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FINAL REPORT

THE IMPACT OF PROGRESA ON WORK, LEISURE, AND TIME ALLOCATION

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EXECUTIVE SUMMARY

This report analyzes the impact of PROGRESA on work and time allocation of its beneficiaries. In PROGRESA, the majority of benefits are linked to children's school attendance. The fact that benefits are conditioned to children's school attendance implies that the price of schooling is reduced. This would tend to imply, for children, an increase in school and a reduction in the participation of time spent in other activities, assuming that school and work are substitutes. With respect to adults, one might expect that a program with monetary transfers would reduce the labor supply of adults by reducing the economic need to work (through the income effect). Nevertheless, if children are now unable to perform certain work activities, other household members may substitute for their work. A final issue is the point that compliance with the obligations of PROGRESA may be time consuming especially for women. This may have the additional effect of either reducing the time available of women to dedicate to other work activities or of reducing their leisure time.

The report has two main sections based on progressively broader definition of what constitutes work. In the first, we define work activities we estimate the impact of PROGRESA on work activities of men, women and children using before and after program implementation data (including the November 1997 census (ENCASEH), and the November 1998, June 1999 and November 1999 rounds of the evaluation survey (ENCEL). In the second, we use a special time use module carried out as part of the June 1999 evaluation survey (ENCEL) to look at the impact of PROGRESA on leisure time, as well as time allocated to different work activities, and school in the case of children. The time use module allows us to use a broader definition of work which include domestic and farm activities. The module also allows us some insights as to whether the time obligations of complying with the requirements of PROGRESA are important for female beneficiaries.

Beginning with our results on labor market participation, the principal findings are the following:

- The results show very clear negative impacts of PROGRESA on children's labor market participation. Estimates based on double difference models of labor force participation before and after the implementation of PROGRESA show significant reductions in children's labor force participation for both boys and girls, in both salaried and non-salaried activities. Labor force participation for boys show reductions as large as 15 to 25% relative to the probability of participating prior to the program. For girls, in spite of their overall lower participation level prior to the program, there are also significant reductions associated with PROGRESA.

- The lower incidence of child work due to the PROGRESA program appears to be considerably higher ranging from 65 percent of the increase in the enrollment of boys in school in November 1999 (at the second school year after the start of the program) to 82 percent in November 1998 (at the first year of the program). In other similar programs, such as the Food for Education program in Bangladesh, the lower incidence of child labor was found to account for 25 percent of the increase in the enrollment of boys in school.

- With respect to adults, the results in general show that there has been no particular reduction in labor market participation rates, as may have been predicted by some economic models of behavior. These results may in part reflect the design of PROGRESA, where benefits are provided to families for three years, irrespective of family income, so that there is no disincentive effect on work, as opposed to transfer programs in other countries which often reduce benefits with work income. The conventional wisdom is that there are tradeoffs between providing benefits to a population in need and stimulating work, the analysis here shows that, thus far, there is not necessarily any such tradeoff in PROGRESA.

Our results from the time allocation survey which allows us to look at hours spent on work activities as well as to include a wider range of work activities show the following:

- Both boys and girls show significant increases in participation in school activities and reductions in work activities. In accordance with previous studies, the impacts of PROGRESA on school participation are much larger for girls than boys. With respect to impacts of PROGRESA by type of work, there are also important differences by gender. Boys of secondary school age show strong reductions in participation in both market work and domestic work. Girls, on the other hand, show larger reductions in the case of domestic work, in accordance with their much higher participation in domestic activities prior to the program. There are no apparent effects of PROGRESA on reducing time of children dedicated to agricultural activities, such as caring for family animals.

- Overall hours that children dedicate to both school and work have not been particularly affected under the Program. This suggests that the impacts of PROGRESA are primarily to increase the number of children in school and to reduce the number of children who are working, but not necessarily, for instance, to reduce the hours worked of children who attend school. A substantial number of children continue to combine both work and school under the Program.

