5.0	4.4	5.0
Ages 14 to 17	7.0	7.8	6.9	7.9

Table 5
Children between 10 and 13 years of age, Venezuela, 1997-1998

	Work and School	Work and No-School	No Work and School	No Work and No School	Total
Work and School	2	1	16	1	20
	10%	5%	80%	5%	100%
Work and No-School	0	2	3	2	7
	0%	29%	43%	29%	100%
No Work and School	29	9	2235	49	2322
	1%	0%	96%	2%	100%
No Work and No School	0	7	22	32	61
	0%	11%	36%	52%	100%
Total	31	19	2276	84	2410
	1%	1%	94%	3%	100%

Table 6
Children between 14 and 17 years of age, Venezuela, 1997-1998

	Work and School	Work and No-School	No Work and School	No Work and No School	Total
Work and School	22	19	33	11	85
	26%	22%	39%	13%	100%
Work and No-School	11	131	11	61	214
	5%	61%	5%	29%	100%
No Work and School	98	92	2127	247	2564
	4%	4%	83%	10%	100%
No Work and No School	9	65	69	191	334
	3%	19%	21%	57%	100%
Total	140	307	2240	510	3197
	4%	10%	70%	16%	100%

Table 7
Child Labor rates for the period, Mexico

	1994-1995	1995-1996	1996-1997	1997-1998
Total				
Ages 12 to 13	3.01%	4.46%	4.34%	5.08%
Ages 14 to 16	9.03%	9.77%	10.64%	11.72%
Boys				
Ages 12 to 13	4.48%	5.68%	6.36%	6.81%
Ages 14 to 16	13.51%	12.87%	14.35%	16.42%
Girls				
Ages 12 to 13	1.50%	3.12%	2.35%	3.21%
Ages 14 to 16	4.46%	6.39%	6.68%	6.75%

Table 8
Average hours per week for working children, Mexico

	1994-1995	1995-1996	1996-1997	1997-1998
Total				
Ages 12 to 13	29.09	25.90	26.05	25.19
Ages 14 to 16	37.25	34.57	35.64	35.13
Boys				
Ages 12 to 13	28.78	28.82	25.76	24.27
Ages 14 to 16	38.15	36.54	35.25	35.54
Girls				
Ages 12 to 13	30.06	20.15	26.81	27.30
Ages 14 to 16	34.43	30.29	36.52	34.01

Table 9
Average monthly earnings for-working children (in 1994 pesos), Mexico

	1994-1995	*1995-1996	*1996-1997	*1997-1998
Total				
Ages 12 to 13	331.54	225.69	195.01	198.36
Ages 14 to 16	423.27	334.29	255.38	292.08
Boys				
Ages 12 to 13	330.19	218.04	190.64	207.57
Ages 14 to 16	422.98	335.64	248.34	308.98
Girls				
Ages 12 to 13	335.66	242.57	209.77	172.48
Ages 14 to 16	424.15	331.14	269.69	246.69

Table 10
Average years of schooling for working children, Mexico

	1994-1995		1997-1998	
	working	not working	working	not working
Total				
Ages 12 to 13	4.74	5.64	5.13	5.69
Ages 14 to 16	6.53	7.42	6.96	7.55
Boys				
Ages 12 to 13	4.82	5.58	5.01	5.58
Ages 14 to 16	6.39	7.30	6.84	7.46
Girls				
Ages 12 to 13	4.5	5.69	5.39	5.81
Ages 14 to 16	6.96	7.52	7.26	7.64

Table 11
Transitions Among States for Mexican children 12-13 years old, 1997-1998

	Only School	School and Work	Only Work	No School and No Work	**Total**
Only School	1316 77.96%	41 2.43%	38 2.25%	293 17.36%	1688 100%
School and Work	27 40.30%	18 26.87%	8 11.94%	14 20.90%	67 100%
Only Work	14 33.33%	3 7.145	14 33.33%	11 26.19%	42 100%
No School and No Work	268 77.01%	14 4.02%	15 4.31%	51 14.66%	348 100%
Total	1625 75.76%	76 3.54%	75 3.50%	369 17.20%	2145 100%

Table 12
Transitions Among States for Mexican children 14-16 years old, 1997-1998

	Only School	School and Work	Only Work	No School and No Work	**Total**
Only School	1058 70.86%	73 4.89%	99 6.63%	263 17.62%	1493 100%
School and Work	59 52.21%	18 15.93%	16 14.16%	20 17.70%	113 100%
Only Work	15 10.95%	17 12.41%	79 57.66%	26 18.98%	137 100%
No School and No Work	211 54.10%	33 8.46%	59 15.13%	87 22.31%	390 100%
Total	1343 62.96%	141 6.61%	253 11.86%	396 18.57%	2133 100%

Table 13

Measures of fit for the three models with Venezuelan data:

	Multinomial Logit model	Sequential Probit model			Bivariate Probit model
		School only	Both	Work only	
Number of observations	15827	15827	2988	2557	15827
Log-likelihood	-7263.6	-4859.3	-1033.5	-1364.5	-7333.5
Pseudo R2	0.3138	0.3663	0.1616	0. 1902	
Percentage of correct predictions (1)	83.30 %	87.74 %	85.78 %	73.05 %	83.06 %
Observed probability		0.8112	0. 1442	0. 3700	
Predicted probability (at mean values for explanatory variables)		0.8827	0. 0995	0. 3351	
Rho estimate					-0.5380**
Wald test (Chi-squared)	3726.4 **	3312.5**	270.7**	499.3**	4517.2**

(1) using 0.5 as cut-off value.

