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EARLY ENTRY INTO THE LABOR FORCE, SCHOOL DROP OUT AND RETURNS TO HUMAN CAPITAL IN MEXICO

Resumen

Este trabajo analiza los efectos de la participación laboral durante la niñez y adolescencia en los ingresos de los adultos. La investigación se enmarca en un modelo de capital humano. El trabajo empírico esta basado en el caso mexicano.

La investigación considera los efectos de largo plazo que la experiencia de trabajo temprano tiene en el individuo, haciendo particular énfasis en el análisis de diferencias de género. Hace uso de información sobre la edad a la cual los participantes de la fuerza de trabajo adulta empezaron a laborar, la combinación de la asistencia a la escuela con el trabajo, y la edad a la cual los trabajadores adultos dejaron de asistir a la escuela. La participación temprana en la fuerza de trabajo se introduce como una actividad que compite con la escolaridad, ocupa el tiempo del niño y afecta sus ganancias futuras debido a las implicaciones para la acumulación de capital humano. Se estiman funciones *Mincerianas* expandidas de salarios con y sin controles por selección de muestreo.

Los hallazgos proveen sugerencias acerca de la estimación de los rendimientos al capital en modelos econométricos, así como de la naturaleza e implicaciones del trabajo infantil en México. Las regresiones para mujeres son muy sensibles a la manera en que se formula la medida de experiencia. Estas regresiones alcanzan niveles máximos a edades más tempranas usando medidas reales de experiencia, en comparación con medidas de experiencia potencial. Por otro lado, los hallazgos muestran que el incorporar el trabajo durante la escuela afecta el patrón de rendimientos de la educación y de la experiencia. Los resultados también sugieren, por una parte, que hay un rendimiento positivo al posponer, hasta terminada la adolescencia, la entrada al mercado de trabajo; y por otra parte, que existe un intercambio de rendimientos entre el trabajo y la escolarización. El rendimiento de un año de educación se reduce cuando la escolaridad se combina con el trabajo. La perdida de rendimiento correspondiente a un año de educación está parcialmente compensada por el rendimiento de un año de experiencia; el efecto neto de la inversión del año depende del nivel de educación alcanzado. Sin embargo, los rendimientos de la educación rápidamente sobrepasan cualquier beneficio obtenido por dejar de estudiar, aún cuando la deserción ocurra hacia el término de la secundaria. Mientras que los costos excesivos de la deserción escolar son evidentes tanto para hombres como para mujeres, las penalidades parecen ser más elevadas entre las mujeres jóvenes. Además, el combinar la escuela con el trabajo, en comparación a la opción de especializarse en la escuela, tiende a proveer un rendimiento particularmente bajo para las mujeres. Estos resultados son especialmente sensibles a la selectividad de la participación en la fuerza laboral, la cual está, a su vez, muy relacionada con la pobreza. Dichos resultados también tienden a reflejar severas limitaciones en las oportunidades laborales accesibles a las mujeres jóvenes que desertan de la escuela con bajos niveles de educación; también reflejan rendimientos especialmente altos para las mujeres con educación avanzada.

Los datos empleados provienen de la Encuesta Nacional de Empleo y la Encuesta Nacional de Educación, Capacitación y Empleo, ambos del año 1995.

Abstract

This paper analyzes the effects of labor force participation during childhood and adolescence on earnings as an adult using a human capital framework. The empirical work is based on the Mexican case.

The research considers the long-run effects of early work experience on the individual, using information on the age at which adult labor force-participants first entered the labor force, the combination of school and work, and the age at which they dropped out of school. Early labor force participation is introduced as an activity that competes with schooling, occupies a child's time, and affects future earnings by virtue of the implications for the accumulation of human capital and hence for adult earning capacity. Expanded Mincerian wage functions are estimated, with and without controlling for sample selection into the labor force. Particular emphasis is placed on the analysis of gender differentials.

The findings provide insight into the estimation of returns to human capital, as well as into the nature and implications of child labor. The regressions for females are highly sensitive to the formulation of the experience measure with earlier peaks using real, as opposed to potential, measures of experience. Further, the incorporation of in-school work affects the overall pattern of returns to education and experience. The results also suggest that there is a payoff to delayed entry into the labor force, and a tradeoff between work and schooling. The return to a year of education is reduced when schooling is combined with work. The lower return to education is partially offset by the return to experience, and the net effect is related to the level of schooling. Still, the returns to additional schooling quickly outweigh any benefits of dropping out of school, even when drop out occurs toward the end of secondary school. While the excessive costs of school drop out are evident for both males and females, the penalties appear to be higher among young women. Further, combining school and work tends to provide a particularly low return for females as compared to the option of specializing in schooling. These results are partially driven by selectivity issues that are closely associated with child poverty. They are also likely to reflect particularly severe limitations in the work opportunities open to young female school leavers with low levels of education, as well as especially high returns to advanced schooling for women.

The data come from the Encuesta Nacional de Empleo and the Encuesta Nacional de Educación, Capacitación y Empleo of 1995.

Introduction

Many children and youth, especially in developing countries, begin to work at an early age. In Mexico, 12.3% of children and youth aged 8 to 17 are economically active. Restricting the definition of work to include only market-based activities, over 2.5 million children and youth between the ages of 8 and 17 are in the labor force. The figure is almost 4 million with the inclusion of home-based work, most of which is undertaken by young women.

While educational attainment has increased dramatically in the past decades in Latin America, the efficiency of educational investment continues to be problematic. In Mexico, grade repetition, school drop out and failure to complete primary and secondary education are all high by comparison to regional standards. Further, the level of educational attainment is low given the country's level of economic development (Banco Interamericano de Desarrollo, 1996). In the face of these issues, research into both demand and supply side determinants of school attendance and educational attainment is a priority.

Child and youth labor force participation have both long- and short-run consequences on individual, family and social welfare. While school drop out and early entry into the labor force are not coincident, there is an important, and potentially causal, relationship between the two events for certain groups of children and youth.

This paper looks at the long-run effects of early work experience on young males and females, using information on the age at which adult labor force-participants first entered the labor force and the age at which they dropped out of school.[1] The impact of early labor force participation is measured in terms of the effects on adult earning capacity. By analyzing the effects on earnings as an adult, this paper provides additional insight into the long-run costs of child labor that should be factored into family decision-making regarding the allocation of children's time.[2] The results also contribute to the debate concerning legislation to end child labor and policies to assist working children and youth. This study complements existing research on developing countries, some of which is discussed below, that tends to focus on the short-run relationship between school attendance and early labor force participation during childhood and adolescence.

The theoretical framework used in this paper is based on a human capital model. Early labor force participation is introduced as an activity that competes with schooling, occupies a child's time, and affects future earnings by virtue of the

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[1] It is necessary to mention that data on a person's earnings provide information on only certain aspects of well-being. Earnings equations give some information on a person's ability to generate income, and on their capacity to function in the labor market that is open to them.

[2] The paper refers to the allocation by families of children's time under the assumption that families control the activities of children. While this is commonly assumed, it is also possible that children and youth have decision-making power that affects both their own allocation of time and the way that resources are allocated within the family.

implications for the accumulation of human capital.[3] The data on early entry into the labor force and on lifetime work history provide insights into the use of different measures of experience in estimates of human capital earnings functions. These insights are applicable not only to the allocation of children's time, but also to other groups of workers who experience substantial instability over time in their labor force attachment.

The first section of the paper provides a brief overview of the literature on the effects of early labor force participation on adult labor market outcomes, the combination of school and work in developing countries, and the importance of early labor force entry in the definition of experience. The second section provides an overview of the data. The next section summarizes the theoretical framework and the models that are used in the paper. The data analysis begins with an overview of age at entry into the labor force and age at dropping out of school. The next part examines the results of earnings equations that seek to model early entry into the labor force and vary the experience measure. These are followed by the models that consider the implications of combining school and work. The conclusions summarize the major points of relevance to policy decisions, and highlight directions for future research.

Prior Research

The literature evaluating the effects of work on schooling, maturation, and training of young people in developed countries is of particular relevance to this study. Although there is a particular focus on the United States, this literature provides a starting point from which to analyze the impact of child and youth labor force participation on schooling and child welfare in less developed countries.

The literature on the impact of early labor market experience among adolescents in developed countries is mixed in its evaluation of the tradeoffs between school and work, and the long-run impact on the capacity to earn. Most of these studies consider the situation of youth, typically aged 16 and over. Much of this literature is summarized in Fine *et al.* (1990) and Rich (1993).

On the one hand, there are a number of studies that suggest that teenage workers have lower grade point averages, and weaker career and educational aspirations. Ehrenberg and Sherman (1986), using a panel of college students, found that hours worked had a negative effect on the probability of enrolling the following year and of graduating on time. There is some evidence to suggest that the negative effects of working increase with hours worked (Fine et al., 1990: Steinberg and Dornbusch, 1991), and a debate as to whether or not working part-time (in the range of 15 to 20 per week) is associated with lower or higher educational and occupational outcomes. D'Amico (1984) found that employment for less than 20 hours per week

[3] The models draw heavily on Knauf (1995).

was associated with higher grades, but that more intense work was associated with drop-out for white teenagers.

On the other hand, Fine et al. (1990) site several studies that have shown that individuals who were employed during high school tend to have more stable employment records, as well as higher earnings as adults. Steinberg et al. (1982 and 1982a) found that working during high school was associated with punctuality, dependability and personal responsibility. A longitudinal study of 14-15 year-olds suggests that starting work early, controlling for hours worked and socio-economic background, is associated with higher grade-point average, especially for boys. Another survey of 11 to 14 year-olds suggests that workers tend to show fewer behavior problems in school. Fine et al. (1990) note that these results are surprising in the face of the mixed evidence for older youth and could well depend on the type of work undertaken.

The evolution of the literature on the negative effects of unemployment, or 'scarring' are summarized in Rich (1993). Early research stressed the negative, long-run impact of unemployment on adult labor market outcomes. By contrast, Becker and Hills (1983) find that job switching during high-school and short periods of unemployment are associated with higher average wages for adults up to 10 years later. The net effect of teenage labor market experience on adult wages is positive for whites, and highly positive for blacks. Studies using data from the 1960s and 1970s presented divergent findings concerning the impact of out-of-school work experience during teen years. While some studies find positive impacts on employment and wages as adults, others find little impact and attribute the differences to unobserved heterogeneity. Rich (1993), using data on high-school leavers in the 1980s, finds that working during high school is positively associated with adult employment, but not with wages. The positive impact on youth's ability to secure and maintain jobs as adults is persistent over time, and has a significant positive impact up to 8 years after leaving high-school.

While authors often point to the negative effects of working on both school attendance and educational attainment in developing countries, there has been little empirical work to evaluate the effects of work on educational outcomes. Studies on developing countries tend to focus on the relationship between school and work during the school-age period. Given data limitations, and in particular that no long-run panel surveys are available, few studies consider the longer-run impact of child labor in terms of employment outcomes or completed schooling.

A number of studies have evaluated the determinants of child and youth labor force participation in developing countries. This review evaluates a selection of the work most relevant to this paper. De Tray (1983) considers the determinants of child and youth labor force participation and hours worked in Malaysia. He demonstrates the important impact of living in a female-headed household, ethnic differences, presence of a family business, and presence of young children in increasing the probability of labor force participation and hours worked. Barros, Fox and Mendonca (1997) also demonstrate the higher probability of work among children living in female-headed families. For the case of Brazil, Levison (1991) and Psacharopoulos

and Arriagada (1989) show the importance of similar factors as well as education of parents and family income on both labor force participation and school attendance. Patrinos and Psacharopoulos (1997) find that family size, as well as the interaction of age and gender of siblings with their time allocation, have important impacts on labor force participation and educational progress among Peruvian children. Evidence from Paraguay highlights the differences in progress through school by language or ethnicity, and in relation to number and work status of siblings (Patrinos and Psacharopoulos, 1993). The importance of parental education levels as determinants of both child work and school attainment are also shown in Lam and Schoeni (1992) and Parish and Willis (1992). Alessie, Baker, Blundell et al (1992) use two rounds of longitudinal data from the Cote d'Ivoire Living Standards Survey to analyze the impact of structural adjustment on child employment and school attendance by considering the transitions between school and work. They find that demand side conditions, measured by changes in the price of agricultural output, have an important positive impact on employment that is dependent on the school-work state in the initial period. Age, number of household workers, and ethnicity also had significant effects. In general, there are important differences in the impacts of variables depending on whether the child worked and attended school in the initial period.

Several studies stress that a large proportion of working children attend school (Patrinos and Psacharopoulos, 1993; Levison, 1991; Knaul 1993 and 1995). Patrinos and Psacharopoulos cite evidence from Bolivia that suggests that non-working children have lower educational attainment. In Lima, by contrast, drop out and repetition are associated with child employment. The low levels of education of particular groups of economically active children, such as street children, stand out in comparison to working children as a whole (Knaul, 1993). Knaul and Parker (1997), Knaul (1998 and 1995) and Flórez, Knaul and Méndez (1995), show that domestic servants have particularly low school attendance rates.

Knaul (1995) develops models similar to those used in this paper to evaluate the long-run impact of early entry into the labor force on adult earnings based on retrospective data from Colombia. The models consider the age at entry into the labor force, as well as the combination of work and school. The results suggest that there is a payoff to delayed entry into the labor force, and a tradeoff between work and schooling. The return to a year of education or experience is reduced when schooling is combined with work, and only partially offset by the return to experience.