- The increases in school enrollment and reductions in the work of boys are approximately equivalent, implying substitution between these activities and also implying no overall impact of PROGRESA on boys' leisure time. For girls, however, the reductions in work are less than the increases in school enrollment, implying that the leisure time of girls is slightly reduced under PROGRESA.

- Turning to adults, there is some evidence that the time demands on women associated with satisfying Program obligations are significant. Women in PROGRESA are more likely to report spending time in both taking household members to schools, clinics etc. as well as having a greater participation in community work and *faenas*.

- There is some weak evidence that PROGRESA has slightly reduced participation of women in domestic work. Note that reductions in domestic work should not necessarily be viewed as "negative", for instance, women may spend less time cooking if the PROGRESA benefits alter their diet or permit them, for instance, to buy ground corn rather than grinding corn themselves to make tortillas.

- Overall, however, there is no significant impact of PROGRESA on the leisure time of both male and female adults. This again provides reinforcing evidence that adult beneficiaries do not use the benefits to work less and increase their leisure, as may be predicted by some economic models. These results would also seem to support the hypothesis that PROGRESA does not create dependency on its benefits, in the sense that it does not appear to reduce the work incentives of adults.

FINAL REPORT

THE IMPACT OF PROGRESA ON WORK, LEISURE, AND TIME ALLOCATION

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1.. INTRODUCTION

In August of 1997, a new anti-poverty program, the Education, Health and Nutrition Program (PROGRESA) was begun in Mexico. The program provides cash benefits linked to children's school attendance and to regular health clinic attendance, as well as in-kind health benefits and nutritional supplements. Cash benefits correspond on average to a 22% increase in the income levels of the beneficiary families and are given directly to the mother of the family. The program has grown rapidly and now covers 2.6 million families in extreme poverty in rural areas, corresponding to about 40 percent of all rural families in Mexico.

The main purpose of this report is to analyze the impact of PROGRESA on work and time allocation. The rural communities where PROGRESA operates are characterized by traditionally very high labor force participation rates of men and very low labor market participation rates of women. On the other hand, children tend to begin their labor force participation at early ages in order to contribute to family income levels. One of the principal objectives of PROGRESA is to reduce this early labor force participation of children and thereby increase their enrollment and attendance at school.

In this report, we analyze the impact of PROGRESA on labor market participation where we distinguish between salaried work and non-salaried activities. We also analyze the impact of PROGRESA on overall leisure time as well as the division of time between different types of work activities. To provide a complete picture of the different activities which may compete for both children's and adults' time, we consider the impact of PROGRESA on four central activities: school (for children only), market work, domestic work and farm work.

In PROGRESA, the majority of the benefits are linked to children's school attendance. The fact that benefits are linked to children's school attendance implies that the shadow wage (or relative value) of children's time in activities other than school is reduced, or that the price of schooling is reduced. This would tend to imply an increase in school and a reduction in the participation of time spent in other activities, assuming that school and work are substitutes.

With respect to adults, one might expect that a program with monetary transfers would reduce the labor supply of adults by reducing the economic need to work (through the income effect). Nevertheless, PROGRESA is specifically oriented at reducing the work of children and increasing their school attendance by linking receipt of benefits to children's school attendance. If children are now unable to perform work activities, one may expect that other household members would substitute for their work. Through a family labor supply model, it is possible

that PROGRESA would reduce the work of children but possibly increase the (non-market) work of other family members. A final issue is the point that compliance with the obligations of PROGRESA may be time consuming especially for women. This may have the additional effect of either reducing the time available of women to dedicate to other work activities or of reducing their leisure time.

Our analysis uses data which come from the Survey of Household Socio-Economic Characteristics (ENCASEH) and the Evaluation Survey of PROGRESA (ENCEL). The ENCEL was especially designed for the purposes of evaluating the program and includes a base line survey (before program implementation) as well as follow-up surveys every six months. This rich data base follows a sample of PROGRESA beneficiary households and a control group before and after program implementation with a total sample of approximately 24,000 households. In our data, we have information on labor market participation of all household members, household income and expenditures, children's school attendance and household wealth. We also take advantage of a module on time use, carried out once only about a year after program implementation. This module contains time allocated to 18 different activities during the previous day and allows us to examine the impact of PROGRESA on leisure as well as time allocation between different existing work activities.