(**) significantly different from zero at 5% confidence

Table 14

Measures of fit for the three models with Mexican data:

	Multinomial Logit model	Sequential Probit model			Bivariate Probit model
		School only	Both	Work only	
Number of observations	15319	15319	4608	3955	15319
Log-likelihood	-12227.6	-8546.6	-1768.7	-1959.2	-12320.2
Pseudo R2	0.0995	0.0877	0.0594	0. 1590	
Percentage of correct predictions (1)	81.20 %	90.02 %	87.30 %	77.10 %	83.01 %
Observed probability		0.8002	0.1670	0.2602	
Predicted probability (at mean values for explanatory variables)		0.8921	0.1270	0.2156	
Rho estimate					-0.4556***
Wald test (Chi-squared)	2700.8***	1394.3***	209.3***	607.53***	2249.8***

(1) using 0.5 as cut-off value.

(**) significantly different from zero at 5% confidence

Table 15
Multinomial Logit model for Venezuelan Data (*)
(coefficients are in odd ratios with respect to "school only" state)

	Both		Work only		None	
	Coeff.	Std. Error	Coeff.	Std. Error	Coeff.	Std. Error
CHARACTERISTICS OF CHILD						
age of child	1.105	0.543	9.294 **	4.842	1.460	0.452
age of child squared	1.011	0.017	0.948 **	0.016	1.002	0.011
gender of child:						
male (omitted)						
female	0.257 **	0.032	0.132 **	0.015	1.022	0.068
kinship with head:						
son/daughter (omitted)						
grandson/granddaughter	0.659 *	0.148	0.575 **	0.115	0.530 **	0.073
brother/sister/niece/nephew/cousin	1.019	0.310	1.189	0.273	1.040	0.203
other	1.369	0.532	2.028 **	0.643	1.459 *	0.286
CHARACTERISTICS OF HEAD						
sex of head						
male (omitted)						
female	1.043	0.232	0.993	0.159	1.111	0.129
age of head	1.001	0.007	0.994	0.005	0.997	0.004
education of head (in years)	0.953 **	0.017	0.870 **	0.013	0.895 **	0.010
current employment of head :						
government	0.550 **	0.107	0.648 **	0.109	0.841	0.103
formal	0.828	0.125	1.042	0.122	1.119	0.099
informal (omitted)						
jobless	0.754	0.137	0.808	0.109	1.154	0.116
marital status of head:						
couple (omitted)						
single/divorced/widowed	1.384	0.302	1.268	0.201	0.939	0.112
CHARACTERISTICS OF HOUSEHOLD						
Location						
urban (omitted)						
rural	1.310	0.232	1.408 **	0.195	1.043	0.119
capital (omitted)						
non-capital	2.638 **	0.722	1.925 **	0.342	2.074 **	0.323
Year						
1995 (omitted)						
1996	0.930	0.167	1.172	0.153	1.132	0.114
1998	1.234	0.208	1.100	0.149	1.310 **	0.131

Table 15 (continued)

	Both		Work only		None	
	Coeff.	Std. Error	Coeff.	Std. Error	Coeff.	Std. Error
initial number of children aged less than 10	1.179 **	0.047	1.207 **	0.040	1.123 **	0.030
initial number of children between 10 and 17	1.157 **	0.051	1.124 **	0.042	1.005	0.030
initial number of adults	0.936 *	0.038	0.915 **	0.030	0.993	0.024
initial number of elderly (above 65)	1.040	0.041	1.126 **	0.029	1.117 **	0.023
POVERTY DYNAMICS (1)						
Stay out of poverty (omitted)						
Stay in poverty	0.824	0.214	1.639 **	0.362	1.253	0.198
Fall into poverty	1.098	0.220	1.424 *	0.270	1.269 *	0.164
Escape from poverty	1.066	0.275	1.462 *	0.335	1.173	0.189
ADULT LABOR MARKET						
adult unemployment rate (2)	1.033 **	0.014	0.989	0.010	1.014 *	0.008
OTHER						
Child is initially attending school	0.377 **	0.068	0.040 **	0.004	0.048 **	0.004
Child labor incidence among age 10 to 14 (3)	1.071 **	0.017	1.012	0.033	0.949 **	0.025
Child labor incidence among age 11 to 17 (3)	1.035 **	0.006	1.026 **	0.005	1.003	0.005

(1) It excludes child's income in the calculation of household income and poverty status.
(2) Unemplomet rate for the town where the child lives.
(3) Incidence rate for the town where the child lives interacting with a dummy for the corresponding age group.
(*) Multinomial logit estimation using STATA6 command "mlogit"

Table 16
Sequential Probit Model for Venezuelan data (*)
(coefficients are derivatives at the average X)

	School only		Both		Work only	
	DF/dx	Std. Error	DF/dx	Std. Error	DF/dx	Std. Error
CHARACTERISTICS OF CHILD						
age of child	-0.029	0.026	-0.044	0.056	0.414 **	0.129
age of child squared	-0.001	0.001	0.001	0.002	-0.012 **	0.004
gender of child:						
male (omitted)						
female	0.069 **	0.006	-0.074 **	0.011	-0.403 **	0.018
kinship with head:						
son/daughter (omitted)						
grandson/granddaughter	0.051 **	0.009	0.031	0.030	0.025	0.049
brother/sister/niece/nephew/cousin	-0.011	0.018	-0.014	0.029	0.050	0.060
other	-0.054 **	0.026	-0.004	0.036	0.100	0.065
CHARACTERISTICS OF HEAD						
sex of head						
male (omitted)						
female	-0.006	0.011	0.000	0.020	-0.017	0.036
age of head	0.000	0.000	0.000	0.001	-0.001	0.001
education of head (in years)	0.011 **	0.001	0.007 **	0.002	-0.002	0.004
current employment of head :						
government	0.029 **	0.009	-0.023	0.018	-0.055	0.038
formal	-0.002	0.008	-0.026 *	0.014	-0.039	0.027
informal (omitted)						
jobless	0.002	0.009	-0.026	0.016	-0.068 **	0.031
marital status of head:						
couple (omitted)						
single/divorced/widowed	-0.011	0.011	0.022	0.022	0.062 *	0.037
CHARACTERISTICS OF HOUSEHOLD						
Location						
urban (omitted)						
rural	-0.021 *	0.012	0.015	0.019	0.096 **	0.031
capital (omitted)						
non-capital	-0.063 **	0.009	0.014	0.026	-0.030	0.043
Year						
1995 (omitted)						
1996	-0.011	0.009	-0.025	0.018	0.003	0.032
1998	-0.025 **	0.009	-0.001	0.018	-0.041	0.032