There has been little quantitative research on child and youth labor force participation in Mexico, especially in terms of the impact of schooling. Christenson and Juarez (1987), in the only available study of the determinants of youth labor force participation in the urban areas of Mexico, suggest that education of parents, family income, family size and female headship increase the likelihood of child labor. Knaul and Parker (1998) use retrospective data to analyze the long-term relationship between school drop out and labor market entry. Further, they exploit longitudinal data to consider the shorter term links between school attendance and work among Mexican children and youth. The results show that labor force participation rates increase in the

summer months when children are out of school, and that many of these children return to school in the winter months. Still, workers are more likely to be behind in school, and hours spent studying are lower among children who work longer hours. Further, the econometric analysis suggests that both labor market entry and school drop-out are associated with negative shocks to household income and to the organization of families such as divorce.

A further literature of direct relevance to this paper considers the measurement of education and experience in analysis of returns to human capital. Lam and Levison (1992) find that the definition of the experience variable may have important effects on the variance in earnings for groups with low levels of experience.

Behrman and Birdsall (1983) evaluate the returns to the quality and to the quantity of schooling in Brazil. The authors assume that effective labor market experience begins at age 15, and find that deepening education (increasing quality) has a higher social rate of return than broadening schooling by increasing quantity. Eaton (1985) and Behrman and Birdsall (1985) show that the findings are sensitive to the measure of experience due to the prevalence of labor force participation among young people, and that the results on deepening versus broadening as a focus for investment in education are less clear. Behrman and Birdsall (1985) note that this finding, "...suggests that the standard definition of experience should not go unquestioned in settings where many children leave school well before the age of 15, but may or may not immediately begin full time work".

As a final point to this section, it is important to consider that the more policy-oriented literature includes a number of studies on developing countries that point to a fundamental difference between 'child work' and 'child labor'. The former includes work in the household and light work in the market, while the latter involves exploitation, health hazards, reduced access to schooling, and long-term scarring (Patrinos and Psacharopoulos, 1993; Salazar, 1992; Myers, 1991). While this distinction may appear more semantic than substantive, it provides a basic framework from which to analyze 'harmful' employment for young people. 'Harmful' may be related to many factors including the age of the child, health status, and hours worked. One indicator for classifying different types of work is the extent to which it prevents or hampers school attendance and educational attainment.

Data

The research combines cross-sectional and retrospective data in order to develop a comprehensive descriptive picture of the gender differentials in the basic variables that characterize the work of young people, their lifetime experience profiles, and gender differences in these issues. The data come from the *Encuesta Nacional de Empleo* (National Employment Survey - NES) and in particular the associated module called the *Encuesta Nacional de Educación, Capacitación y Empleo* (National Survey of Education, Training and Employment - NSETE). These

combined data produce an unusually rich source of quantitative information on the market work of young people.

The NES and the NSETE have been undertaken in Mexico at least every two years since 1988 by the *Instituto Nacional de Estadística, Geografía e Informática (INEGI)* and the *Secretaría del Trabajo y Previsión Social*. This research makes use of the 1995 NES-NSETE, undertaken during the second trimester of the year.[4] The NES-NSETE covers both the urban and rural areas of Mexico and includes approximately 110,000 individuals. The sample is divided into urbanized and less urbanized areas. The former include the major urban centers with 100,000 or more inhabitants as well as state capitals. The less urbanized areas are comprised of low density urban centers of 2500 to 99,999 inhabitants and rural areas. This has the unfortunate consequence that the results presented in this paper are not easily divided into rural and urban areas given that the low density urban centers are quite large. For this reason, the majority of the results are given at the national level with a dummy variable to indicate differences between the urbanized and less urbanized areas.

The NES includes information on educational attainment, demographic characteristics and family structure for all household residents. The survey also contains a household module that includes information on physical characteristics and ownership of the dwelling. The NES is one of the household-based, labor market surveys undertaken by INEGI and is used to develop indicators of employment and unemployment at the national level. As such, the main body of the survey includes a standard set of detailed questions on employment, unemployment and labor market withdrawal applied to all household residents aged 12 years and over. It also includes detailed information on time use in household work, market work and studying.

The NSETE includes detailed information on education and labor market histories. While it does not provide information on the labor force status of children below the age of 12, the NSETE does include retrospective questions on the age at which individuals undertook their first job and the age at which they left school. This retrospective data provides an interesting cohort-specific picture of the labor force participation and school attendance of both young children and youth. Further, the data on school drop-out are particularly interesting because they specifically refer to the age at leaving school. The information on age at first entry unfortunately does not specify what is considered as 'entry' or a 'first job' either in terms of hours worked or duration of the work. There are no specific instructions in the interviewers manual. The data also include a variety of questions related to labor

[4] The advantage of using a survey from the second trimester of the year is that it reflects labor force participation and domestic labor during the school year. The third and fourth trimesters include weeks of school vacation when both market and home-based work are more common. This implies that the second trimester figures on current activity rates are below the figures for having worked at any time during the year. See Knaul and Parker (1998) for a detailed analysis of the effects of seasonality on child and youth activity rates.

market experience. In addition to the standard variables (age and years of schooling) used to construct potential or traditional experience measures, there is information on the total number of months worked during the individual's lifetime.

Modelling Child and Youth Labor Force Participation Using a Human Capital Earnings Function

Firms and schools may be complementary sources of human capital. As Becker (1993) writes:

> Schools and firms are often substitute sources of particular skills. Some types of knowledge can be mastered better if simultaneously related to a practical problem; others require prolonged specialization...The development of certain skills requires both specialization and experience and can be had partly from schools and partly from firms. (pp. 51)

Still, for young children, school and work are likely to be competing activities. Schooling is a cumulative process and this suggests non-linearity in the relationship between education and training. Advancement in both education and the labor market is unlikely without an investment in education early in the life cycle.

The human capital model provides a framework for examining the effect of early entry into the labor force, as well as the tradeoff between working and attending school. Individuals invest in themselves through education and training that lead to increases in future earnings and non-monetary benefits. This investment is associated with both direct costs and time costs that arise due to the deferral of earnings and the possible reduction of a person's working life. A positive discount rate satisfies the condition that at the time in which the investment is undertaken, the present value of the income streams with and without the investment should be equal (Mincer, 1974; Becker, 1993).

The human capital earnings function summarized by Mincer (1974) differentiates between schooling and 'post'-schooling investments that may be referred to as training or on-the-job experience. The earnings function is of the following general form:

$$\text{Ln } E_j = \ln E_o + r_s s + r_k K \qquad (1)$$

where E are gross earnings, r_s is the return to years of schooling, s is the total amount of schooling, r_k is the return to post-school investment in training, and K is the cumulative amount of time spent in training. This function is used as the starting point for the analysis in this paper.

This equation is estimated empirically as a log linear function, a basic formulation commonly used in the literature. A quadratic term for years of experience incorporates diminishing returns in terms of the training that is received through labor market experience. The basic equation is of the following form:

$$\text{Log } Y_i = \beta_0 + \beta_1 s_i + \beta_2 e_i + \beta_3 e_i^2 + X'\beta + \mu_i \qquad (2)$$

where, for each individual i, log Y is the natural logarithm of earnings or wages at time t, e represents years of work experience, s is years of schooling and **X** is a matrix of control variables that may include personal, family background, and labor market characteristics.[5] The error term is represented by μ.

The analysis included in this paper makes use of several different specifications of the education and experience terms. The models are summarized in Table 1. In the absence of more detailed information on training and time actually spent in the labor force, the traditional measure of experience is given by the person's age less years of schooling less the age at which they began school (Model 1). For this research the age at potentially beginning school is set at 5.[6]

The traditional proxy for experience has several limitations. First, years of schooling is typically not available and number of grades successfully completed is used a proxy. This may lead to overestimates of the number of years of out-of-school experience when grade repetition is frequent and children start school as late as age 7 or 8 years.

A further limitation of the traditional measure is that it does not account for the fact that labor market attachment is not necessarily continuous. Part-time and temporary employment are prevalent, even among school-going children at the primary and secondary levels. These phenomena may be especially important in the context of a developing country and for women.[7] With sufficient information, the earnings equation may be specified in such a way as to allow for differences between early and late labor market experience, between in-school and out-of-school work, and the interaction of school and work at different stages of schooling.

Early entry into the labor force may be modeled in a number of different ways. The most simplistic involves reformulating the experience variable to be a measure of total work experience as opposed to out-of-school experience. This is equivalent to the person's age minus the age at which they started working (Model 2). One important limitation of this variable is that it is constructed under the assumption that labor force participation is continuous from age of first work until the age at school drop-out. . This specification also fails to account for unemployment and inactivity at other points

[5] This parabolic specification of the earnings function follows from modelling the pattern of investment in post-school training as linear and declining (Mincer, 1974; pp 83-6).

[6] While most studies use the age of 6 years, the data suggest that some adults began school at an earlier age.

[7] Even in the United States many teenagers work while they are in school (Steinberg, 1982; Finch et al., 1991).

in the life cycle. It is thus likely to overstate years of experience while in school. Knaul and Parker (1998) and Flórez, Knaul and Méndez (1995) show that there is a great deal of short-run discontinuity in the labor force participation of children and youth. Further, many young people work only during school vacations and rates of child and youth labor force participation may double during these periods.

Another formulation (Model 3), and the one preferred for this analysis is the total time spent working during the individual's life. The information is derived from a question that explicitly asks about the total number of months that the respondent has worked during their lifetime. This formulation of the experience measure should provide the most accurate information as it includes part-time and in-school work, undertaken at any time of the life cycle. Further, it excludes labor market absences be they of short or long duration. Finally, it also accounts for late entry into the labor force, which is particularly common among women. Still, this variable is likely to suffer from recall error and without longitudinal data it is very difficult to judge either the nature or the magnitude of the bias.

Allowing education to vary with early experience is a more realistic approach to the analysis of returns to investments in human capital and has important implications for policy. Work competes for children's time and may reduce the number of hours that can be spent in school and studying. On the other hand, it may also be a complement to schooling if the schedule is not onerous and depending on the age of the child. Under either scenario, combining the two activities provides a return to a year of school and a return to a year of training, but each individual return is less than when the young person specializes in either one of the activities. The combination of the returns may or may not exceed the individual return.

Models 4 and 5 explicitly account for the combination of school and work in terms of in-school experience. The first model includes a linear term for potential in-school experience below age 18. This is defined as the difference between the age at entry into the labor force and the age at school drop-out. The coefficient on this term is expected to be negative as the young person is unlikely to spend as much time in school or at work as on either activity if undertaken individually. One important limitation of this variable is that, as in the measure of experience based on age at entry into the labor force, it is constructed under the assumption that labor force participation is continuous from age of first work until the age at school drop-out. This is likely to overstate the quantity of in-school experience, and perhaps dilute the returns as they are assigned to a greater number of years.

Model 5 allows for non-linearity in the returns to schooling. Education is modeled using a step function with a dummy variable for primary, junior high school, high school and university education. Five interaction terms are added to indicate individuals who: combined work and primary school, and then dropped out of school during or after primary; combined work and primary school, and continued on to junior high school; worked during junior high school and went on to high school; worked during junior high and then dropped out of school; and, combined work with time spent studying in high school. The inclusion of these five dummy variables provided a

complete system for differentiating between combining work and school at different levels of the educational cycle, and dropping out of school at different points in the cycle. The underlying assumption in the system is that once a child enters the labor force they continue to work at all later phases of the educational cycle.

A series of caveats regarding the econometric analysis are in order. A serious issue is that the model does not account for unpaid work in ones' own family home. This biases the analysis, in terms of time use, particularly with respect to females. This issue is dealt with in more detail in Knaul (1998).

Another difficulty with the regression analysis presented below, is that the age at entry into the labor force is an endogenous variable. The choice of the age of entry and educational attainment may be determined by the expected wages or payoff to early entry. Lacking adequate instruments to address these problems, the empirical analysis assumes that both variables may be treated as exogenous.

The cross-sectional nature of the data makes it difficult to control for individual heterogeneity. One does not know what the effect of working as a child would have been on the people who did not undertake these activities, or what the adult wage would have been for the working children if they had not worked.[8] These issues are dealt with in greater detail in Knaul and Parker (1998) using longitudinal data.

The empirical analysis is organized around the five models described above and presented in Table 1. The means and standard deviations of the variables are given in Table 2. The following section provides a descriptive overview of some of the key variables related to labor market entry and school drop-out (Tables 3-8). The econometric analysis that follows includes the results from the first three models varying the experience measure(Table 9, Figure 3), and then considers the last two models focussing on the impact of in-school work experience (Table 10 and 11, Figures 4 and 5).

The regressions all include a dummy variable to indicate whether the person is living in one of the large urban areas, or in the less urbanized parts of the country. Further, the regressions are all calculated using 'total hourly earnings' as the dependent variable. Earnings include wages and income of all workers, be they salaried or independent. The variables exclusively reflects monetary earnings from the primary job, as in-kind and secondary salaries are not reported.[9] Hours are based on the week

[8] Under some scenarios, there may be upward bias in the estimation of the coefficients that measure early work experience. This would imply that early entry would appear to have a more positive (or a less negative) effect on earnings than is actually the case. This would be true if the children who entered the labor force were those who would be most likely to benefit from the early experience, possibly in the sense of being physically able to combine work and school. Selectivity may also operate in the opposite manner, leading to overestimation of the negative effect of early entry into the labor force on the 'average' child, both because of the type of work undertaken and the condition of the children who are found to be working. It may be that the only children who begin working at an early age are those who come from households in extreme hardship, come from 'abusive' families, or do not succeed at school for reasons such as having an inadequate diet.

[9] The analysis is limited by the use of hourly earned income. First, salaried and non-salaried

prior to the survey. Each regression is done separately for males and females. The sample is restricted to adults between the ages of 18 and 59.