The report is organized as follows: we begin with a description of PROGRESA and a brief discussion as to how PROGRESA may be expected to affect child and adult work and time allocation. In the third section, we describe our data and the estimation strategies used. We then begin analysis of our data, providing a brief description of labor market activities and time allocation in the poor rural areas where PROGRESA operates. This is followed by our results on the impact of PROGRESA on the labor force participation and time allocation. We conclude with interpretations of our results and related policy recommendations.

2. PROGRESA

PROGRESA, the Education, Health, and Nutrition Program, is a large anti-poverty in Mexico begun in 1997, which targets its benefits directly to the population in extreme poverty in rural areas. PROGRESA currently operates in over 50,000 localities in 31 states, with a budget of approximately one billion dollars for 2000.

The program is made up of three closely linked components, education, health and nutrition, based on the idea that positive inter-action benefits relationships between health, education and nutrition enhance the effectiveness of an integrated program over and above the separate benefits from each of these areas.

Under the first benefit component, education, PROGRESA provides monetary educational grants for each child less than 18 years of age enrolled in school between the third grade of primary and the third grade of secondary school (Table 1). The grant amounts increase as children progress to higher grades, in order to reflect the income children would contribute to their families if they were working. Additionally, at the junior high level, the grants are slightly higher for girls than

for boys. [1] The amounts of the monthly educational grants range from 90 pesos (about $US9) in the third grade of primary to 290 pesos ($US30) for boys and 335 pesos ($US35) for girls in the third year of secondary school.

The second component, health, provides basic health care for all members of the family, whose services are provided by the Ministry of Health and by IMSS-Solidaridad, a branch of the Mexican Social Security Institute. The third component, nutrition, includes a fixed monetary transfer (equal to 135 pesos monthly or about $US14) for improved food consumption, as well as nutritional supplements, which are principally targeted to children between the ages of four months and two years, and pregnant and breastfeeding women. They are also given to children between the ages of 2 and 5 if any signs of malnutrition are detected.

The objective of designing benefits to provides incentives for increased human capital is revealed through the fact that receipt of the benefits is contingent on fulfillment of certain obligations by the beneficiary families. The monetary educational grants are linked to the school attendance of children so that if a child misses more than 15% of school days in a month (for unjustified reasons), the family will not receive the grant that month. Similarly, families must complete a schedule of visits to the health care facilities in order to receive the monetary supports for improved nutrition.

All of the monetary benefits are given directly to the female (mother) of the family. PROGRESA has a maximum limit of monthly benefits for each family currently equivalent to 820 pesos (about $US80). Average monthly benefits are currently about $300 pesos ($US30) and are equivalent to about 22% of the monthly income of beneficiary families. After three years, families may renew their status as PROGRESA beneficiaries, subject to a re-evaluation of their socio-economic conditions. [2]

[1] In poor areas of Mexico, girls tend to drop out of school earlier than boys, so that the grants are intended to help reverse this tendency.

[2] PROGRESA selects its beneficiary families through a three stage targeting mechanism. In the first stage, PROGRESA uses geographic targeting to select poor regions and communities. Communities which demonstrate a high level of margination, as measured by characteristics such as overall illiteracy rates in the community, are selected. Next, PROGRESA carries out a survey of socio-economic conditions for all households in the selected communities. With this data, discriminant analysis is used to identify beneficiary households. Households are judged to be poor not only on the basis of income levels (which is not always a good predictor of well-being) but on the basis of a number of other characteristics as well, such as running water in the household, dependency ratios, ownership of durable goods, animals and land, and the presence of disabled individuals. The third stage consists of community feedback where the list of selected families is presented to the community and community agreement is sought.