Table16 (continued)

	School only		Both		Work only	
	DF/dx	Std. Error	DF/dx	Std. Error	DF/dx	Std. Error
initial number of children aged less than 10	-0.015 **	0.002	0.002	0.004	0.018 **	0.007
initial number of children between 10 and 17	-0.007 **	0.003	0.009 *	0.005	0.025 **	0.009
initial number of adults	0.003	0.002	-0.003	0.004	-0.015 *	0.008
initial number of elderly (above 65)	-0.011 **	0.002	-0.008 *	0.004	0.001	0.007
POVERTY DYNAMICS (1)						
Stay out of poverty (omitted)						
Stay in poverty	-0.022	0.015	-0.048 **	0.020	0.062	0.058
Fall into poverty	-0.023 **	0.010	-0.021	0.025	0.021	0.048
Escape from poverty	-0.021	0.015	-0.021	0.024	0.035	0.059
ADULT LABOR MARKET						
adult unemployment rate (2)	-0.001 *	0.001	0.003 *	0.001	-0.006 **	0.002
OTHER						
Child is initially attending school	0.532 **	0.017	0.191 **	0.013	-0.045 **	0.021
Child labor incidence among age 10 to 14 (3)	-0.001	0.002	0.013 **	0.004	0.036 **	0.014
Child labor incidence among age 11 to 17 (3)	-0.002 **	0.000	0.002 **	0.001	0.005 **	0.001

(1) It excludes child's income in the calculation of household income and poverty status.
(2) Unemplomet rate for the town where the child lives.
(3) Incidence rate for the town where the child lives interacting with a dummy for the corresponding age group.
(*) Probit estimation using STATA6 command "dprobit"

Table 17
Bivariate Probit Model for Venezuelan data

	School		Work	
	Coeff.	Std. Error	Coeff.	Std. Error
CHARACTERISTICS OF CHILD				
age of child	-0.249 *	0.146	0.386 **	0.173
age of child squared	0.000	0.005	-0.006	0.006
gender of child:				
male (omitted)				
female	0.204 **	0.031	-0.852 **	0.042
kinship with head:				
son/daughter (omitted)				
grandson/granddaughter	0.307 **	0.068	-0.166 **	0.077
brother/sister/niece/nephew/cousin	-0.062	0.088	0.050	0.095
other	-0.207 **	0.100	0.156	0.129
CHARACTERISTICS OF HEAD				
sex of head				
male (omitted)				
female	-0.037	0.055	-0.009	0.070
age of head	0.002	0.002	-0.001	0.002
education of head (in years)	0.060 **	0.005	-0.035 **	0.006
current employment of head :				
government	0.097 *	0.056	-0.233 **	0.063
formal	-0.049	0.041	-0.054	0.048
informal (omitted)				
jobless	-0.036	0.048	-0.140 **	0.058
marital status of head:				
couple (omitted)				
single/divorced/widowed	-0.009	0.056	0.156 **	0.070
CHARACTERISTICS OF HOUSEHOLD				
Location				
Urban (omitted)				
rural	-0.081	0.056	0.173 **	0.058
capital (omitted)				
non-capital	-0.341 **	0.069	0.271 **	0.066
Year				
1995 (omitted)				
1996	-0.086 *	0.047	0.014	0.057
1998	-0.115 **	0.047	0.043	0.056

Table 17 (continued)

	School only		Work only	
	Coeff.	Std. Error	Coeff	Std. Error
initial number of children aged less than 10	-0.064 **	0.013	0.071 **	0.013
initial number of children between 10 and 17	-0.017	0.014	0.068 **	0.015
initial number of adults	0.008	0.012	-0.037 **	0.014
initial number of elderly (above 65)	-0.059 **	0.010	0.027 **	0.012
POVERTY DYNAMICS (1)				
Stay out of poverty (omitted)				
Stay in poverty	-0.157 **	0.072	0.070	0.082
Fall into poverty	-0.131 **	0.060	0.096	0.070
Escape from poverty	-0.113	0.073	0.114	0.087
ADULT LABOR MARKET				
adult unmeployment rate (2)	-0.002	0.004	0.003	0.005
OTHER				
Child is initially attending school	1.729 **	0.045	-0.762 **	0.042
Child labor incidence among age 10 to 14 (3)	0.019	0.012	0.029 **	0.008
Child labor incidence among age 11 to 17 (3)	-0.005 *	0.002	0.015 **	0.002

(1) It excludes child's income in the calculation of household income and poverty status.
(2) Unemplomet rate for the town where the child lives.
(3) Incidence rate for the town where the child lives interacting with a dummy for the corresponding age group.
(*) Bivariate Probit estomation using STATA6 command "biprobit"

Table 18
Multinomial Logit model for Mexican Data
(coefficients are in odd ratios with respect to "school only" state)