Selection bias is potentially an important problem with both the wage and earnings equations, especially for women. Among males, approximately 72% are economically active and earning a positive wage, while for females the figure is 34%.[10] In order to correct for this source of bias, the results for the OLS models are compared to results using a full information maximum likelihood version of the Heckman selection correction (Heckman, 1979).[11] The probit equations are identified using a series of variables describing the physical characteristics of the home as a proxy for wealth. These variables are excluded from the earnings and wage functions. They are comprised of sets of dummy variables to indicate: the predominant building materials; the roofing materials; the flooring material; and, whether the home is lacking an interior bathroom, electricity, an interior sewage connection, or a telephone. Given the instability of sample selection models (Mroz, 1987; Falaris, 1995), and the fact that the data used for the analysis do not include more commonly used variables such as unearned income, the majority of the results are also presented using simple OLS equations. The text tables include only the regression coefficients for the wage functions, while the appendix tables provide the complete set of results of the sample selection models including the probit equation. The Heckman equations suggest the presence of significant sample selection bias for both males and females in all of the regressions. The inverse Mills ratio is consistently positive for males, and varies in sign for females.

Early Entry Into The Labor Force And School Drop-Out

The pattern of age at entry into the labor force among adult Mexicans that have ever worked suggests that a large proportion began to work at an early age (Table 3). For males, 30% first worked by the age of 11 while the figure for females is 15.6%.

It is also important to note that a large group of women began to work as adults. Approximately 23.4% of females who have ever worked entered the labor

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income earners are grouped together implying that the returns to physical capital may be included in the returns to human capital for business owners. Further, the use of hourly wages masks to some extent the reduced earnings that come as a result of only being able to work part-time. Finally, the exclusion of in-kind wages may generate a bias that is particularly strong for females as a large proportion work as domestic servants and part of their salary in paid in room and board. See Knaul (1995) for a detailed analysis of the differences in returns to human capital using a variety of measures of wages and earnings.

[10] The figure of 34% coincides with census data and published analyses of levels of female labor force participation in the urban areas (Valdés et al, 1995).

[11] The Heckman procedure is performed using full maximum likelihood techniques with corrected standard errors.

force after age 20, as compared to 10.7% of males. Further, 30.5% of women report never having worked, as compared to only 3.6% of males (Table 4).

The trends in age at entry into the labor force suggest important changes over time and by cohort. Consistent with patterns that have been observed in other Latin American countries and in the developed world, the prevalence of market-based child labor in Mexico shows a long-run tendency to decline (Table 4). While 12.8% of males over the age of 60 began work before the age of 8, the figure is only 4.8% among 18 to 39 year olds. For women, the rates are 4.8% and 1.6%. The same tendencies are evident in the proportions of adults who began to work between the ages of 8 and 11, or 12 and 15.

Among youth aged 12 to 17, the age at entry into the labor force is higher than for older cohorts. Still, a large proportion of youth first worked at a much younger age. Among males aged 12 to 17, 21.3% worked before the age of 11 and 43.3% before age 15. For females the rates are 7.6% and 20.8%, respectively. By contrast, the proportion of children and youth who are currently working is much lower. Among males aged 12 to 17, 28.3% are working as compared to 14.9% of females. The differences between the proportion of 12 to 17 year olds who are working and the proportion who at some point worked, suggests the importance of part-time, sporadic and seasonal work in child and youth labor force employment.[12] Further, the higher rates of ever having worked imply that the dimension of the phenomenon of child labor increases by 30-50% as compared to the figures using cross-sectional data.

Coincident with the finding of higher rates of child and youth employment in the rural areas, the retrospective data also show an earlier age at entry into the labor force among adults who are currently living in less urbanized areas of Mexico (Table 5). The pattern of consistent decline across cohorts in the proportion of people who began work at a young age holds across the division between more and less urbanized areas. Still, the decline appears to be more pronounced among adults living in the urbanized areas.

The distribution of the age at school drop out shows that a large proportion of adults left school at an early age. By age 11, 27% had abandoned the school system, as compared to 58% by age 14 (Table 6). The proportion of children who drop out of school is slightly higher among females.

As in the case of age at entry into the labor force, important changes in age at school drop out are evident over time. The age at dropping out of school has increased steadily and substantially among both women and men according to retrospective data (Figure 1). While almost 55% of adult males over the age of 60 report having dropped out of school before the age of 11, this is the case for only 15% of those aged 18 to 39. For females the figures are 54% and 18%. As expected, early school drop out appears to have been, and to continue to be, more common in the rural areas.

[12] These findings are reinforced by the much higher rates of child and youth labor force participation over time using panel data as compared to cross-sectional figures. Knaul and Parker (1998) show that the proportion of youth who work during at least one quarter of the year is substantially higher than the proportion who work throughout the year.

As noted above, several studies have highlighted that while the proportion of working children and youth who attend school is consistently lower than among non-workers, it is still relatively large (Levison, 1991; Knaul, 1995). The data for Mexico is consistent with this pattern (Figure 2). The rates of school attendance are particularly high among primary school age working children in both the rural and urban areas. The gap between workers and non-workers is much more evident by the secondary level, although even at this level more than 40% of rural workers and over 50% of urban workers, attend school. This suggests that while both early school drop-out and early age at entry into the labor force are becoming less frequent, this is not necessarily coincident with an end to child and youth labor force participation. Rather, many youngsters currently combine work with school, particularly at the secondary school level. This finding concurs with recent work by Abler, Rodríguez and Robles (1998).

The proportion of economically inactive (non-working) young people who attend school is slightly higher among boys than among girls aged 12 to 17 (Figure 2). For many of these young women, economic inactivity is likely to be synonymous with undertaking home-based domestic work. These gender differentials may thus point to a group of young women who invest large amounts of time in household chores at the expense of school attendance. These results highlight the importance of accounting for household work in addition to market-based activities in evaluating the impact of the work undertaken by children and youth (Knaul, 1995; Knaul and Parker, 1997; Knaul, 1998; Flórez, Knaul and Méndez, 1995).

Although a large proportion of working children are currently attending school, there is a strong correlation between age at entry into the labor force and age at school drop out among Mexican adults (Table 7). The age at school drop-out rises steadily with the age of first work for both males and females. This finding is likely to reflect a cohort effect related to factors such as improvements in school supply, or possible changes in the compatibility between child work and schooling. It also supports the hypothesis that devoting time to work has a negative impact on educational attainment.

The prevalence of discontinuities in labor force participation, the combination of work and schooling, and the variance in the age at entry into the labor force, are reflected in differences, particularly with respect to gender, in the experience measures (Table 8). For both males and females, the traditional measure of experience is higher than the calculations based on age at first work. The latter is, in turn, higher than the measure from total time spent working during the lifetime. For females, however, the differences are significantly more pronounced than for males. For the group of working and inactive women, the traditional measure gives a figure of 21.7 years of work experience on average, as compared to 11.9 years using age at first work and 8.2 years using total lifetime years worked. The decline is similarly large for female labor force participants.

The descriptive data presented in this section underscore the importance of considering the effect of early work experience on adult labor market outcomes both

directly in terms of experience accrued, as well as in terms of the cost via lost schooling. Further, the gender differences in labor market insertion and continuity are reflected in the measures of experience and suggest the importance of incorporating more complete experience measures in analyses of returns to human capital.

Human Capital Earnings Functions Varying The Experience Measure And Incorporating The Effect Of Combining School And Work

In accord with the descriptive data presented above, the human capital earnings functions are sensitive to changes in the experience measures (Tables 9a and 9b). The regressions for males are somewhat more stable. For females, however, the returns to experience vary substantially across the measures and the returns to education increase using the 'total lifetime' measure of experience. It is also important to note that the results differ substantially between the OLS regressions (Table 9b) and the regressions corrected for sample selection (Table 9a), especially in the case of women. For men, the returns continue to be relatively stable across the experience measures, yet the OLS measures give higher linear terms on the experience measure and more curvature. For women using the OLS as compared to the sample corrected regressions, the returns to education are lower using the 'total lifetime' measure of experience and the differences in the returns to experience are much less pronounced. Still, the 'total lifetime' experience measure does produce a slightly steeper profile. Further, the explained variation (R^2) is slightly lower for the 'total lifetime' experience measures as compared to the 'traditional' formulation of the experience variable, and slightly higher than using the 'age since first work' measure. This is true of both the OLS and sample selection corrected regressions. Still, the t-statistics suggest that the returns are more precisely measured using the 'total lifetime' measure, particularly in the case of the sample selection corrected models.

The experience-earning profiles that correspond to the sample selection corrected regressions in Table 9a are presented, by gender, in panels A and B of Figure 3.[13] The male profile changes little when the experience measure is varied. Still, both the 'age since first worked' and the 'total lifetime' profiles are below and to the left of the model using a 'traditional' model of experience with slightly higher intercepts. For females, the differences are much more pronounced. The profile using 'traditional' experience is high and peaks very late in the life cycle. By contrast, the profile using 'age at first work' is lower and flatter with a peak at approximately age 40. The profile using the 'total lifetime' experience measure is high and displays much more curvature with a peak near to age 25.

These results may reflect the fact that the total lifetime measure includes only

[13] The axis on these profiles is given in terms of years of completed experience instead of age. The profiles are calculated using the constant terms as well as the average levels of the education, rural residence and sample selection terms for each of male and female earners, respectively.

returns to labor market experience, and excludes the returns to age or maturity. Another way of thinking of this result is that the returns to total lifetime experience are generally higher at the beginning of the life cycle because each year corresponds a real increment in labor market experience. The returns to experience based on 'age since first worked' and 'total years during life' differ from the returns to the traditional measure for several reasons. Both measures of experience include work undertaken while a person was attending school. The return to these years of experience is likely to be lower than to a year of full-time work. Further, these experience measures, unlike the 'traditional' formulation, do not count grade repetition, variation in the year a child enters the school system, and late entry into the labor force as experience. The measure based on 'total years worked during lifetime' excludes unemployment and years spent out of the labor force. These periods of time are counted as experience in both the 'traditional' and 'age since first worked measures', and the calculated returns for these periods should be lower as they only reflect the accumulation of age not labor market experience.

The corresponding experience-earnings profiles using the OLS regressions are given in panels C and D of Figure 3.[14] These profiles, and the differences between them, are less pronounced than the results from the regressions with a correction for sample selection, but have the same general shapes. For both males and females, the profiles using the total lifetime experience measure are again higher at the beginning of the life cycle and thus have with an earlier peak..

It is also important to note that the both the OLS and sample selection profiles for women often exceed those of men, with intercepts that are comparable or higher in some cases. This finding coincides with earlier research summarized in Parker (1995) and Parker and Knaul (1997), and using similar data from the National Urban Employment Surveys, that suggests that wages for males and females are comparable after controlling for differences in education and experience. These studies find little evidence of a measurable gender gap or of market wage discrimination.

The differences in the returns to experience for females using the sample selection corrected models, as compared to the OLS, are difficult to interpret and in part reflect the sensitivity of the econometric model. The instability of the correction is particularly worrisome given that, in the absence of other identifying variables, the model is driven by the variables on the physical characteristics of the home.

The last two models explicitly consider the time spent working while in school. The combination of school and work is likely to reduce both the returns to school and the returns to experience. Less time is spent on each year of education or work and this could imply a reduction in the value of the schooling and experience that is attained. The net effect may be either positive or negative, as although the returns to each individual activity are likely to decline, the young person has two part-time returns and there may be either complementarities or substitution between the two activities.

[14] The axis on these profiles is also given in terms of years of completed experience instead of age. The profiles are calculated using the constant terms as well as the average levels of the education and rural residence for each of male and female earners, respectively.

The regressions using Model 4 (including a variable that approximates the number of years of primary and secondary, in-school, work experience between ages 5 and 17) are consistent with the interpretation above regarding reducing the time spent on each individual activity (Tables 10a and 10b). For both males and females, the coefficient on years of in-school work experience is negative and significant for the selection corrected and the OLS regressions. For males the coefficient is –2.4%, while for females it is –2.7% using the selection corrected equations (Table 10a). The returns to experience and to education tend to be slightly higher than in the regressions using only the linear and quadratic experience terms.

The models used in this research assume that a young person may spend any year of their life either at school, at work or doing both activities. One way of evaluating the effects of in-school work experience on earnings and wages is then to consider a time-use earnings profile. The complete profiles under different scenarios are presented for males and females in Figure 4 using the selection corrected earnings equations. The returns to six possible combinations of school and work are given. The first profile refers to a person who did not attend school and worked from the age of 5 years. The next three profiles refer to combinations of schooling, in-school and out-of-school experience. In each case it is necessary to assign a, somewhat arbitrary, adult-experience equivalent which in these profiles is the same as a full year of experience. The second line refers to a person who completed high school (12 years of education), worked during the last 6 years of school, and then dropped out and entered the labor force. The third profile corresponds to a person who has 12 years of education, worked through their entire school career, and gained 12 years of work experience. The next line describes a person who combined school and work during primary school, then dropped out of school. The last line considers the case of a person who completed primary and high school and then dropped out to work..[15]

The most striking result is the difference between the profile of the drop-out as compared to young people who remain in school. In all of the graphs, the profile for the person who never went to school is everywhere substantially below the other profiles and peaks earlier on. The person with only primary school does better, but still substantially worse than those who are able to remain in school. Even the person who works during high school has a profile generally below the profile for those who only went to school. In this latter case, the present value of the returns to the additional years of work experience must be compared to the higher but shorter profile for those who did not work while in school. These findings suggest that the returns to additional schooling quickly outweigh any benefits to dropping out of school, even when if drop-out occurs toward the end of secondary school.