3. THEORETICAL CONSIDERATIONS

At first glance, the impact of PROGRESA on labor supply can be analyzed through a standard individual labor supply model. PROGRESA, unlike programs such as Aid to Families with Dependent Children (AFDC) in the United States, has no explicit disincentives to work. In AFDC the level of benefits is affected by work decisions as work income is effectively taxed by reducing the level of AFDC benefits provided. In PROGRESA, however, the level of benefits given to households is not affected by decisions to work of its household members or the income level of the household. Once households become beneficiaries, they participate for three years at which point a re-assessment of their conditions is done to see if they continue to qualify.

Considering adult labor supply only for the moment and using a simple static model where individual utility depends on consumption C and hours of leisure L (and individuals allocate their time between work and leisure), it can be argued that the main effect of PROGRESA on the labor supply of adults is a pure income effect. An increase in income increases the demand of all normal goods, which includes both consumption and leisure. Assuming interior solutions, an increase in leisure then, by definition, decreases hours worked. According to the income effect, then, PROGRESA would have the unambiguous implication of reducing adult labor supply.

Nevertheless, there is an important complication to this story, which results from taking into account a model of family labor supply (Kilingsworth, 1983). In this model, the time allocation decisions of all household members are affected by the value of time of all household members. In PROGRESA, the majority of the benefits for families with children, as described above, are linked to children's school attendance. The fact that benefits are linked to children's school attendance implies that the shadow value of children's time in the labor market is reduced. The question then, is what happens to the labor supply of other household members once the possible reduction in children's work is taken into account. Intuitively, one can argue that, assuming the household acts as one unit, then if children work less, then there is less available labor in the household, which tends to increase the shadow wage of labor inside the household. This effect would then tend to increase the hours worked inside the household, that is, in domestic and/or other household production activities, although not necessarily in hours spent in market work. Given the own income effect on work described earlier, the effect on leisure would be consequently ambiguous.

Finally, for women there may be an additional impact on work and leisure time, associated from the point that the receipt of benefits implies that beneficiaries must comply with clinic and school attendance of family members. It is possible that these requirements may reduce leisure time of women.

Turning to the impact of PROGRESA on children, the majority of the benefits for families with children, as described above, are linked to children's school attendance. The fact that benefits are linked to children's school attendance implies that the shadow wage (or relative value) of children's time in activities other than school is reduced. This would tend to imply an increase in school and a reduction in the participation of children in other activities.

The Slutsky decomposition implies that the program grants should have an income effect which would increase the demand of all normal goods and a substitution cross price effect which should reduce the demand of all goods which are substitutes for schooling and increase the demand for goods which are complements (Schultz, 2000). If schooling and work are substitutes, one would expect the increase in time dedicated to schooling to be associated with a reduction in time dedicated to working, where a broad definition of work can be used to include not just market activities, but also other unpaid activities such as domestic and farm work. Of course not all forms of work may be substitutes with schooling. As Ravallion and Wodon (2000) note, time spent in school is ordinarily only a fraction of a day, so it is possible to increase time dedicated to school by reducing leisure without necessarily reducing work. [3]

There is also an income effect of the grants, which would imply, assuming both schooling and leisure are normal goods (and that children's time is allocated between leisure, work and schooling), a decrease in work. If schooling and work are substitutes, the income effect will reinforce the reduction in work through the substitution effect of the PROGRESA grants, so that in fact, it is possible to observe a larger reduction on work than increase in school. We do not attempt to isolate the substitution effect from the income effect of the PROGRESA educational grants on child work. Rather we are primarily interested in the extent to which child labor may fall and schooling may increase with the PROGRESA grants.

One of our empirical interests is to focus on different types of work, not just that of paid work, but also domestic work and farm work. Many of the communities in PROGRESA rely on agriculture and children are likely valuable inputs into the production of agricultural goods. For girls, domestic work may represent a greater deterrent to school than market work (which as we will see later is an activity for which they have very low participation rates). Depending on the type of work which children engage in, PROGRESA may have different impacts. One of the purposes of the analysis carried out here is to shed light on which types of work may be reduced by PROGRESA through substitution towards school activities and if there are differences by gender.