	Both		Work only		None	
	Coeff.	Std. Error	Coeff.	Std. Error	Coeff.	Std. Error
CHARACTERISTICS OF CHILD						
age of child	1.503 **	0.058	2.235 **	0.080	1.273 **	0.025
gender of child:						
male (omitted)						
female	0.403 **	0.036	0.410 **	0.030	1.078 *	0.047
CHARACTERISTICS OF HEAD						
sex of head						
male (omitted)						
female	1.205	0.283	0.924	0.184	1.110	0.144
age of head	0.989	0.007	0.994	0.005	0.998	0.004
education of head (in years)	0.922 **	0.009	0.836 **	0.008	0.946 **	0.005
current employment of head :						
government	0.719 **	0.107	0.595 **	0.081	0.903	0.069
formal	0.778 **	0.079	0.671 **	0.054	0.830 **	0.047
informal (omitted)						
jobless	0.698	0.204	0.587 **	0.140	1.236	0.164
marital status of head:						
couple (omitted)						
sinlge/divorced/widowed	1.154	0.270	1.551 **	0.301	1.132	0.145
CHARACTERISTICS OF HOUSEHOLD						
Year						
1995 (omitted)						
1996	1.913 **	0.403	0.748 *	0.127	0.901	0.092
1997	2.087 **	0.362	0.989	0.124	0.884	0.069
1998	2.243 **	0.375	1.142	0.149	0.951	0.075
initial number of children aged less than 12	1.114 **	0.040	1.232 **	0.033	1.119 **	0.021
initial number of children between 12 and 16	1.206 **	0.066	1.231 **	0.055	1.122 **	0.033
initial number of adults	0.962	0.036	1.004	0.027	1.050 **	0.020
initial number of elderly (above 60)	1.079	0.153	1.118	0.130	0.921	0.075

Table 18 (continued)

	Both		Work only		None	
	Coeff.	Std. Error	Coeff.	Std. Error	Coeff.	Std. Error
POVERTY DYNAMICS [1]						
Stay out of poverty (omitted)						
Stay in poverty	1.740 **	0.248	1.685 **	0.198	1.250 **	0.108
Fall into poverty	1.118	0.156	1.202 *	0.132	1.163 **	0.085
Escape from poverty	1.468 **	0.198	1.368 **	0.153	1.107	0.085
ADULT LABOR MARKET						
adult unmeployment rate [2]	0.000	0.001	148945.9 *	917989.5	80.265	307.449
OTHER						
Child is initially attending school [3]	0.003 **	0.006	1.690	3.142	2.176	2.508
Child labor incidence [3]	0.013	0.047	22.651	68.716	0.354	0.698

(1) It excludes child's income in the calculation of household income and poverty status.
(2) Unemplomet rate for the town where the child lives.
(3) Incidence rate for the town where the child lives.

Table19
Sequential Probit Model for Mexican Data
(coefficients are derivatives at the average X)

	School only		Both		Work only	
	DF/dx	Std. Error	DF/dx	Std. Error	DF/dx	Std. Error
CHARACTERISTICS OF CHILD						
age of child	-0.216 **	0.010	0.009	0.022	0.300 **	0.022
gender of child:						
male (omitted)						
female	0.143 **	0.022	-0.391 **	0.049	-0.593 **	0.047
CHARACTERISTICS OF HEAD						
sex of head						
male (omitted)						
female	-0.570	0.067	0.120	0.139	-0.082	0.135
age of head	0.001	0.002	-0.004	0.004	-0.002	0.004
education of head (in years)	0.045 **	0.003	0.003	0.006	-0.065 **	0.007
current employment of head :						
government	0.131 **	0.040	-0.070	0.087	-0.286 **	0.088
formal	0.156 **	0.029	0.012	0.057	-0.141 **	0.054
informal (omitted)						
jobless	0.008	0.073	-0.194	0.159	-0.439 **	0.152
marital status of head:						
couple (omitted)						
sinlge/divorced/widowed	-0.111 *	0.066	-0.082	0.139	0.155	0.132
CHARACTERISTICS OF HOUSEHOLD						
Year						
1995 (omitted)						
1996	0.030	0.053	0.409 **	0.117	-0.033	0.111
1997	0.006	0.040	0.439 **	0.094	0.077	0.084
1998	-0.047	0.041	0.450 **	0.091	0.140	0.088
initial number of children aged less than 12	-0.082 **	0.010	-0.018	0.020	0.055 **	0.018
initial number of children between 12 and 16	-0.086 **	0.015	0.033	0.031	0.045	0.030
initial number of adults	-0.017 *	0.010	-0.043 **	0.021	-0.024	0.019
initial number of elderly (above 60)	0.004	0.040	0.052	0.085	0.179 **	0.085

Table 19 (continued)

	School only		Both		Work only	
	DF/dx	Std. Error	DF/dx	Std. Error	DF/dx	Std. Error
POVERTY DYNAMICS [1]						
Stay out of poverty (omitted)						
Stay in poverty	-0.213 **	0.044	0.134 *	0.081	0.225 **	0.082
Fall into poverty	-0.094 **	0.038	-0.030	0.079	0.006	0.073
Escape from poverty	-0.106 **	0.039	0.119	0.079	0.103	0.077
ADULT LABOR MARKET						
adult unmeployment rate [2]	-2.347	1.955	-7.942 *	4.208	1.585	4.098
OTHER						
Child is initially attending school [3]	0.096	0.572	-3.942 **	1.255	-0.392	1.278
Child labor incidence [3]	0.131	0.987	-2.882	2.106	1.741	2.078

(1) It excludes child's income in the calculation of household income and poverty status.
(2) Unemploment rate for the town where the child lives.
(3) Incidence rate for the town where the child lives.

Table 20
Bivariate Probit Model for Mexican Data

	School		Work	
	Coeff.	Std. Error	Coeff.	Std. Error
CHARACTERISTICS OF CHILD				
age of child	-0.193 **	0.010	0.289 **	0.014
gender of child:				
male (omitted)				
female	0.049 **	0.023	-0.481 **	0.030
CHARACTERISTICS OF HEAD				
sex of head				
male (omitted)				
female	-0.035	0.068	0.029	0.084
age of head	0.000	0.002	-0.002	0.002
education of head (in years)	0.042 **	0.003	-0.058 **	0.004
current employment of head :				
government	0.104 **	0.041	-0.220 **	0.053
formal	0.141 **	0.030	-0.164 **	0.036
informal (omitted)				
jobless	-0.037	0.074	-0.268 **	0.098
marital status of head:				
couple (omitted)				
sinlge/divorced/widowed	-0.108	0.067	0.140 *	0.083
CHARACTERISTICS OF HOUSEHOLD				
Year				
1995 (omitted)				
1996	0.098 *	0.054	0.066	0.071
1997	0.081 **	0.041	0.156 **	0.054
1998	0.037	0.042	0.220 **	0.055
initial number of children aged less than 12	-0.079 **	0.010	0.079 **	0.012
initial number of children between 12 and 16	-0.072 **	0.015	0.090 **	0.019
initial number of adults	-0.025 **	0.010	-0.012	0.012
initial number of elderly (above 60)	0.017	0.041	0.077	0.050