The female profiles differ from the male profiles. Combining school and work produces profiles that are higher for females, especially around the middle of the life cycle, but peak slightly earlier. These findings suggest that the high returns to education for females are an important key to explaining the low gender wage gaps.

[15] Note that the profiles are shifted to the right for individuals who start working later in life as the axis refers to years of experience.

Still, these results are likely to again be very sensitive to the use of the sample selection procedure.

The next set of regressions seek to model the fact that the combination of work and school may have different effects depending on the stage of schooling, the probability of proceeding to a higher level, and the type of work that is undertaken (Table 11). For example, the costs of combining primary school with work may be higher because of the age of the child. Yet, higher levels of schooling may be more challenging and leave less time for the additional pressures of working.

There are five interaction terms in these regressions that refer to the stage at which work was combined with school: the first for individuals who worked during primary school and did not go on to secondary school; the second for those who combined school and work at the primary level and went on to complete secondary education; the third includes those who did at least some secondary education, worked while they were in secondary school and then dropped out:; the fourth for those who worked beginning in junior high school and went on to high school; and the last indicating individuals who began work during high school. The signs on these coefficients are all negative and significant, except the coefficient on working only during high school for males. The pattern of negative coefficients coincides with the hypothesis that each of schooling and work become part-time activities.

The fact that the coefficients on the interaction terms are much larger for females, even at the level of high school, suggests that there are important gender differences in the implications of combining school and work. Specifically, the penalties are more severe for females.

The return to experience and the return to education at each level are summarized in figure 5 for males and females. The first bar refers to individuals who combined primary school and work and did not continue to secondary. The second includes those who went to primary school without working and did not go on to secondary school. The third and fourth bars refer to the individuals who combine work and school at the level of junior high, in the first case also combining primary and work. The fifth bar summarizes the returns to those who did not work during primary or junior high school. The sixth, seventh and eighth columns summarize the returns for individuals who completed high school and worked from primary through to high school, during junior high and high school, or only during high school respectively. The last column refers to those who completed high school and did not work. The overall returns to experience are added to the net returns to education and in-school work to represent the total return to the investment of time in school and work. In order to calculate the return to work experience, it is necessary to make assumptions about the adult-equivalent of part-time experience. The calculations assume that children who begin to work between ages 5 and 11, work half of the period, or on average 3 years. Those who began to work during primary school and continued on to junior high school and high school are assumed to gather the equivalent of 9 years of full-time labor market experience, and in the case of those who worked during junior high and

high school 4.5 years. Individuals who began work during high school are assumed to have 1.5 years of full-time equivalent experience.

The first result to note from the figures is that, coincident with the findings presented above using Model 4, dropping out of school to work never provides a higher short-run return than continuing in school. Further, as in the earlier figures, the profiles for females are slightly higher than for males.

Another key finding is that for women, the penalties for combining school and work or for dropping out of school are not compensated by the returns to experience. For males the total returns to combining work and school may sometimes exceed those of devoting youth time exclusively to schooling. This suggests some complementarity between the schooling and work undertaken by males. In contrast, for females the bars for combining work and schooling tend to be lower than those for specializing in school. This implies that the returns to combining education and work are lower than the returns to concentrating on schooling.

There appears to be a higher penalty for women to early work experience. This may reflect a lack of complementarity between jobs that are more likely to be undertaken by young women and schooling, as well as the low returns to accumulating experience in certain types of work.. The skills that are attained by women who enter the labor market at an early age may not be transferable to other jobs, and young women who begin in these occupations may find it difficult to look for and be accepted in other types of work.. Early entry into the labor force may also have a long-run negative impact on young women's health and ability to function in the labor market, and this may exceed the average impact on males. These gender differences could also reflect more of a supply-side problem related to the ways in which families invest in children's time. Another explanation relates to selection. It is possible that the women who begin to work at an early age are those who are less likely to do well in school. These alternate explanations require further research, and in particular additional information on the gender differentials in the occupational distribution of young workers and their progression through the labor market.

Conclusions

This paper highlights the differences in returns to experience that are associated with labor force participation at different stages of the life cycle. Both work during childhood and as a youth, as well as in-school work experience, affect adult earnings in ways that differ from later on-the-job experience. In addition, grade repetition, age at entry into schooling, unemployment and late entry into the labor force can have important effects on the measure of experience.

The results point to several priorities for future research. First, the differences in the traditional, age since first worked, and total lifetime experience measures for females imply that there are important gender differentials in terms of late entry into the labor force, labor market exit and entry and possibly unemployment. These

differentials reflect the life-cycle patterns of female labor force participation and affect the analysis of returns to the accumulation of human capital. As suggested in Psacharopoulos and Tzannatos (1992 and 1992a) additional research is required, both at the level of the participation decision and more specific analysis by sectors and occupations. Further, these patterns have been changing over time in Mexico, it will be important to undertake cohort-specific research. Future research should also focus on differentiating between the effect of age as compared to labor market experience in earnings equations, and using alternative data bases to better identify the effects of sample selection.

The relationship between working and attending school is complex and deserves further attention. Work might induce drop-out, or quite the opposite, it might provide a positive impetus to remaining in school, particularly for youth. Further, the work of children and youth is very heterogeneous in terms of hours worked, job content, age at entering the labor force, and continuity between school and summer months. These differences are likely to have an important impact on the degree of compatibility with school attendance and progress in school (Knaul and Parker, 1998). This suggests that it will be necessary to consider the effects of different types of work, or the intensity of work on educational attainment and later earnings.

It will be important to disentangle the effects of poverty versus early entry in the labor force on adult earnings. While often correlated, the relationship is not one-to-one. There is a relatively large group of poor children who do not work, and at the same time another group of relatively wealthy young people that are working. Still, the issue of selectivity into child labor, meaning that either the poorest or least capable students enter the labor force, may actually drive many of the results presented in this paper. It is probable that children from the poorest families are those that are more likely to have to work. Hazardous forms of child and youth labor may be concentrated among certain groups and most notably the offspring of poor families. School drop-out, and later labor market success, could be a function either of the family's need for income or of the type of jobs that are open to poor children. This implies that the negative effects of early labor force participation may not be evident from comparing workers to non-workers, but rather rest on the unequal distribution of this work across children based on poverty, age and perhaps on gender. This reinforces the importance of undertaking research on the differences in the nature of work across the various occupations more common among children and youth. The analysis of these effects will require both longitudinal data and information on family background that are not available in the data sets used in this paper.

The results presented in this paper point to important differences between males and females in terms of the returns to education and experience, as well as the effect of early experience on earnings. The returns to experience are lower for women, and the penalties for combining school and work are more severe. While there is evidence of complementarity between youth work and educational among males, for females the returns to combining work and school tend to be lower than devoting time only to schooling. It may be that the types of jobs that are open to young women,

particularly in the wage sector, are of the type that offer little room for advancement or progression in schooling. One obvious case to study is the situation of domestic servants. Available evidence on domestic service suggests that the women are often quite young, work long hours and have few opportunities to attend school and that they play an important role in explaining the differences in the returns to education and experience by gender (Tenjo, 1992 and 1993; UNICEF, 1997; Knaul and Parker, 1997; Knaul, 1995).

The findings of the paper suggest that there are positive returns to early labor market experience, but that these depend on continued progression through the school system. The earnings profiles for school drop-outs are substantially lower than for those who stay in school. This is true of both the profiles for schooling combined with work, and to time dedicated entirely to schooling. The returns to early experience are substantially lower than the returns to education. As a result, the returns to additional schooling quickly outweigh any benefits to dropping out of school even when this occurs toward the end of secondary school. The results of this analysis suggest that the penalty to shortening the educational career substantially outweighs the returns to early experience.

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Table 1

An Overview of the Formulations of the Human Capital Earnings Model and Summary of the Advantages and Disadvantages of the Measures of Labor Market Experience and Education in Accounting for Early Labor Market Experience

MODELS	*EXPERIENCE MEASURE*	*ADVANTAGES AND DISADVANTAGES OF EXPERIENCE MEASURE*
1)Traditional measure of experience	'Age - number of completed grades of schooling-6'	Only out-of-school experience is measured and grade repetition is not counted
2) Age since first worked	Age - age at entry into labor force	Measures both out-of- and in-school experience; grade repetition resolved in measure of experience; no accounting for continuity in labor market
3) Total years worked in lifetime	The number of months the individual has spent working over the course of the lifetime divided by 12	Measures both out-of - and in-school experience; grade repetition no longer an issue in returns to experience; accounts for years out of labor force, unemployment and continuity in labor market
4) Total years worked in lifetime controlling for in-school experience	Total years worked in lifetime; and, years of work while undertaking primary and secondary school (ages 5 to 17)	Credits early experience; a year of school or work is each worth less than if done 'full-time' if either school or work is undertaken part-time.
5) Total years worked in lifetime allowing non-linearity in education and interactions between school and work	Total years worked in lifetime; and, dummies for work ages 5 to 11, 12 to 14, and 15 to 17 years interacted with the highest level of schooling attained; dummies for combining school and work at each level interacted with continuing on to the next level of schooling	Credits early experience; 'penalty' in terms of reduction in value of schooling depends on the highest level of education that is achieved as well as if school was reduced to part-time, (the pattern on the three terms is a test of the effect of work at different ages)

Table 2
Means and Standard Deviations of Dependent and Independent Variables

	All						*Positive Wage Earners*					
	Male		*Female*		*All*		*Male*		*Female*		*All*	
	Mean	*SD*	*Mean*	*SD*	*Mean*	*SD*	*Mean*	*SD*	*Mean*	*SD*	*Mean*	*SD*
Endogenous Variables												
Human Capital Variables												
Education												
Years of Education	9.01	4.969	8.192	4.647	8.581	4.810	8.945	4.968	9.361	4.820	9.089	4.921
Education Categories [1]												
Some or Completed Primary School	0.348	0.477	0.378	0.485	0.364	0.481	0.366	0.482	0.303	0.459	0.344	0.475
Some or Completed Jr. High School	0.140	0.121	0.204	0.403	0.216	0.412	0.241	0.428	0.263	0.403	0.228	0.420
Some or Completed High School	0.350	0.384	0.225	0.417	0.288	0.453	0.266	0.442	0.266	0.442	0.269	0.443
Some or Completed College Level Degree	0.235	0.403	0.136	0.343	0.169	0.374	0.195	0.396	0.193	0.394	0.194	0.396
Experience												
Traditional (Age - years of education - 5)												
Linear	29.368	14.244	20.695	13.573	23.160	13.429	29.425	12.545	18.598	12.445	20.763	12.541
Squared	558.287	635.463	612.595	671.667	586.764	659.907	574.521	623.929	506.749	585.265	549.045	611.838
Years since First Worked (age - age first worked)												
Linear	18.387	12.855	12.519	12.505	15.305	13.007	18.887	11.962	12.745	10.478	17.790	11.981
Squared	505.332	576.175	313.169	475.153	403.422	534.055	499.817	542.702	272.242	396.409	450.039	529.496
Total Years Worked during Life												
Linear	17.682	12.721	8.416	9.993	12.815	12.275	19.472	11.998	14.668	11.283	15.764	11.843
Squared	472.458	553.211	170.676	337.421	314.965	477.608	525.111	555.821	310.705	452.284	421.125	538.656
Years that Combined Studies and Work	1.787	3.013	0.795	2.607	1.270	2.589	1.843	3.046	1.078	2.594	1.589	2.860
Combinations of Work and Study by Categories												
Combined Work and Primary School, then dropped-out	0.129	0.335	0.055	0.227	0.090	0.286	0.134	0.340	0.056	0.230	0.102	0.302
Combined Work with Primary School, then passed to Jr. High Scho	0.034	0.182	0.010	0.098	0.021	0.144	0.036	0.186	0.011	0.105	0.027	0.163
Combined Work and Jr. High School, then dropped-out	0.055	0.229	0.029	0.169	0.042	0.200	0.060	0.238	0.031	0.172	0.050	0.218
Combined Work with Jr. High School, then passed to High School	0.024	0.152	0.014	0.117	0.020	0.140	0.025	0.155	0.017	0.127	0.020	0.140
Combined Work and High School	0.059	0.235	0.058	0.251	0.060	0.240	0.061	0.239	0.059	0.284	0.070	0.255

Table 2 (continued)
Means and Standard Deviations of Dependent and Independent Variables