4. ESTIMATION STRATEGY

There is now abundant literature showing that there is no substitute for a natural experiment for the purposes of evaluation of programs (Heckman et al. 1998). Natural experiments, if done correctly, avoid impact evaluation biases which can result from selection bias by insuring that

[3] It is an unresolved issue the extent to which once children begin working, they are likely to drop out of school. It has been shown in the context of Mexico and other Latin American countries that a substantial fraction of children both work and attend school. There is a fairly large literature which evaluates whether work is "harmful" for children that attend school (see Knaul and Parker,1996 for a review). Work may reduce the time children have to dedicate to their homework; children may miss more school days because of work and consequently fall behind in school and be more likely to repeat grades.

the treatment and the control group are similar in terms of both observable and unobservable characteristics.

As part of its evaluation program, PROGRESA carried out a type of natural experiment in which a sample of 506 eligible communities in the areas where the program was first implemented was selected. A randomization was carried out where 320 communities were assigned to receive benefits (the treatment group) and the remaining 186 were assigned to a group which would receive benefits at a time about two years later. [4]

All of the households in both the treatment and control communities (a total of 24,077) were interviewed prior to implementation of the program and periodic follow-up interviews were carried out after program implementation approximately every six months. These data include information on numerous topics, including education, health utilization, household expenditure, women's status, community indicators etc.(see data description below).

Within each community, all households, regardless of poverty status, were interviewed. This implies that within each treatment community we have data for both PROGRESA and non-PROGRESA households and within each control community we have corresponding data for households who are eligible for PROGRESA (that is, poor) and those who are not eligible for PROGRESA.

The structure of the data implies that there are a large number of potential estimators which can be used to evaluate the program. To name but a few possible evaluation strategies, one can compare outcomes at the community level between PROGRESA and control communities, compare outcomes at the individual level between poor PROGRESA individuals and poor control individuals, compare "double differences" estimators between the differences in PROGRESA and control individuals over time and so forth.

As stated earlier, a natural experiment can have great advantages in obtaining unbiased estimates of program impact, nevertheless this is only the case if the randomization is carried out correctly. In the case of PROGRESA, it is important to emphasize that the randomization to treatment and control groups occurred at the level of the community, not at the level of the household or individual. While it would be expected that randomization at the level of the community implies an effective randomization at both the household and individual level, this must be tested and not assumed.

Behrman and Todd (1999) analyze the extent to which the distribution of characteristics between the treatment and control groups of PROGRESA appears to be random. They find that a general analysis of characteristics such as age, education, income, access to health care do not reveal systematic differences. Statistical tests on means at the locality level generally accept the hypothesis of no significant differences between the treatment and control group. Nevertheless, at the household and individual level, they do find some significant differences in certain

[4] The control groups were incorporated into PROGRESA at the end of 1999. All of the data we use for the analysis, however, is prior to their incorporation so that we can still consider them to be control groups.

variables between the control and the treatment group. They attribute these significant differences to the large size of the samples (more than 100,000 individuals) implying that even tiny differences between groups can be significant at conventional levels.

Our principal estimations of the impact of PROGRESA on labor force participation use differences in differences estimators (or double differenced estimators as they are often called). These estimators are based on comparing differences between the treatment and control groups before and after PROGRESA. These estimators have the advantage in that any pre-program differences between the treatment and control group are eliminated in the estimation of impacts. Under the assumption that any unobserved heterogeneity between the treatment and control groups is fixed over time, the double differenced estimator eliminates this heterogeneity. The empirical specification we use also contains a number of control variables, which may be useful for reducing any remaining statistical bias.

In the case of our analysis of the impact of PROGRESA on hours worked and time use, the time use module which we use was only carried out once, approximately one year after program implementation, so that we cannot use the same double difference type estimators as is the case for labor market participation. This implies that we cannot test whether or not there are or not significant differences in our dependent variables of interest prior to the program (e.g. participation and hours spent in the work activities). Nevertheless, we do have indicators of whether children were attending school as well as whether children or adults were working prior to program implementation which can give us an idea of any possible biases. In general, we are unable to reject the hypothesis that there are no significant differences in the distribution of these variables prior to program implementation.[5] In our impact estimations, we continue to control for a number of observed exogenous characteristics (described below), using a number of individual and family level characteristics to reduce any potential statistical biases (Schultz, 1999) (Gertler, 2000).