Table 20 (continued)

	School only		Work only	
	Coeff.	Std. Error	Coeff	Std. Error
POVERTY DYNAMICS [1]				
Stay out of poverty (omitted)				
Stay in poverty	-0.153 **	0.045	0.275 **	0.052
Fall into poverty	-0.091 **	0.039	0.070	0.048
Escape from poverty	-0.067 *	0.041	0.166 **	0.049
ADULT LABOR MARKET				
adult unmeployment rate [2]	-3.412 *	2.016	0.959	2.558
OTHER				
Child is initially attending school [3]	-0.629	0.593	-1.320 *	0.746
Child labor incidence [3]	-0.181	1.024	0.137	1.283

(1) It excludes child's income in the calculation of household income and poverty status.
(2) Unemplomet rate for the town where the child lives.
(3) Incidence rate for the twon where the child lives

.

Table 21
Selection-corrected Wage equation for Venezuelan data (*)

	Wages		Participation	
	Coeff.	Std. Error	Coeff.	Std. Error
CHARACTERISTICS OF CHILD				
age of child	-255.2	563.6	0.457 **	0.174
age of child squared	14.3	17.0	-0.008	0.006
gender of child:				
male (omitted)				
female	-356.9	342.4	-0.881 **	0.043
kinship with head:				
son/daughter (omitted)				
grandson/granddaughter			-0.160 **	0.079
brother/sister/niece/nephew/cousin			0.049	0.098
other			0.178	0.132
CHARACTERISTICS OF HEAD				
sex of head				
male (omitted)				
female			-0.001	0.002
age of head			-0.012	0.071
education of head (in years)			-0.037 **	0.006
current employment of head :				
government			-0.240 **	0.067
formal			-0.053	0.053
informal (omitted)				
jobless			-0.146 **	0.058
marital status of head:				
couple (omitted)				
single/divorced/widowed			0.147 **	0.074
CHARACTERISTICS OF HOUSEHOLD				
Location				
Urban (omitted)				
rural	-342.2 *	188.0	0.164 **	0.058
capital (omitted)				
non-capital	-725.7 **	243.9	0.261 **	0.068
Year				
1995 (omitted)				
1996	-340.2 **	98.7	0.019	0.056
1998	77.6	117.2	0.033	0.056

Table 21 (continued)

	Wages		Participation	
	Coeff.	Std. Error	Coeff	Std. Error
initial number of children aged less than 10			0.069 **	0.014
initial number of children between 10 and 17			0.065 **	0.015
initial number of adults			-0.038 **	0.015
initial number of elderly (above 65)			0.027 **	0.012
POVERTY DYNAMICS (1)				
Stay out of poverty (omitted)				
Stay in poverty			0.083	0.084
Fall into poverty			0.114	0.073
Escape from poverty			0.116	0.091
ADULT LABOR MARKET				
adult unemployment rate (2)	6.8	10.5	0.002	0.005
OTHER				
Child is initially attending school			-0.747 **	0.043
Child labor incidence among age 10 to 14 (3)			0.027 **	0.008
Child labor incidence among age 11 to 17 (3)			0.015 **	0.002
Number of observations:	15827			
Number of uncensored observations	1337			
Log-likelihood	-15217.5			
Wald test	82.7 **			
rho	0.1315 (0.2984)			
Mills' ratio (lambda)	184.2 (423.7)			
Wald test of independent equations	0.19			

(1) It excludes child's income in the calculation of household income and poverty status.
(2) Unemploment rate for the town where the child lives.
(3) Incidence rate for the town where the child lives interacting with a dummy for the corresponding age group.
(*) Maximun Likelihood estimation of wage equation with selection and Huber/White corrected standard errors, using STATA6 command "heckman".

Table 22
Selection-corrected Hours equation for Venezuelan data (*)

	Hours		Participation	
	Coeff.	Std. Error	Coeff.	Std. Error
CHARACTERISTICS OF CHILD				
age of child	9.792 **	4.411	0.469 **	0.175
age of child squared	-0.306 **	0.144	-0.009	0.006
gender of child:				
male (omitted)				
female	-2.393 *	1.324	-0.881 **	0.043
kinship with head:				
son/daughter (omitted)				
grandson/granddaughter	-1.930	1.550	-0.159 **	0.079
brother/sister/niece/nephew/cousin	-0.332	1.851	0.051	0.097
other	2.094	1.855	0.178	0.132
CHARACTERISTICS OF HEAD				
sex of head				
male (omitted)				
female	0.029	0.043	-0.001	0.002
age of head	-0.372	1.239	-0.017	0.071
education of head (in years)	-0.002	0.131	-0.037 **	0.006
current employment of head :				
government	-0.128	1.485	-0.233 **	0.065
formal	-0.664	0.941	-0.046	0.049
informal (omitted)				
jobless	1.597	1.558	-0.145 **	0.058
marital status of head:				
couple (omitted)				
single/divorced/widowed	-0.038	1.204	0.156 **	0.070
CHARACTERISTICS OF HOUSEHOLD				
Location				
Urban (omitted)				
rural	0.161	1.118	0.164 **	0.058
capital (omitted)				
non-capital	-2.774 **	1.245	0.269 **	0.067
Year				
1995 (omitted)				
1996	-0.377	1.214	0.018	0.056
1998	-2.074 *	1.133	0.031	0.056