	All						*Positive Wage Earners*					
	Male		*Female*		*All*		*Male*		*Female*		*All*	
	Mean	*SD*	*Mean*	*SD*	*Mean*	*SD*	*Mean*	*SD*	*Mean*	*SD*	*Mean*	*SD*
Independent Variables												
Labor Force Participation Variables												
Dummy variable urban (rural = 1)	0.173	0.378	0.169	0.375	0.171	0.376	0.164	0.370	0.165	0.369	0.142	0.354
Home Ownership [2]												
Owns home or lives on Mortgaged	0.780	0.414	0.785	0.411	0.782	0.413	0.760	0.427	0.779	0.415	0.767	0.423
Lives without Paying Rent or Other Arrangement	0.146	0.353	0.142	0.349	0.144	0.351	0.159	0.366	0.154	0.361	0.157	0.364
Overcrowding												
Number of rooms per resident	1.189	0.733	1.263	0.720	1.196	0.726	1.180	0.733	1.284	0.786	1.216	0.752
Number of bedrooms per resident	1.427	0.511	0.484	0.512	0.481	0.513	0.465	0.512	0.515	0.536	0.482	0.522
Income Characteristics												
Predominant Building Material												
Wood	0.069	0.253	0.063	0.243	0.066	0.248	0.074	0.261	0.062	0.241	0.070	0.254
Adobe (Mud Bricks)	0.070	0.255	0.066	0.248	0.068	0.251	0.064	0.245	0.052	0.223	0.060	0.238
Asbestos or Metallic Sheathing	0.004	0.063	0.003	0.054	0.004	0.061	0.004	0.062	0.003	0.052	0.003	0.059
Paper Board Sheathing	0.061	0.063	0.061	0.061	0.061	0.062	0.004	0.062	0.003	0.055	0.004	0.061
Other Building Material	0.065	0.247	0.065	0.068	0.065	0.070	0.005	0.072	0.003	0.055	0.004	0.067
Roofing Material [4]												
Palm Fronds or Wood	0.096	0.294	0.086	0.281	0.091	0.287	0.101	0.301	0.085	0.278	0.095	0.293
Asbestos or Metallic Sheathing	0.120	0.325	0.116	0.320	0.118	0.322	0.122	0.327	0.100	0.300	0.114	0.318
Paper Board Sheathing	0.038	0.191	0.036	0.185	0.037	0.188	0.039	0.193	0.031	0.172	0.036	0.186
Other Building Material	0.014	0.119	0.014	0.119	0.014	0.119	0.014	0.116	0.009	0.097	0.012	0.110
Flooring Material [5]												
Wood Tiles or other Covering Material	0.505	0.500	0.526	0.499	0.516	0.500	0.491	0.500	0.570	0.495	0.518	0.500
Earthen Floors	0.062	0.240	0.056	0.230	0.059	0.235	0.059	0.236	0.038	0.190	0.052	0.222
Does not have												
Interior Bathroom	0.056	0.230	0.051	0.220	0.053	0.225	0.054	0.226	0.030	0.171	0.046	0.209
Electricity	0.024	0.153	0.021	0.144	0.022	0.148	0.023	0.151	0.012	0.110	0.020	0.138
Interior Sewage Connection	0.134	0.352	0.135	0.342	0.140	0.347	0.142	0.349	0.089	0.285	0.124	0.330
Telephone Service	0.492	0.489	0.580	0.494	0.592	0.492	0.626	0.484	0.528	0.499	0.592	0.491
n	37,288		41,250		78,538		26,921		14,229		41,150	

[1] The excluded category was Zero Years of Education

[2] The excluded category was Renting dwelling

[3] The excluded category was Built of Brick, Concrete, Stone

[4] The excluded category was Concrete or Brick Roofing Material

[5] The excluded category was Cane, Concrete, Flooring Covering material

Table 3
Age First Worked by Gender (%)
Adults aged 18 to 59

Age first Worked	*Male*	*Female*	*All*
Less than 4	0.3	0.1	0.2
5 - 8	9.8	4.8	7.5
9 - 11	20.1	10.9	16.0
12 - 14	24.4	18.5	21.7
15 - 17	24.9	27.3	26.0
18 - 19	9.9	14.9	12.2
20 - 24	8.6	14.6	11.3
25 - 29	1.6	4.1	2.7
30 - 34	0.3	2.0	1.1
35 - 39	0.1	1.3	0.7
40 or more	0.1	1.5	0.7
Total %	100	100	100
n	35425	31371	66796

Source: ENECE, 1995.

Table 4

Distribution of Age at First Entry into the Labor Force

by Gender and Age Group

Actual Age	*Male*				*Female*			
	18-39	*40-59*	*60+*	*All*	*18-39*	*40-59*	*60+*	*All 18+*
Age First Worked								
4-7	4.8	9.7	12.8	7.9	1.6	3.6	4.8	2.5
8-11	19.3	31.1	42.7	25.4	8	11.7	14.2	9.8
12-15	32.5	31.7	28.4	31.8	19.9	18.7	14.3	18.9
16-17	16.9	10.2	6.5	13.9	14.9	9.2	5.1	12.2
18+	20.9	16.9	9.1	18.4	28	25.5	19.1	26.2
Never Worked	5.6	0.4	0.4	3.6	27.7	31.3	42.5	30.5
Total %	100	100	100	100	100	100	100	100

Source: ENECE, 1995

Notes: 1/ Using Expansion Factors

Table 5

Distribution of Age at First Entry into the Labor Force
by Gender Age Group and Residence

	Less Urbanized Areas[2/]				*Urbanized Areas*			
Actual Age	*18-39*	*40-59*	*60+*	*All*	*18-39*	*40-59*	*60+*	*All*
Age First Worked								
Male								
4-7	6.6	11.9	13.8	9.2	3.1	7.0	11.1	4.8
8-11	27.8	38.7	50.7	34.3	11.2	21.78	29.6	15.6
12-15	35.8	30.9	26.1	32.9	29.4	32.7	32.2	30.5
16-17	12.1	6.9	4.0	9.4	21.5	14.4	10.6	18.7
18+	13.8	11.2	4.8	11.7	27.6	24.0	16.4	25.6
Never Worked	4.0	0.5	0.5	2.5	7.2	0.2	0.2	4.8
Total %	100	100	100	100	100	100	100	100
Female	*18-39*	*40-59*	*60+*	*All*	*18-39*	*40-59*	*60+*	*All*
4-7	2.2	4.3	5.1	3.1	1.1	2.9	4.4	1.9
8-11	10.4	13.1	17.3	12.1	5.6	10.2	10.1	7.3
12-15	19.0	15.7	12.6	17.2	20.7	22.0	16.5	20.6
16-17	10.5	5.8	2.9	8.2	19.2	12.9	8.1	16.3
18+	21.4	18.9	15.0	19.8	34.5	32.7	24.2	32.9
Never Worked	36.6	42.3	47.1	39.6	19.0	19.3	36.5	21.0
Total %	100	100	100	100	100	100	100	100

Source: ENECE, 1995

Notes: [1/] Using Expansion Factors

[2/] 100,000 or fewer inhabitants

[*/] less than 30 cases

Table 6
Age at Dropping Out of School by Gender (%)
Adults aged 18 to 59

Age at Drop-out	*Male*	*Female*	*All*
Less than 4	0.3	0.4	0.4
5 - 8	5.8	6.2	6.0
9 - 11	19.4	22.0	20.7
12 - 14	30.6	31.0	30.8
15 - 17	21.7	20.6	21.2
18 - 19	7.4	8.8	8.1
20 - 24	10.2	8.0	9.1
25 or more	4.7	3.0	3.9
Total %	100	100	100
n	38106	41677	79783

Source: ENECE, 1995.

Table 7

Age at School Drop Out by Age First Worked and Gender

Adults aged 18 to 59

Age at First Worked	*Age at Drop out*					
	Male			*Female*		
	Mean	*Median*	*Std. Dev.*	*Mean*	*Median*	*Std. Dev.*
Less than 4	10.8	10	7.2	16.8	11	9.4
5 - 8	13.3	12	6.1	12.2	11	6.2
9 - 11	12.9	11	5.1	12.1	11	4.7
12 - 14	13.8	13	4.5	13.0	12	4.3
15 -17	15.6	15	4.3	15.2	15	4.2
18 - 19	17.4	18	4.5	16.9	17	4.2
20 - 24	20.6	21	4.5	18.1	19	4.9
25 - 29	23.7	25	4.9	17.4	15	6.5
30 - 34	25.5	28	8.0	14.9	13	6.9
35 - 39	27.1	33	10.5	14.3	13	6.5
40 or more	29.1	32	13.4	12.8	11	6.9

Source: ENECE, 1995.

Table 8

Mean and Median Level of Experience by Gender
Adults aged 18 to 59

	Male		*Female*	
	All	*Wage Earners*	*All*	*Wage Earners*
Traditional				
Mean	20.8	21.6	21.7	19.6
Median	18	19	20	12.7
Std. Dev.	(13.2)	(12.5)	(13.6)	(12.4)
Years Since First Worked				
Mean	19.2	20.2	11.9	15
Median	17	18	8	12
Std. Dev.	(12.9)	(12.0)	(12.5)	(11.3)
Total Years Worked During Life				
Mean	18.6	19.7	8.2	13.2
Median	16.5	18	4	10
Std. Dev.	(12.7)	(12.0)	(10.0)	(10.5)
n	37288	26921	41288	14229

Source: ENECE, 1995.

Table 9a

Returns to Human Capital Varying the Measurement of Experience by Gender, Ages 18 to 59, Urban Areas, 1995. Using Sample Section Correction1\

Dependent Variable: Hourly Earnings

Independent Variables: Experience Measures	*Men* *Traditional* *(Age - education -5)*	*Years since first worked* *(Age - age first worked)*	*Total Years During Life*	*Women* *Traditional* *(Age - education -5)*	*Years since first worked* *(Age - age first worked)*	*Total Years During Life*
Experience						
Linear	0.0547	0.0562	0.0577	0.0252	0.0230	0.0889
	(19.19)	(16.83)	(18.27)	(10.05)	(4.06)	(12.07)
Squared	-0.0008	-0.0009	-0.0010	-0.0002	-0.0003	-0.0016
	(14.41)	(13.32)	(14.63)	(3.19)	(2.52)	(12.00)
Years of Education	0.0995	0.0864	0.0869	0.0855	0.0814	0.1107
	(87.47)	(82.31)	(82.61)	(22.14)	(22.43)	(30.90)
Dummy: Rural / Urban Area (Rural=1)	-0.3112	-0.3364	-0.3448	-0.0917	-0.1821	-0.2691
	(22.63)	(23.24)	(23.76)	(3.32)	(8.42)	(12.45)
Constant	0.1229	0.2870	0.2696	1.3156	1.0178	-0.5302
	(2.28)	(5.24)	(5.11)	(8.31)	(5.82)	(3.21)
Inverse Mills Ratio	0.4515	0.4828	0.5240	-0.7064	-0.2313	0.6625
	(7.77)	(7.55)	(8.46)	(6.41)	(2.18)	(7.25)
Adjusted R^2	0.2982	0.2929	0.2938	0.3083	0.2948	0.3022
F Statistic	2288.46	2230.78	2240.91	1269.09	1190.39	1233.11
n	37288	37288	37288	41250	41250	41250

Source: ENE and ENECE 1995.

Notes: 1. The correction uses full information maximum likelihood and the standard errors are White heteroskedasticity corrected using LIMDEP.

Table 9b
Returns to Human Capital Varying the Measurement of Experience
By Gender, Ages 18 to 59, 1995.
Using OLS[a]

Dependent Variable: Hourly Earnings

Independent Variables Experience Measures	*Men* *Traditional* (Age - education -5)	*Years since first worked* (Age - age first worked)	*Total Years During Life*	*Women* *Traditional* (Age - education -5)	*Years since first worked* (Age - age first worked)	*Total Years During Life*
Experience:						
Linear	0.0355	0.0334	0.0339	0.0358	0.0349	0.0402
	(25.63)	(24.58)	(25.22)	(20.01)	(19.72)	(21.47)
Squared	-0.0004	-0.0005	-0.0005	-0.0004	-0.0006	-0.0007
	(14.59)	(11.52)	(15.00)	(10.31)	(12.02)	(13.85)
Years of Education	0.0983	0.0874	0.0874	0.1075	0.0888	0.0871
	(90.05)	(86.63)	(86.72)	(74.55)	(69.17)	(37.31)
Dummy Rural / Urban Area (Rural=1)	-0.2755	-0.2897	-0.2940	-0.2099	-0.2057	-0.2147
	(18.75)	(19.61)	(19.96)	(9.41)	(9.06)	(9.48)
Constant	0.5093	0.6776	0.6889	0.3208	0.6384	0.6551
	(26.96)	(42.54)	(44.37)	(13.28)	(35.21)	(37.31)
Adjusted R^2	0.2965	0.2912	0.2917	0.3057	0.2946	0.2991
F Statistic	2837.01	2766.25	2772.69	1567.10	1486.36	1519.06
n	26921	26921	26921	14229	14229	14229

Source: ENE and ENFOR 1995

Notes: [a] The standard errors are calculated with the White heteroscedasticity correction using LIMDEP

Table 10a

Returns to Human Capital
Combinations of Work and Schooling by Gender
Using Heckman Sample Selection Correction[1]

Dependent Variable: Hourly Income

Independent Variables	*Men*		*Women*	
Measures of experience and combination of work and school	*Total Years Worked During Life*	*Total Years Worked and Work and Studies*	*Total Years Worked During Life*	*Total Years Worked and Work and Studies*
Total years worked during life				
Linear	0.0577	0.0661	0.0859	0.0952
	(18.27)	(19.17)	(12.62)	(13.23)
Squared	-0.0016	-0.0018	-0.0016	-0.0017
	(14.63)	(15.15)	(12.00)	(12.51)
Years of Education	0.0869	0.0923	0.1107	0.1158
	(82.61)	(83.28)	(30.90)	(30.56)
Years Combining Education and Work		-0.0236		-0.0273
		(13.89)		(7.98)
Dummy Rural / Urban Area	-0.3448	-0.3279	-0.2691	-0.2660
	(23.76)	(22.88)	(12.45)	(12.27)
Constant	0.2696	0.2367	-0.5302	-0.6418
	(5.11)	(4.51)	(3.21)	(3.86)
Inverse Mills Ratio	-0.5246	-0.5956	0.6625	0.7108
	(8.36)	(8.39)	(7.25)	(7.80)
Adjusted R^2	0.2938	0.2985	0.3622	0.3643
F Statistic	2230.91	1920.35	1233.11	1037.86
n	37258	37258	11250	11250

Source: LSL and ENEU, 1995

Notes: 1. The corrections uses full information maximum likelihood and the standard errors are White. Years of education corrected using UNIDEP

Table 16b
Returns to Human Capital
Including Combination of Work and Schooling
by Gender, Ages 18 -59, 1995.
Using OLS[1]

Dependent Variable: Hourly Earnings.