Measuring Eligibility and Program Impacts

In our regressions, we focus only on the group of individuals (families) who are eligible for the program and we identify impact through including a dummy variable measuring whether a household resides in a control or a treatment community. Nevertheless, the definition of those who are eligible has some ambiguities which we now briefly describe.

The selection process of eligible households in the communities where PROGRESA operates consisted in the case of the early phases of the Program in two steps. Originally, a set of households were selected and incorporated into the program according to the discriminant analysis procedure (see Skoufias, Davis and de la Vega, 1999) for more description). In the evaluation sample, the percentage of households selected corresponds to approximately 52% of all households in the communities. Nevertheless, in order to correct perceived errors in leaving out households, in particular, elderly households, a second selection, called “densificacion” took place in which an additional 25% of households in treatment communities were identified as

[5] If we had the same time use data prior to program implementation, we could use the same strategy of double difference estimates.

eligible to receive benefits. Incorporating these "densified" households required the return of personnel from PROGRESA and Sedesol to the communities to incorporate the newly selected household. However, it appears that some of these families experienced substantial delays in their incorporation. As of November, 1999, the date of our last survey used in this report, only 819 of the 3023 densified households had been incorporated, that is 2204 families had not yet begun to receive benefits from PROGRESA.

A final complication before discussing our measures of eligibility is that an additional 478 families chosen in the original selection mechanism as beneficiaries had also not received payments. This may be due to for instance, migration before the family was incorporated into the Program or to lack of takeup. This second explanation would have the obvious implication of making the PROGRESA participation variable a choice variable, or in other words, possibly endogenous to the impact indicators. Families who refuse benefits may be "different" from families which accept benefits in ways which are related to the impacts of the program, for instance they may be those most (or least) likely to be affected by the Program. Nevertheless, given their small overall number, they are unlikely to significantly alter the program impact estimations.

It is also worth noting that the control group was constructed through carrying out of the PROGRESA selection mechanism on the households located in the control communities. This was carried out twice, first using the discriminant selection method to select the initial eligible sample and a second time as well, to adjust the selection criteria to include the "densified" sample. Given that our interest here is to compare the impact of the Program using only households which are eligible for benefits, this point is important for insuring that the control group is comparable to the treatment group.

For the impact evaluation, this discussion brings out the issue of which sample of families is the most appropriate to use in the evaluation. Theoretically, the sample which includes both the initially chosen and the "densified" households corresponds to the actual selection mechanism used in PROGRESA to select eligible families and thus would seem the most attractive sample to use. Nevertheless, as described above, a substantial portion of these households did not receive benefits during our period of analysis (and were likely not even aware they had been chosen as eligible to receive PROGRESA benefits). Thus, using this sample would tend to underestimate the impact of the program by including a significant number of households who supposedly are in the treatment group but have not received benefits due to operational difficulties which delayed their incorporation into PROGRESA.

This report takes the approach of constructing three different eligible samples, to first judge the extent to which these issues may or may not affect the estimated impact of the program. Our first group of eligibles corresponds to those initially identified as eligible to receive PROGRESA benefits, (we term these *init-poor*). Our second group corresponds to the sum of those initially incorporated as well as those "chosen" to be incorporated through the densification process, whether or not they were incorporated or not (*dens-poor*). Our third sample of eligibles consists of all families identified to receive benefits, who were incorporated into the program and who had received at least one payment during our period of study (*incor-poor*). Note that this last definition of eligible may be endogenous to the extent that it includes the decision of households

to participate. As mentioned earlier, take up rates in PROGRESA are quite high, nevertheless it is still an important issue, beyond the scope of this report, to examine how endogenizing program participation may affect impact estimates. Our report uses the strategy of comparing the different program impacts based on the different eligibility criteria to judge the possible bias in program impacts. One would expect impact estimates based on *init-poor* and *incor-poor* to provide higher impact estimates than *dens-poor*. Impact estimates based on *init-poor* and *dens-poor* are economically more exogenous, nevertheless if those based on using *incor-poor* are not particularly different, we may conclude that the bias based on endogeneity is not too severe.