Table 22 (continued)

	Hours		Participation	
	Coeff.	Std. Error	Coeff	Std. Error
initial number of children aged less than 10	-0.064	0.229	0.070 **	0.013
initial number of children between 10 and 17	0.080	0.309	0.065 **	0.015
initial number of adults	0.187	0.284	-0.040 **	0.014
initial number of elderly (above 65)	0.126	0.231	0.027 **	0.012
POVERTY DYNAMICS (1)				
Stay out of poverty (omitted)				
Stay in poverty	0.271	1.613	0.087	0.083
Fall into poverty	-1.334	1.459	0.108	0.071
Escape from poverty	0.030	1.784	0.124	0.088
LABOR MARKET				
adult unemployment rate (2)	-0.293 **	0.084	0.001	0.005
head hourly wage (in logarithms)	0.246	0.162		
child's hourly wage (in logarithms)	-0.266	1.167		
OTHER				
Child is initially attending school			-0.756 **	0.042
Child labor incidence among age 10 to 14 (3)			0.026 **	0.008
Child labor incidence among age 11 to 17 (3)			0.015 **	0.002
Number of observations:	15827			
Number of uncensored observations	1337			
Log-likelihood	-8637.0			
Wald test	64.3 **			
rho	0.2144 (0.079)			
Mills' ratio (lambda)	2.55 (0.982)			
Wald test of independent equations	6.87 **			

(1) It excludes child's income in the calculation of household income and poverty status.
(2) Unemplomet rate for the town where the child lives.
(3) Incidence rate for the town where the child lives interacting with a dummy for the corresponding age group.
(*) Maximun Likelihood estimation of hours equation with selection and Huber/White corrected standard errors, using STATA6 command "heckman".

Table 23
Selection-corrected Wage equation for Mexican Data

	Wages		Participation	
	Coeff.	Std. Error	Coeff.	Std. Error
CHARACTERISTICS OF CHILD				
age of child	0.160 **	0.035	0.270 **	0.025
gender of child:				
male (omitted)				
female	-0.145 **	0.058	-0.564 **	0.053
CHARACTERISTICS OF HEAD				
sex of head				
male (omitted)				
female			0.196	0.132
age of head			-0.008 *	0.004
education of head (in years)			-0.070 **	0.007
current employment of head :				
government			-0.469	0.095
formal			-0.076	0.058
informal (omitted)				
jobless			0.146	0.146
marital status of head:				
couple (omitted)				
sinlge/divorced/widowed			0.174	0.128
CHARACTERISTICS OF HOUSEHOLD				
Year				
1995 (omitted)				
1996	-0.290 **	0.089	0.085	0.086
1997	-0.447 **	0.131	0.252 *	0.131
1998	-0.315 **	0.156	0.235	0.150
initial number of children aged less than 12			0.073 **	0.019
initial number of children between 12 and 16			0.145 **	0.031
initial number of adults			0.027	0.019
initial number of elderly (above 60)			0.052	0.079

Table 23 (continued)

	School only		Work only	
	Coeff.	Std. Error	Coeff	Std. Error
POVERTY DYNAMICS [1]				
Stay out of poverty (omitted)				
Stay in poverty			0.319 **	0.078
Fall into poverty			0.069	0.081
Escape from poverty			0.040	0.082
ADULT LABOR MARKET				
adult unmeployment rate [2]	-6.052	4.614	8.813 **	4.382
OTHER				
Child is initially attending school [3]			-0.741 **	0.049
Child labor incidence [3]			3.824 *	2.092
Number of observations	14599			
Number of uncensored observations	14164			
Log-likelihood	-1728.9			
Wald test	185.1**			
Rho	0.3923 (0.1211)			
Mills' ratio (lambda)	0.1961 (0.0682)			
Wald test of independent equations	8.38**			

(1) It excludes child's income in the calculation of household income and poverty status.
(2) Unemplomet rate for the town where the child lives.
(3) Incidence rate for the twon where the child lives

Table 24
Selection-corrected Hours equation for Mexican Data

	Hours		Participation	
	Coeff.	Std. Error	Coeff.	Std. Error
CHARACTERISTICS OF CHILD				
age of child	-1.339	0.914	0.253 **	0.022
gender of child:				
male (omitted)				
female	7.605 **	1.976	-0.581 **	0.050
CHARACTERISTICS OF HEAD				
sex of head				
male (omitted)				
female	-3.726	4.217	0.180	0.124
age of head	-0.040	0.116	-0.004	0.004
education of head (in years)	0.341	0.257	-0.059 **	0.007
current employment of head :				
government	10.210 **	3.098	-0.160 *	0.090
formal	5.389 **	1.645	-0.155 **	0.054
informal (omitted)				
jobless	7.485 *	4.483	0.002	0.143
marital status of head:				
couple (omitted)				
sinlge/divorced/widowed	1.844	4.196	0.118	0.123
CHARACTERISTICS OF HOUSEHOLD				
Year				
1995 (omitted)				
1996	-3.418	2.863	0.091	0.082
1997	-2.200	4.159	0.251 **	0.122
1998	-2.440	4.676	0.260 *	0.139
initial number of children aged less than 12	-0.984 *	0.545	0.054 **	0.018
initial number of children between 12 and 16	-1.038	0.947	0.144 **	0.029
initial number of adults	0.858	0.554	0.012	0.019
initial number of elderly (above 60)	-4.393 **	2.114	0.030	0.076

Table 24 (continued)

	Hours		Participation	
	Coeff.	Std. Error	Coeff	Std. Error
POVERTY DYNAMICS [1]				
Stay out of poverty (omitted)				
Stay in poverty	-5.437 **	2.262	0.299 **	0.074
Fall into poverty	0.970	2.340	0.037	0.077
Escape from poverty	-0.897	2.422	0.127 *	0.076
LABOR MARKET				
adult unmeployment rate [2]	62.151	135.06	5.304	4.070
child's hourly wage	-0.079	0.621		
OTHER				
Child is initially attending school [3]			-0.714 **	0.044
Child labor incidence [3]			3.721 **	1.805
Number of observations	14672			
Number of uncensored observations	14164			
Log-likelihood	-3726.2			
Wald test	110.8**			
Rho	-0.8269 (0.0411)			
Mills' ratio (lambda)	-17.2929 (1.9347)			
Wald test of independent equations	82.22**			

(1) It excludes child's income in the calculation of household income and poverty status.
(2) Unemploment rate for the town where the child lives.
(3) Incidence rate for the town where the child lives.