Independent Variables:	*Men*		*Women*	
Measures of experience and combination of work and school	*Total Years Worked During Life*	*Total Years Worked and Work and Studies*	*Total Years Worked During Life*	*Total Years Worked and Work and Studies*
Total years worked during life.				
Linear	0.0339	0.0369	0.0402	0.0416
	(75.2)	(27.13)	(21.47)	(22.04)
Squared	-0.0005	-0.0005	-0.0007	-0.0007
	(15.00)	(16.20)	(13.85)	(13.89)
Years of Education	0.0874	0.0923	0.0871	0.0890
	(86.72)	(85.60)	(37.31)	(69.05)
Years Combined Education and Work		-0.0213		-0.0143
		(12.94)		(5.42)
Dummy Rural / Urban Area (Rural=1)	-0.2940	-0.2806	-0.2147	-0.2113
	(19.90)	(19.01)	(9.48)	(9.35)
Constant	0.6889	0.6450	0.6551	0.6397
	(44.37)	(40.60)	(37.31)	(36.21)
Adjusted R^2	0.2917	0.2966	0.2991	0.3006
F Statistic	2772.69	2270.35	1519.00	1224.96
n	26,921	26,921	14,229	14,229

Source: ENE and ENECL 1995

Notes: [1] The standard errors are calculated with the White heteroscedasticity correction using LIMDEP.

Table 11
Returns to Human Capital
Combinations of Work and Schooling by Level and by Gender
Ages 18 to 59.
Using Heckman Sample Selection Correction1\

Dependent Variable: Hourly Earnings.

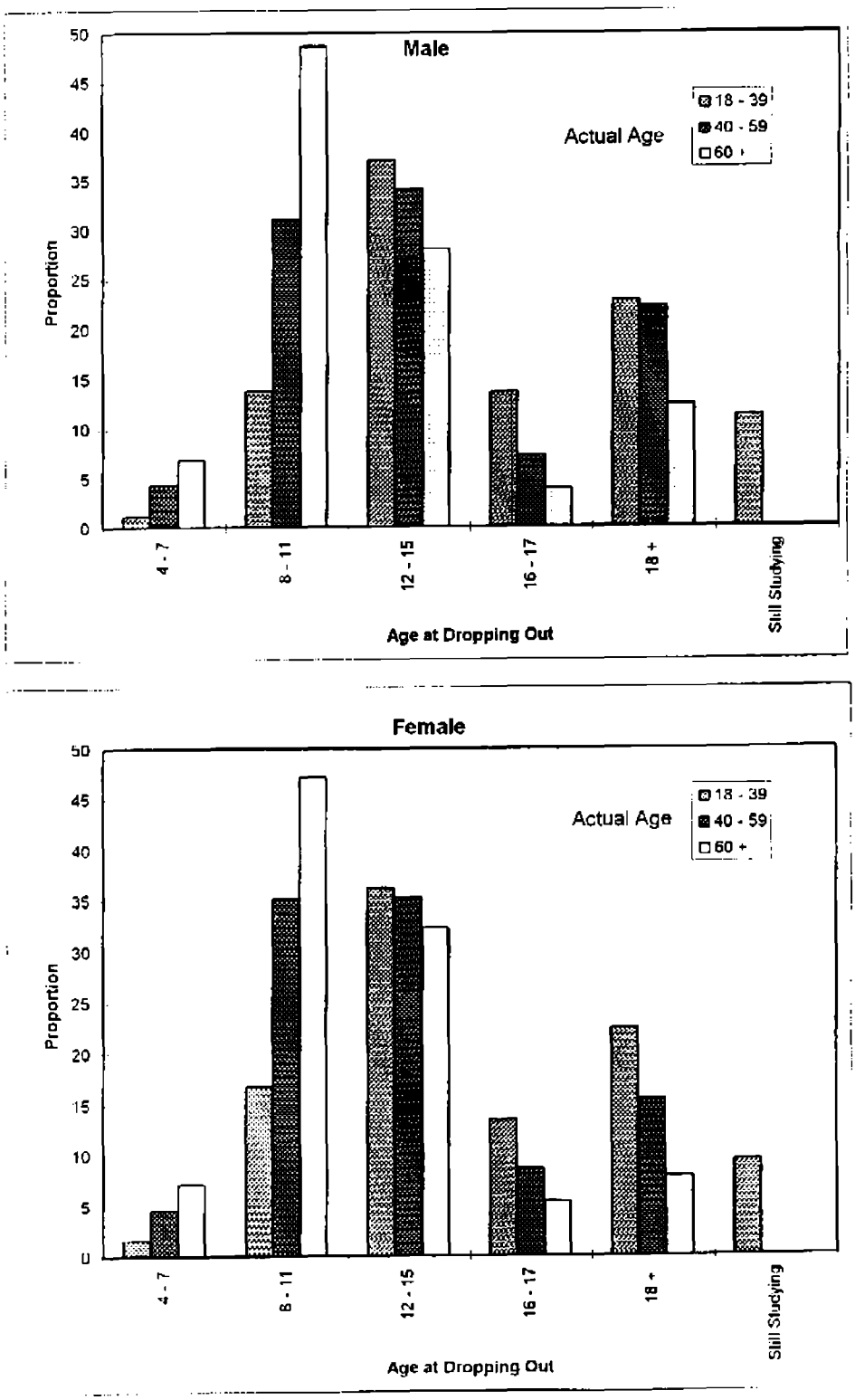
Independent Variables: Measures of experience and combination of work and school by level	*Males Total Years Worked, and Work and Studies by Level*	*Females Total Years Worked, and Work and Studies by Level*
Total years worked during life:		
Linear	0.0634	0.1009
	(18.79)	(13.02)
Squared	-0.0011	-0.0019
	(16.13)	(12.70)
Education Categories:		
Some or Completed Primary School	0.4451	0.4109
	(15.04)	(9.74)
Some or Completed Jr. High School	0.7025	0.7953
	(21.52)	(14.09)
Some or Completed High School	0.8441	1.2205
	(25.62)	(19.91)
Some or Completed College Level Degree	1.4466	1.7560
	(47.47)	(25.40)
Combination of Work-Study by Categories:		
Combined Work and Primary, then dropped-out	-0.0988	-0.2666
	(5.75)	(7.63)
Combined Work with Primary, went to Jr. High School	-0.2561	-0.4159
	(8.61)	(5.86)
Combined Work and Jr. High, then dropped-out	-0.0542	-0.2389
	(2.29)	(5.37)
Combined Work and Jr. High, then went to High School	-0.0904	-0.4416
	(2.52)	(7.48)
Combined Work and High School	0.0521	-0.1170
	(1.86)	(4.14)
Dummy Rural / Urban Area	0.0004	0.0003
	(25.80)	(13.39)
Constant	0.2706	-0.5459
	(4.01)	(2.99)
Inverse Mills Ratio	0.5838	0.7416
	(8.65)	(7.71)
Adjusted R^2	0.2800	0.2600
F Statistic	806.23	455.00
n	37,288	41,250

Source: ENE and ENECE, 1995

Notes: 1. The correction uses full information maximum-likelihood and the standard errors are White, heteroscedasticity corrected using LIMDEP.

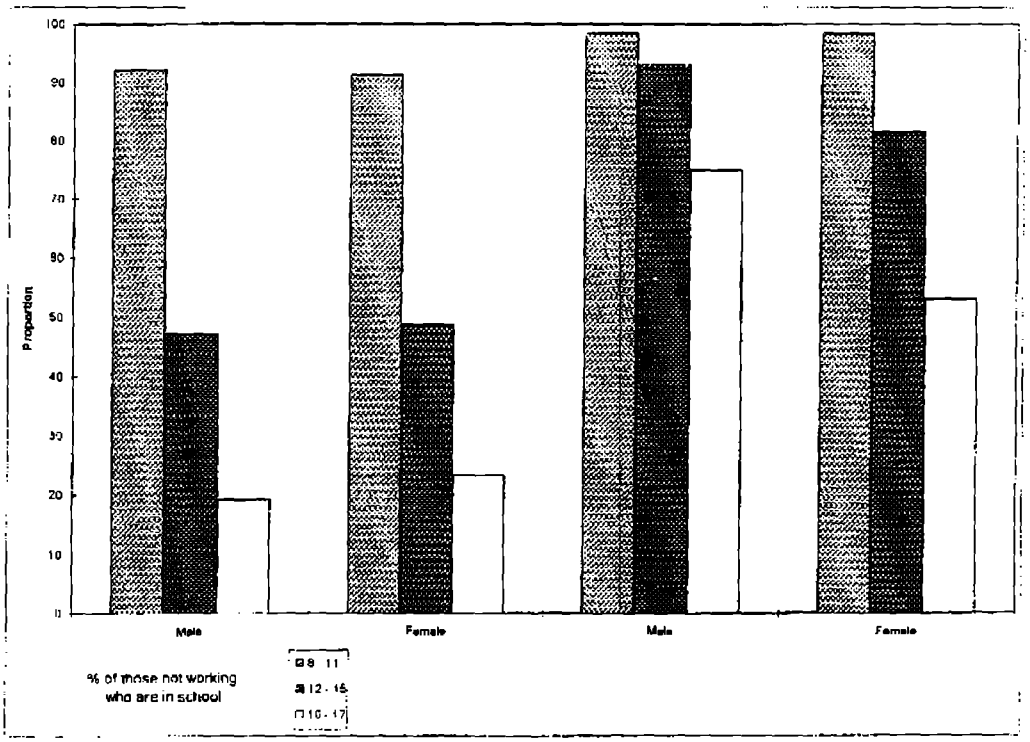
Figure 1

Distribution of School Drop-out by Gender and Age Group



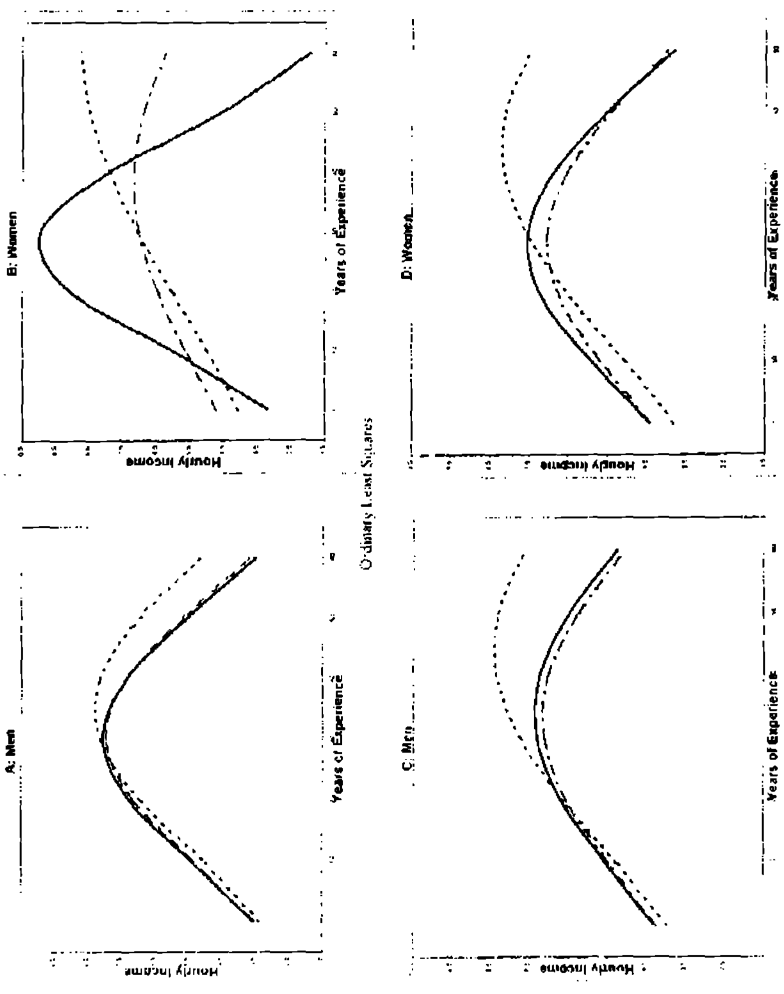
Source: ENT and ENECE, 1995.

Figure 2
School Attendance Rates
by employment, residence, and gender.