In practice, the results obtained using *init-poor* (those initially chosen as eligible) and *incor-poor* (those actually receiving payments at least once) provide impact estimates that are almost identical. Given this, we exclude the results based on *init-poor* and in the text report only estimations based on *dens-poor* and *incor-poor*.

5. DATA AND EMPIRICAL SPECIFICATION

The data used in this report come from the Survey of Household Socio-economic Characteristics (ENCASEH) and the Evaluation Survey of PROGRESA (ENCEL). The Survey of Household Socio-economic Conditions is an economic census and is the data survey used to select which households in the eligible communities will participate in PROGRESA. The Evaluation Survey was designed especially for the purposes of the evaluation and consists of a baseline survey on the 24,077 households of the evaluation sample and follow-up surveys every 6 months. [6] We make particular use of a special time use module carried out one time only as part of the May 1999 ENCEL which also allows us to look at hours spent in school and work, as well as analyze the impact of PROGRESA on participation and time spent in household work.

Labor Force Participation (Adults and Children)

For the purposes of the analysis of labor force participation, we use the ENCASEH data as our baseline round and three post program rounds of the ENCEL, including the November 1998 round, the June 1999 round and the November 1999 round.[7]

To analyze participation in work for both adults and children, we use difference in difference probit models, where we estimate the impact of PROGRESA on labor force participation (LFP) over the different rounds of analysis by using interaction terms of the program impact with each

[6] The data includes quite extensive information on numerous individual, household and community characteristics including all sources of income levels, labor market participation, demographic and socio-economic information, child's school attendance, health utilization, community characteristics, among others.

[7] We use the ENCASEH rather than the baseline ENCEL survey as our baseline of labor market participation as the ENCEL baseline did not include information on labor force participation. Fortunately, the labor market participation questions in the ENCASEH and the post program implementation ENCELs are identical.

round of analysis. Using different rounds of the survey after the program began operation allows us to examine whether impacts are constant, decreasing or increasing over time, as well as whether there are seasonal effects.

The empirical equation for participation in work is shown as follows:

$$W_{it} = \sum_{r=1}^{4} a_{0i} + a_1 T_i + a^*_2 T_i R_2 + a^*_3 T_i R_3 + a^*_4 T_i R_4 + \sum_{j=1}^{J} b_j X_{jit} + e_{it}$$

where W_{it} represent the work outcome indicator for individual i in period t, T_i represents a binary variable equal to 1 if individual i lives in a treatment community and 0 otherwise, R is the round of the corresponding ENCEL survey, and X_{jit} represents the vector of J control variables for individual i in time t (described below).

The equation demonstrates that the impact of PROGRESA over the various rounds of the evaluation survey is estimated by including variables which interact the treatment dummy T_i with the round of the analysis R (round 1 represents the baseline observation before implementation of the program whereas rounds 2 through 4 represent after program rounds corresponding to the ENCEL of November 1998, June 1999 and November 1999). Note that a_1 is expected to be insignificantly different from zero (that is, pre-program differences prior to program implementation are expected to be zero) and the interaction terms represent the impact of being in a treatment community on work participation after program implementation. The different intercept a terms capture the point that participation in work may vary (for reasons unrelated to PROGRESA) over each round of the analysis.

Our definition of working is defined to include all workers who report that they worked over the previous week (whether paid or unpaid). There is also a follow-up question to capture individuals who may engage in informal activities but that the respondent may not have initially considered as work. This question asks about participation in a) selling a product, b) helping in family business c) making products to sell, d) washing, cooking or ironing and e) working in agriculture activities or caring for animals. Individuals who respond that they engage in any of these activities, we include also as working. It should be emphasized that domestic activities are <u>not</u> included in this definition of work. The time use survey we use later will allow us to broaden our definition of work to include these activities.