Table 25
Probit model for transitions into and out of work among Venezuelan children

	Start working[(1)]		Stop Working[(2)]	
	Coeff.	Std. Error	Coeff.	Std. Error
CHARACTERISTICS OF CHILD				
age of child	0.023 **	0.009	-0.744 **	0.222
age of child squared	-0.001	0.000	0.024 **	0.007
gender of child:				
male (omitted)				
female	-0.045 **	0.003	0.157 **	0.053
kinship with head:				
son/daughter (omitted)				
grandson/granddaughter	-0.005	0.004	-0.089	0.081
brother/sister/niece/nephew/cousin	0.006	0.007	0.070	0.090
other	0.003	0.009	0.000	0.113
CHARACTERISTICS OF HEAD				
sex of head				
male (omitted)				
female	0.001	0.003	-0.005	0.047
age of head	0.000	0.000	0.001	0.002
education of head (in years)	-0.001 **	0.000	0.004	0.006
employment change of head :				
stayed the same (omitted)				
lost job	-0.004	0.004	0.145 **	0.073
got job in public sector	-0.017	0.005	0.111	0.217
got job in private sector	-0.012	0.006	0.228	0.178
got job in informal sector	0.004	0.006	-0.044	0.079
changed sectors	0.000	0.003	-0.062	0.049
change in marital status of head:				
same (omitted)				
different	0.008	0.006	-0.095	0.071
CHARACTERISTICS OF HOUSEHOLD				
Location				
Urban (omitted)				
rural	0.012 **	0.005	-0.146 **	0.049
capital (omitted)				
non-capital	0.014 **	0.003	-0.010	0.071
Year				
1995 (omitted)				
1996	-0.003	0.003	-0.047	0.053
1998	0.000	0.003	-0.014	0.055

Table 25 (continued)

	Start working[1]		Stop Working[2]	
	Coeff.	Std. Error	Coeff	Std. Error
Change in …				
…number of children aged less than 10	0.001	0.002	0.030	0.034
…number of children between 10 and 17				
… number of adults	0.001	0.002	-0.029	0.034
… number of elderly (above 65)	0.000	0.002	-0.029	0.024
POVERTY DYNAMICS [1]				
Stay out of poverty (omitted)				
Stay in poverty	0.005	0.006	0.032	0.093
Fall into poverty	0.010 **	0.004	-0.046	0.079
Escape from poverty	0.012 **	0.007	-0.041	0.104
SCHOOL DYNAMICS				
schooling in both periods (omitted)				
no schooling in both periods	0.118 **	0.013	-0.304 **	0.048
stop schooling	0.154 **	0.013	-0.215 **	0.053
start schooling	0.029 **	0.012	0.049	0.076
Number of observations	14937		890	
Wald test	1145.9 **		145.4 **	
Pseudo R2	0.2754		0.1405	
Log-likelihood	-2375.5		-519.0	
Observed probability	0..0573		0.4146	
Predicted probability	0..0219		0.4079	

(1) Conditional on not working in intial period
(2) Conditional on working in intial period
(*) Probit model using STATA6 command "dprobit"

Table 26
Probit model for transitions into and out of school among Venezuelan children (*)

	Start schooling[1]		Stop schooling[2]	
	Coeff.	Std. Error	Coeff.	Std. Error
CHARACTERISTICS OF CHILD				
age of child	-0.116	0.087	0.034 **	0.016
age of child squared	0.003	0.003	0.000	0.001
gender of child:				
male (omitted)				
female	0.007	0.023	0.000	0.004
kinship with head:				
son/daughter (omitted)				
grandson/granddaughter	0.023	0.047	-0.022 **	0.006
brother/sister/niece/nephew/cousin	0.014	0.046	0.018	0.013
other	-0.132 **	0.028	0.005	0.016
CHARACTERISTICS OF HEAD				
sex of head				
male (omitted)				
female	0.001	0.026	0.003	0.005
age of head	0.003 **	0.001	0.000	0.000
education of head (in years)	0.024 **	0.004	-0.005 **	0.001
employment change of head :				
stayed the same (omitted)				
lost job	-0.024	0.038	0.013 *	0.009
got job in public sector	0.349 **	0.195	-0.018	0.019
got job in private sector	0.267 **	0.095	0.003	0.015
got job in informal sector	0.037	0.049	-0.017 **	0.007
changed sectors	0.027	0.033	0.000	0.005
change in marital status of head:				
same (omitted)				
different	0.001	0.039	0.012	0.010
CHARACTERISTICS OF HOUSEHOLD				
Location				
urban (omitted)				
rural	0.042	0.035	0.011	0.007
capital (omitted)				
non-capital	-0.182 **	0.044	0.021 **	0.005
Year				
1995 (omitted)				
1996	0.023	0.030	0.002	0.005
1998	-0.007	0.030	0.004	0.005

Table 26 (continued)