Source: ENE and ENECE, 1995

Figure 3
Time Earnings Profiles
Varying the Experience Measure
Using Sample Selection Correction, Ages 18 to 59 (corresponds to Tables 9a and 9b)



-- Traditional -- Age - age first worked — Total lifetime (years)

Source: INEI ENECE 1995

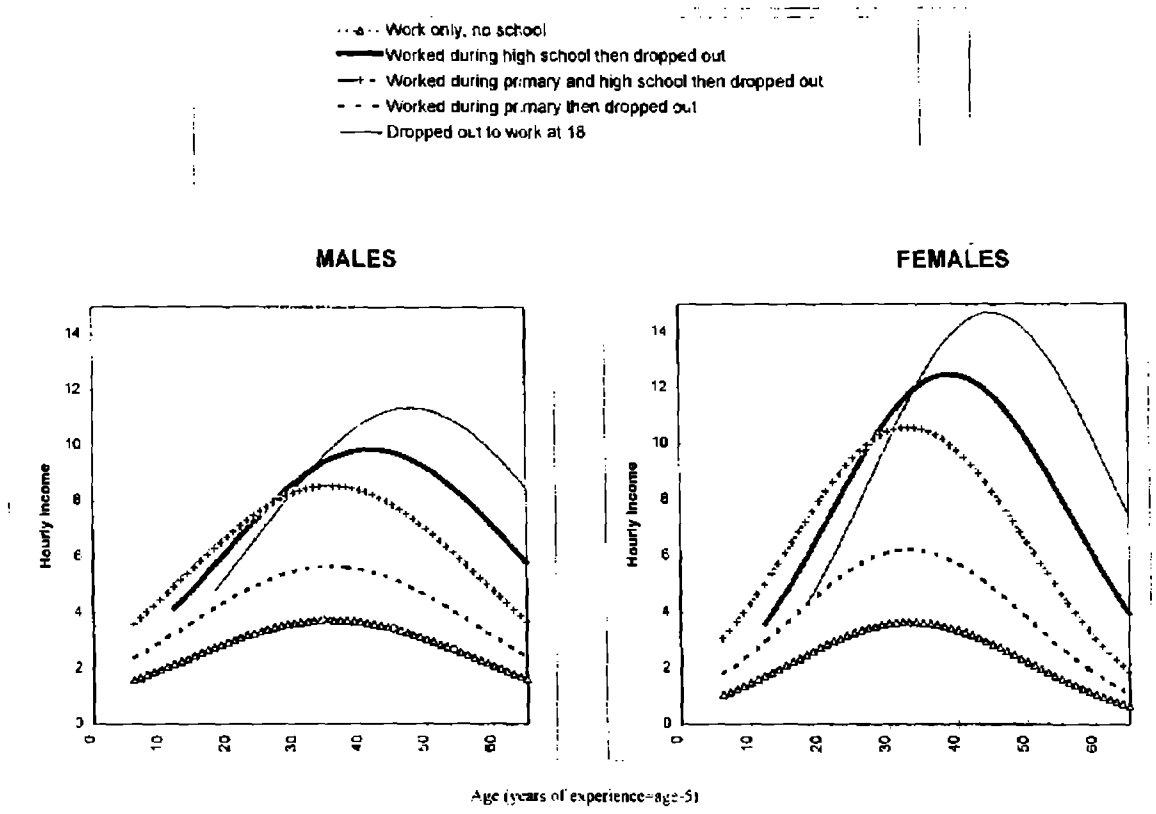
Figure 4

Time Earnings Profiles

Varying the Investment of Time Between School and Work

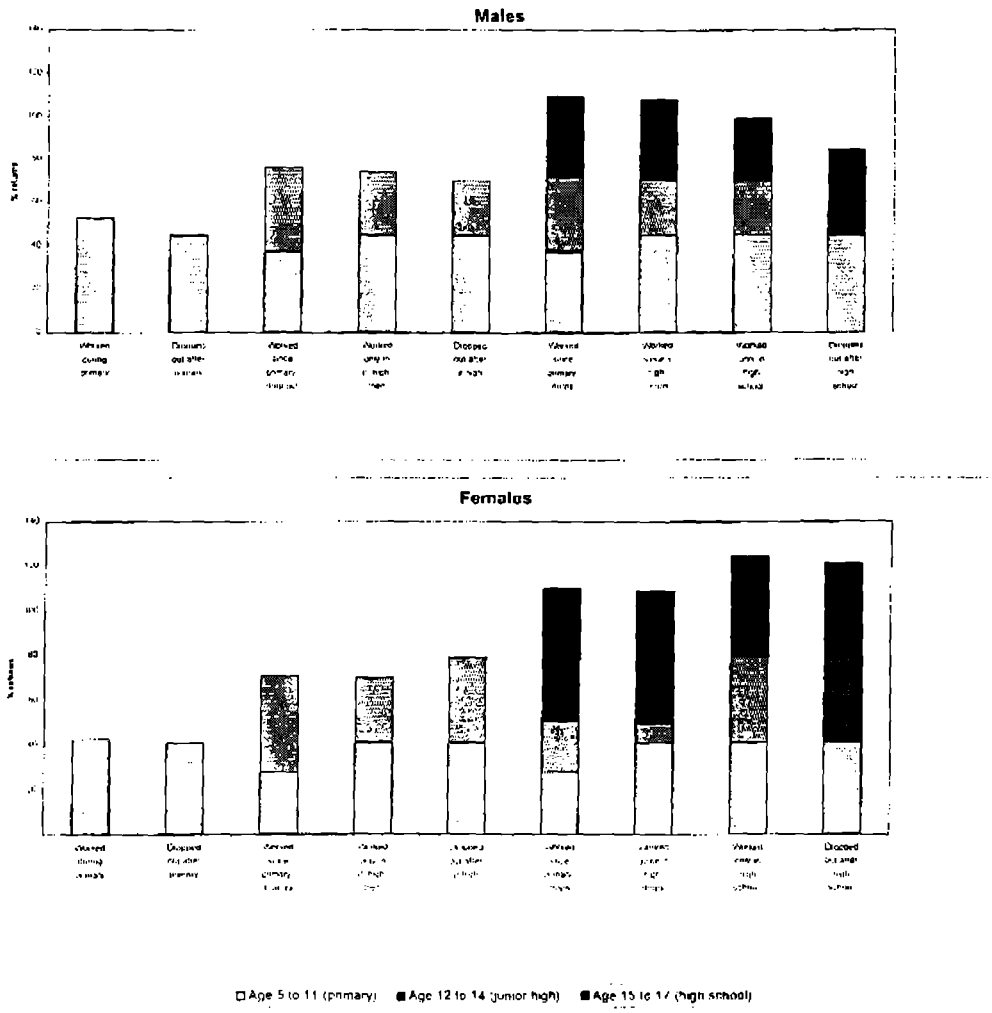
Using sample correction, adults ades 18 to 59

(corresponds to Table 10a)



Source: ENE and ENECE, 1995

Figure 5
By Level of Education, Ages 18 to 59 (corresponds to Table 11)



Appendix 1

Wage Function with Sample Selection Correction for Labor Force Participation [1/]
Using the Traditional Definition of Experience (Age - Years of Education - 5)
Absolute Value of Z - Statistic in Parenthesis

Independent Variables	*Male*		*Female*	
	Probit for Labor Force Participation	*Wage Function*	*Probit for Labor Force Participation*	*Wage Function*
Human Capital Variables				
Education:				
Years of Education	0.021	0.099	0.043	0.086
	(10.39)	(87.47)	(20.39)	(22.14)
Experience:				
Traditional: (age - years of education - 5)				
Linear	0.087	0.055	0.021	0.025
	(44.39)	(19.19)	(11.15)	(10.05)
Squared	-0.002	-0.001	0.000	0.000
	(38.76)	(14.41)	(12.97)	(3.19)
Dummy rural-urban (rural = 1)	-0.161	-0.311	-0.188	-0.092
	(6.50)	(22.63)	(8.07)	(3.32)
Labor Force Participation Variables				
Home Ownership: [2]				
Owns home or has it Mortgaged	-0.127		0.077	
	(4.42)		(3.02)	
Lent without Paying Rent or Other Arrangement	0.078		0.083	
	(2.29)		(2.80)	
Overcrowding				
Number of rooms per resident	0.069		0.058	
	(4.20)		(3.85)	
Number of bedrooms per Resident	-0.278		0.046	
	(7.18)		(1.31)	
Home Characteristics				
Predominant Building Material: [3]				
Wood	0.046		0.147	
	(1.30)		(4.55)	
Adobe (Mud Brick)	-0.198		0.020	
	(6.14)		(0.62)	
Asbestos or Metalic Sheathing	-0.182		-0.159	
	(1.62)		(1.44)	
Paper Board Sheathing	0.104		0.091	
	(0.84)		(0.82)	
Other Building Material	0.124		0.235	
	(1.19)		(2.25)	

Appendix 1 (continued)

Wage Function with Sample Selection Correction for Labor Force Participation [1/]
Using the Traditional Definition of Experience (Age - Years of Education - 5)
Absolute Value of Z - Statistic in Parenthesis

	Male		*Female*	
Independent Varinbles	*Probit for Labor Force Participation*	*Wage Function*	*Probit for Labor Force Participation*	*Wage Function*
Human Capital Variables				
Rooting Material: [1]				
Palm Fronds or Wood	0.141		0.096	
	(4.70)		(3.44)	
Asbestos or Metalic Sheathing	0.014		0.042	
	(0.53)		(1.72)	
Paper Board Sheathing	0.015		0.094	
	(0.33)		(2.23)	
Other Building Material	0.086		-0.011	
	(1.37)		(0.18)	
Flooring Material: [2]				
Wood, Tiles or other Covering Material	-0.091		-0.039	
	(5.08)		(2.40)	
Earthen Floors	-0.102		0.005	
	(2.84)		(0.14)	
Does not have				
Interior Bathroom	-0.014		-0.039	
	(0.38)		(1.00)	
Electricity	0.005		-0.105	
	(0.09)		(1.95)	
Interior Sewage Connection	-0.024		-0.136	
	(0.84)		(4.91)	
Telephone Service	0.167		0.008	
	(9.32)		(0.50)	
Inverse Mills Ratio		0.452		-0.706
		(7.77)		(6.41)
Constant	-0.299	0.123	-1.020	1.316
	(6.52)	(2.28)	(23.60)	(8.31)
F Statistic (Prob > F, degrees of freedom) (Values for Chi^2 given for Probit model)	2800.133 (0.00, 23)	2288.46 (0.00, 5)	1848.78 (0.00, 23)	1269.09 (0.00, 5)
R^2		0.30		0.31
n	37,288	26,921	41,250	14,229

1/ Using hourly wages as the dependent variable and heteroskedasticity, White corrected standard errors and full information maximum likelihood.
2/ The excluded category was Renting Home
3/ The excluded category was Built of Brick, Concrete, Stone
4/ The excluded category was Concrete or Brick Roofing Material
5/ The excluded category was Plain Concrete Flooring (no covering material)

Appendix 2

Wage Function with Sample Selection Correction for Labor Force Participation [1]
Using the Years since First Worked Definition of Experience
Absolute Value of Z - Statistic in Parenthesis

	Male		Female	
Independent Variables	*Probit for Labor Force Participation*	*Wage Function*	*Probit for Labor Force Participation*	*Wage Function*
Human Capital Variables				
Education:				
Years of Education	0.066	0.086	0.042	0.093
	(3.35)	(82.31)	(27.94)	(22.13)
Experience:				
Years since First Worked. (age - age first worked)				
Linear	0.095	0.056	0.074	0.023
	(50.83)	(16.83)	(44.56)	(4.66)
Squared	-0.002	-0.001	-0.002	0.000
	(44.27)	(13.32)	(35.84)	(2.52)
Dummy rural-urban (rural = 1)	-0.181	-0.336	-0.109	-0.182
	(7.25)	(23.24)	(4.59)	(8.42)
Labor Force Participation Variables				
Home Ownership [2]				
Owns home or has it Mortgaged	-0.110		0.086	
	(3.81)		(3.30)	
Lent without Paying Rent or Other Arrangement	0.076		0.086	
	(2.74)		(2.86)	
Overcrowding				
Number of rooms per resident	0.060		0.010	
	(3.63)		(0.65)	
Number of bedrooms per Resident	0.251		0.089	
	(6.51)		(2.45)	
Home Charaterstics				
Predominant Building Material [3]				
Wood	0.049		0.146	
	(1.47)		(4.45)	
Adobe (Mud Brick)	-0.203		0.014	
	(6.28)		(0.47)	
Asbestos or Metalic Sheathing	-0.059		-0.140	
	(1.67)		(1.24)	
Paper Board Sheathing	0.029		0.064	
	(0.80)		(0.83)	
Other Building Material	0.132		0.131	
	(3.26)		(1.23)	

Appendix 2 (continued)

Wage Function with Sample Selection Correction for Labor Force Particiaption [1/]
Using the Years since First Worked Definition of Experience
Absolute Value of Z - Statistic in Parenthesis

	Male		*Female*	
Independent Variables	*Probit for Labor Force Participation*	*Wage Function*	*Probit for Labor Force Participation*	*Wage Function*
Human Capital Variables				
Roofing Material: [4]				
Palm Fronds or Wood	0.142		0.096	
	(4.70)		(3.36)	
Asbestos or Metalic Sheathing	0.011		0.056	
	(0.42)		(2.20)	
Paper Board Sheathing	0.015		0.080	
	(0.34)		(1.86)	
Other Building Material	0.087		0.007	
	(1.39)		(0.11)	
Flooring Material: [5]				
Wood, Tiles or other Covering Material	-0.084		-0.047	
	(4.62)		(2.86)	
Earthen Floors	-0.109		-0.008	
	(3.03)		(0.23)	
Does not have				
Interior Bathroom	-0.036		0.040	
	(0.95)		(0.99)	
Electricity	-0.030		-0.109	
	(0.60)		(1.93)	
Interior Sewage Connection	-0.038		-0.139	
	(1.29)		(4.88)	
Telephone Service	0.140		0.036	
	(7.77)		(2.25)	
Inverse Mills Ratio		0.481		-0.231
		(7.52)		(3.28)
Constant	-0.113	0.287	-1.386	1.018
	(2.70)	(5.24)	(37.31)	(15.82)
F Statistic (Prob > F, degrees of freedom) (Values for Chi^2 given for Probit model)	3515.995 (0.00, 23)	2230.78 (0.00, 5)	4026.095 (0.00, 23)	1490.34 (0.00, 5)
$R^{2/}$		0.59		0.29
n	37,788	26,921	41,250	14,225

1/ Using hourly wages as the dependent variable and heteroskedasticity, White corrected standard errors and full information maximum likelihood

2/ The excluded category was Remain Home

3/ The excluded category was Built of Brick, Concrete, Stone

4/ The excluded category was Concrete or Brick Roofing Material

5/ The excluded category was Plain Concrete Flooring (no covering material)

6/ The correction uses full-information maximum-likelihood and the standard errors are White, heteroscedasticity corrected using Limdep

Appendix 3

Wage Function with Sample Selection Correction for Labor Force Participation [1]
Using the Total Work in Life Time Definition of Experience
Absolute Value of Z - Statistic in Parenthesis

Independent Variables	*Male*		*Female*	
	Probit for Labor Force Participation	*Wage Function*	*Probit for Labor Force Participation*	*Wage Function*
Human Capital Variables				
Education:				
Years of Education	0.010	0.087	0.042	0.111
	(5.47)	(82.61)	(36.25)	(50.93)
Experience:				
Total Years Worked during Life:				
Linear	0.092	0.058	0.113	0.089
	(49.52)	(18.27)	(59.31)	(12.67)
Squared	-0.002	-0.001	-0.002	-0.002
	(11.57)	(14.63)	(37.71)	(12.001)
Dummy rural-urban (rural = 1)	-0.190	0.345	-0.081	-0.269
	(7.63)	(23.76)	(3.29)	(12.45)
Labor Force Participation Variables				
Home Ownership: [2]				
Owns home or has it Mortgaged	-0.120		0.049	
	(4.14)		(1.81)	
Lent without Paying Rent or Other Arrangement	0.072		0.052	
	(2.13)		(1.67)	
Overcrowding				
Number of rooms per resident	0.052		-0.063	
	(3.16)		(4.00)	
Number of bedrooms per Resident	-0.254		0.051	
	16.501		(1.37)	
Home Charateristics				
Predominant Building Material [3]				
Wood	0.049		0.141	
	(1.39)		(4.13)	
Adobe (Mud Brick)	-0.202		-0.009	
	(6.24)		(0.26)	
Asbestos or Metalic Sheathing	0.184		-0.104	
	(1.62)		(0.90)	
Paper Board Sheathing	0.103		0.125	
	(0.831		(1.06)	
Other Building Material	0.115		-0.013	
	(1.09)		(0.12)	

Appendix 3 (continued)

Wage Function with Sample Selection Correction for Labor Force Participation [1]
Using the Total Work in Life Time Definition of Experience
Absolute Value of Z - Statistic in Parenthesis

	Male		*Female*	
Independent Variables	*Probit for Labor Force Participation*	*Wage Function*	*Probit for Labor Force Participation*	*Wage Function*
Roofing Material: [4]				
Palm Fronds or Wood	0.149		0.088	
	(4.91)		(2.99)	
Asbestos or Metalic Sheathing	0.014		0.037	
	(0.54)		(1.41)	
Paper Board Sheathing	0.023		0.039	
	(0.51)		(0.88)	
Other Building Material	0.083		-0.009	
	(1.33)		(0.14)	
Flooring Material [5]				
Wood, Tiles or other Covering Material	0.088		-0.061	
	(4.87)		(3.59)	
Earthen Floors	-0.110		-0.040	
	(3.09)		(1.04)	
Does not have				
Interior Bathroom	-0.030		-0.058	
	(0.79)		(1.38)	
Electricity	-0.025		-0.111	
	(0.50)		(1.93)	
Interior Sewage Connection	-0.035		0.164	
	(1.18)		(5.23)	
Telephone Service	0.150		0.070	
	(8.30)		(4.20)	
Inverse Mills Ratio		0.524		0.667
		(8.46)		(7.28)
Constant	-0.106	0.270	-1.582	0.530
	(2.49)	(5.11)	(41.84)	(3.21)
F Statistic (Prob > F, degrees of freedom) (Values for Chi^2 given for Probit model)	3499.624 (0.00, 23)	2240.91 (0.00, 5)	7895.764 (0.00, 23)	1233.11 (0.00, 5)
R^2		0.29		0.30
n	37,288	26,921	41,250	11,229

1. Using hourly wages as the dependent variable and heteroskedasticity White corrected standard errors and full information maximum likelihood.
2. The excluded category was Renting Home
3. The excluded category was Built of Brick, Concrete, Stone
4. The excluded category was Concrete or Brick Roofing Material
5. The excluded category was Plain Concrete Flooring (no covering material)
6. The correction uses full-information maximum-likelihood and the standard errors are White heteroscedasticity corrected using Limdep

Appendix 4

Wage Function with Sample Selection Correction for Labor Force Participation [1] Using the Total Years Worked in Life Time Definition of Experience Plus the Interaction Variable for Years Combined School and Work Below Age 18 Absolute Value of Z - Statistic in Parenthesis

	Male		*Female*	
Independent Variables	*Probit for Labor Force Participation*	*Wage Function*	*Probit for Labor Force Participation*	*Wage Function*
Human Capital Variables				
Education:				
Years of Education	0.014	0.092	0.043	0.116
	(6.84)	(83.20)	(37.20)	(30.56)
Experience:				
Total Years Worked during Life:				
Linear	0.094	0.060	0.116	0.095
	(49.64)	(19.10)	(59.81)	(13.23)
Squared	-0.002	-0.001	-0.002	-0.002
	(41.89)	(15.15)	(38.49)	(12.51)
Years that Combined Studies and Work	-0.014	-0.024	-0.030	-0.027
	(9.38)	(13.99)	(8.71)	(7.98)
Dummy rural-urban (rural = 1)	-0.184	-0.328	-0.076	-0.266
	(7.39)	(22.88)	(3.07)	(12.27)
Labor Force Participation Variables				
Home Ownership: [2]				
Owns home or has it Mortgaged	-0.122		0.045	
	(4.22)		(1.66)	
Lent without Paying Rent or Other Arrangement	0.073		0.052	
	(2.16)		(1.66)	
Overcrowding				
Number of rooms per resident	0.051		-0.063	
	(3.08)		(4.00)	
Number of bedrooms per Resident	-0.255		0.044	
	(6.54)		(1.17)	
Home Charateristics				
Predominant Building Material: [3]				
Wood	0.049		0.110	
	(1.37)		(4.10)	
Adobe (Mud Brick)	-0.200		-0.007	
	(6.19)		(0.20)	
Asbestos or Metalic Sheathing	-0.183		-0.106	
	(1.62)		(0.92)	
Paper Board Sheathing	0.104		0.121	
	(0.83)		(1.02)	
Other Building Material	0.118		-0.022	
	(1.12)		(0.20)	

Appendix 4 (continued)

Wage Function with Sample Selection Correction for Labor Force Participation [1/]
Using the Total Years Worked in Life Time Definition of Experience plus the
Interaction Variable for years combined Scool and Work below age 18
Absolute Value of Z- Statistic in Parenthesis

	Male		*Female*	
Independent Variables	*Probit for Labor Force Participation*	*Wage Function*	*Probit for Labor Force Participation*	*Wage Function*
Roofing Material. [2/]				
Palm Fronds or Wood	0.147		0.084	
	(4.85)		(2.85)	
Asbestos or Metalic Sheathing	0.014		0.036	
	(0.53)		(1.37)	
Paper Board Sheathing	0.023		0.041	
	(0.50)		(0.93)	
Other Building Material	0.084		0.010	
	(1.33)		(0.15)	
Flooring Material [3/]				
Wood, Tiles or other Covering Material	-0.090		-0.062	
	(4.95)		(3.63)	
Earthen Floors	-0.106		-0.035	
	(2.93)		(0.89)	
Does not have				
Interior Bathroom	-0.026		-0.058	
	(0.68)		(1.38)	
Electricity	-0.021		-0.107	
	(0.41)		(1.85)	
Interior Sewage Connection	-0.035		-0.154	
	(1.20)		(5.20)	
Telephone Service	0.152		0.072	
	(8.42)		(4.26)	
Inverse Mills Ratio		0.506		0.710
		(8.30)		(7.80)
Constant	-0.129	0.237	-1.602	-0.642
	(3.02)	(4.51)	(42.24)	(3.86)
F Statistic (Prob > F, degrees of freedom) (Values for Chi^2 given for Probit model)	3528.457 (0.00, 24)	1910.55 (0.00, 6)	7971.711 (0.00, 24)	1037.96 (0.00, 6)
R^2		0.30		0.30
n	37,288	26,921	41,250	14,229

1/ Using hourly wages as the dependent variable and heteroskedasticity, White corrected standard errors and full information maximum likelihood.

2/ The excluded category was Renting Home

3/ The excluded category was Built of Brick, Concrete, Stone

4/ The excluded category was Concrete or Brick Roofing Material

5/ The excluded category was Plain Concrete Floorins (no covering material)

6/ The correction uses full-information maximum-likelihood and the standard errors are White, heteroscedasticity corrected using Limdep.

Appendix 5

Wage Function with Sample Selection Correction for Labor Force Participation 1/
Using the Total Work in Life Time Definition of Experience,
Education Categories as well as Work and School Categories
Absolute Value of *Z* - Statistic in Parenthesis

	Male		*Female*	
Independent Variables	*Probit for Labor Force Participation*	*Wage Function*	*Probit for Labor Force Participation*	*Wage Function*
Human Capital Variables				
Education:				
Education Categories [2]				
Some or Completed Primary School	0.186	0.445	0.321	0.411
	(4.51)	(15.04)	(8.86)	(9.74)
Some or Completed Jr. High School	0.378	0.702	0.666	0.795
	(8.44)	(21.52)	(17.08)	(14.09)
Some or Completed High School	0.088	0.844	0.805	1.220
	(1.88)	(25.62)	(20.08)	(19.91)
Some or Completed College Level Degree	0.216	1.447	1.004	1.756
	(4.80)	(47.47)	(24.55)	(25.40)
Experience				
Total Years Worked during Life				
Linear	0.092	0.063	0.119	0.101
	(47.84)	(18.79)	(61.56)	(25.02)
Squared	-0.002	-0.001	-0.002	-0.002
	(40.43)	(16.13)	(39.57)	(12.70)
Combinations of Work and Study by Categories				
Combined Work and Primary School, then dropped-out	-0.028	-0.099	-0.277	0.267
	(1.07)	(5.75)	(8.68)	(7.63)
Combined Work with Primary School, then passed to Jr. High Sch	-0.260	-0.256	-0.479	0.416
	(5.85)	(8.61)	(7.05)	(5.86)
Combined Work and Jr. High School, then dropped-out	-0.042	-0.054	-0.287	-0.239
	(1.12)	(2.29)	(6.82)	(5.37)
Combined Work with Jr. High School, then passed to High School	0.173	-0.090	-0.190	-0.442
	(3.28)	(2.52)	(6.72)	(7.48)
Combined Work and High School	0.320	0.052	-0.047	-0.117
	(8.50)	(1.86)	(1.55)	(4.14)
Dummy rural-urban (rural = 1)	0.000	0.000	0.000	0.000
	(7.13)	(25.80)	(3.16)	(13.59)
Labor Force Participation Variables				
Home Ownership [3]				
Owns home or has it Mortgaged	-0.116		0.045	
	(4.01)		(1.68)	
Lent without Paying Rent or Other Arrangement	0.085		0.056	
	(2.50)		(1.81)	
Overcrowding				
Number of rooms per resident	0.063		0.060	
	(3.78)		(3.80)	
Number of bedrooms per Resident	-0.248		0.044	
	(6.34)		(1.18)	
Home Characteristics				
Predominant Building Material [4]				
Wood	0.050		0.141	
	(1.40)		(4.13)	
Adobe (Mud Brick)	-0.201		-0.004	
	(6.22)		(0.12)	
Asbestos or Metalic Sheathing	-0.169		-0.105	
	(1.49)		(0.91)	
Paper Board Sheathing	0.103		0.141	
	(0.83)		(1.18)	
Other Building Material	0.124		-0.038	
	(1.18)		(0.35)	

Appendix 5 (continued)

Wage Function with Sample Selection Correction for Labor Force Participation [1/]
Using the Total Work in Life Time Definition of Experience,
Education Categories as well as Work and School Categories
Absolute Value of Z - Statistic in Parenthesis

	Male		*Female*	
Independent Variables	*Probit for Labor Force Participation*	*Wage Function*	*Probit for Labor Force Participation*	*Wage Function*
Roofing Material [3/]				
Palm Fronds or Wood	0.141		0.081	
	(4.67)		(2.77)	
Asbestos or Metalic Sheathing	0.010		0.035	
	(0.37)		(1.35)	
Paper Board Sheathing	0.019		0.028	
	(0.44)		(0.64)	
Other Building Material	0.083		-0.008	
	(1.32)		(0.12)	
Flooring Material [4/]				
Wood, Tiles or other Covering Material	-0.073		-0.055	
	(4.05)		(3.24)	
Earthen Floors	-0.091		-0.042	
	(2.49)		(1.06)	
Does not have				
Interior Bathroom	-0.019		-0.053	
	(0.49)		(1.26)	
Electricity	-0.010		-0.111	
	(0.20)		(1.92)	
Interior Sewage Connection	-0.025		-0.147	
	(0.84)		(4.98)	
Telephone Service	0.121		0.071	
	(6.90)		(4.24)	
Inverse Mills Ratio		0.584		0.742
		(8.65)		(7.71)
Constant	-0.252	0.271	-1.631	-0.546
	(4.51)	(4.01)	(32.90)	(2.99)
F Statistic (Prob > F, degrees of freedom) (Values for Chi^2 given for Probit model)		806.23 (0.00, 11)		455 (0.00, 11)
R^2		0.28		0.26
n	37,288	26,921	41,250	14,229

1/ Using hourly wages as the dependent variable and heteroskedasticity, White corrected standard errors and full information maximum likelihood

2/ The excluded category was Zero Years of Education

3/ The excluded category was Renting House

4/ The excluded category was Built of Brick, Concrete, Stone

5/ The excluded category was Concrete or Brick Roofing Material

6/ The excluded category was Plain Concrete Flooring (no covering material)