	Start schooling[1]		Stop schooling[2]	
	Coeff.	Std. Error	Coeff	Std. Error
Change in …				
…number of children aged less than 10	-0.018	0.017	0.007 *	0.004
…number of children between 10 and 17				
… number of adults	0.013	0.016	0.010 **	0.003
… number of elderly (above 65)	-0.006	0.013	0.006 **	0.003
POVERTY DYNAMICS [1]				
Stay out of poverty (omitted)				
Stay in poverty	-0.020	0.048	0.021 **	0.010
Fall into poverty	-0.048	0.046	0.021 **	0.006
Escape from poverty	-0.036	0.048	0.014	0.010
CHILD LABOR DYNAMICS				
no work in any period (omitted)				
stop working	0.019	0.032	0.079 **	0.024
start working	-0.139 **	0.020	0.289 **	0.022
working in both periods	-0.164 **	0.022	0.256 **	0.041
Number of observations	1689		14138	
Wald test	207.2 **		1391.6 **	
Pseudo R2	0.1785		0.2213	
Log-likelihood	-734.6		-3277.3	
Observed probability	0.2220		0.0879	
Predicted probability	0.1796		0.0589	

(1) Conditional on not attending school in intial period
(2) Conditional on attending school in intial period
(*) Probit model using STATA6 command "dprobit"

Table 27
Transitions into and out of work for Mexican children

	Start working[(1)]		Stop Working[(2)]	
	Coeff.	Std. Error	Coeff.	Std. Error
CHARACTERISTICS OF CHILD				
age of child	0.187 **	0.022	0.097 **	0.026
gender of child:				
male (omitted)				
female	-0.362 **	0.045	-0.369 **	0.057
CHARACTERISTICS OF HEAD				
sex of head				
male (omitted)				
female	-0.029	0.069	0.146 *	0.077
age of head	-0.008 **	0.003	-0.006	0.004
education of head (in years)	-0.040 **	0.005	-0.042 **	0.006
employment change of head :				
stayed the same (omitted)				
lost job	-0.109	0.188	0.219	0.183
got job in public sector				
got job in private sector	-0.231	0.266	-0.045	0.336
got job in informal sector	-0.364	0.322	0.428 *	0.239
changed sectors	0.108 *	0.061	0.066	0.078
change in marital status of head:				
same (omitted)				
different	-0.043	0.165	0.222	0.157
CHARACTERISTICS OF HOUSEHOLD				
Year				
1995 (omitted)				
1996	0.028	0.064	0.160 **	0.079
1997	0.077	0.065	0.091	0.083
1998	0.127 *	0.067	0.181 **	0.084
Change in … number of children aged less than 12	-0.078	0.097	0.161	0.130
… number of children between 12 and 16				
… number of adults	-0.002	0.091	0.152	0.125
… number of elderly (above 60)	0.061	0.127	0.216	0.164

Table 27 (continued)

	Start working[1]		Stop Working[2]	
	Coeff.	Std. Error	Coeff	Std. Error
POVERTY DYNAMICS [1]				
Stay out of poverty (omitted)				
Stay in poverty	0.238 **	0.077	0.149	0.092
Fall into poverty	0.147 **	0.072	0.007	0.090
Escape from poverty	0.170 **	0.075	0.109	0.091
SCHOOL DYNAMICS				
schooling in both periods (omitted)				
no schooling in both periods	0.627 **	0.062	0.366 **	0.076
stop schooling	0.661 **	0.056	-0.067	0.086
start schooling	-0.123	0.090	0.238 **	0.087
Number of observations	7140		7091	
Wald test	625.65**		291.97**	
Pseudo R2	0.1448		0.0971	
Log-likelihood	-1924.3		-1138.9	
Observed probability				
Predicted probability				

(1) Conditional on not attending school in intial period
(2) Conditional on attending school in intial period
(*) Probit model using STATA6 command "dprobit"

Table 28
Transitions into and out of school for Mexican children

	Start schooling[1]		Stop schooling[2]	
	Coeff.	Std. Error	Coeff.	Std. Error
CHARACTERISTICS OF CHILD				
age of child	0.001	0.019	0.081 **	0.017
gender of child:				
male (omitted)				
female	-0.001	0.041	-0.002	0.037
CHARACTERISTICS OF HEAD				
sex of head				
male (omitted)				
female	0.068	0.063	0.038	0.056
age of head	0.002	0.003	-0.006 **	0.003
education of head (in years)	0.003	0.004	-0.017 **	0.004
employment change of head :				
stayed the same (omitted)				
lost job	-0.272	0.187	0.025	0.142
got job in public sector			0.077	0.561
got job in private sector	-0.294	0.281	-0.009	0.218
got job in informal sector	0.116	0.257	-0.039	0.242
changed sectors	-0.035	0.061	-0.003	0.053
change in marital status of head:				
same (omitted)				
different	0.168	0.129	-0.175	0.133
CHARACTERISTICS OF HOUSEHOLD				
Year				
1995 (omitted)				
1996	-0.260 **	0.059	-0.231 **	0.051
1997	-0.164 **	0.058	-0.309 **	0.052
1998	0.066	0.057	-0.143 **	0.052
Change in … number of children aged less than 12	-0.031	0.093	-0.150 *	0.080
… number of children between 12 and 16				
… number of adults	-0.003	0.089	-0.135 *	0.076
… number of elderly (above 60)	0.125	0.119	-0.157	0.107

Table 28 (continued)

	Start schooling[1]		Stop schooling[2]	
	Coeff.	Std. Error	Coeff	Std. Error
POVERTY DYNAMICS [1]				
Stay out of poverty (omitted)				
Stay in poverty	-0.097	0.083	0.082	0.069
Fall into poverty	-0.071	0.072	0.038	0.060
Escape from poverty	0.018	0.072	0.021	0.064
CHILD LABOR DYNAMICS				
no work in any period (omitted)				
stop working	0.128	0.096	-0.144	0.098
start working	-0.414 **	0.086	0.522 **	0.057
working in both periods	-0.154	0.114	-0.029	0.096
Number of observations	7140		7147	
Wald test	141.39**		278.43**	
Pseudo R2	0.0288		-2988.5	
Log-likelihood	-2277.7		0.0457	
Observed probability				
Predicted probability				

(1) Conditional on not attending school in intial period
(2) Conditional on attending school in intial period
(*) Probit model using STATA6 command "dprobit"