We also consider two other outcomes variables, salaried work and non-salaried work and estimate the impact of PROGRESA on each category. The distinction between salaried and non-salaried work is made through what a worker reports as their occupational position. Workers who report that they were day agricultural workers or non-agricultural employees are considered as salaried workers. All other workers are classified separately and include self-employed workers, business owners, unpaid workers and ejidatarios. [8] [9]

[8] In preliminary analysis, we considered separating non-salaried workers between self-employed workers and unpaid family workers. Nevertheless, the proportions of individuals participating in each of these activities are quite small for all age groups, and the distinction

Control Variables

Beginning first with the impact analysis for children, the multi-variate analysis includes a number of different family and household variables likely to influence children's participation in work. With respect to parental characteristics, the regressions include controls for mother and father education levels, the age of the mother and father as well as whether parents speak an indigenous language and whether they also speak Spanish. [10]

We also include a number of variables measuring the demographic composition of the household. [11] At the community level, the model also contains a variable measuring distance to the *"cabecera municipal"* which is an indicator of distance to the governing center of the municipality (and likely the largest locality of the municipality). This may be taken to be an indicator of the availability of local labor markets. It may, nevertheless, have different impacts on both school and work. Closer available labor markets may make (paid) work more attractive and reduce schooling or, in fact, it may make school more attractive by providing more information about the expected returns to schooling. [12] Finally, we include a variable measuring distance to the closest secondary school. This provides an indicator of the cost of attending school and thus is likely to affect the relative time spent in both school and work.

For adults, we include as individual characteristics their age, age squared, marital status, whether they are head of the household, speak an indigenous language, and their level of education. We also include the same demographic composition variables described above and the distance to the "cabecera municipal".

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between these activities is often blurred so that we prefer to aggregate these groups in the impact analysis.

[9] In this section we do not estimate the impact of PROGRESA on hours spent in work but rather postpone this for the section on time use. This decision was made due to the fact that overtime, the structure and design of the ENCEL questionnaires has changed such that it is difficult to compare hours worked before and after program implementation for workers. The after program data results in the awkward problem that many individuals who declare they are working in the participation questions (which are identical overtime) have no information for hours worked. Furthermore the time use module allows us to include a broader definition of work, which includes domestic work and other unpaid activities as work.

[10] Missing variable dummies are also included in the regressions for the cases in which data are not available (for instance, because the father no longer lives in the household).

[11] These variables include the number of children aged 0 to 2 and aged 3 to 5, boys and girls aged 6-7, 8-12, and 13 to 18, men and women aged 19 to 54 and men and women over the age of 55.

[12] We do not attempt to construct at the individual level predicted wages for children given the large number of children who do not work for an income.

Time Use

The time use module includes information on 18 activities carried out during the previous day for all individuals aged 8 or more. [13] In our analysis, we first construct overall measures of leisure time, defined as the difference between 24 hours and the time spent on all reported activities, that is, leisure is a residual. Analysis of leisure allows us to measure in broad terms, for adults, whether PROGRESA has increased their work load, through, for instance, substituting for a reduction in the work of children. We also, nevertheless, examine the composition of time spent. For instance, it may be that adults increase time spent in household activities previously done by children and then consequently reduce the time spent in market activities. That is, whereas there may be no effect on overall leisure time, there may be effects on substitution between different types of work. In the case of children, whereas the overall expected change from PROGRESA on children's leisure is ambiguous, there are also likely to be changes in the composition of activities occupying ones time. In particular, there is likely to be an increase in time spent on schooling and a reduction in time spent on work activities. For both adults and children, we consider 3 different types of work, including market work, farm work and domestic work where we analyze participation and hours spent in each activity. For children we also estimate participation and time spent in school.

Leisure time for individual i is estimated using OLS models as follows:

$$L_i = a_0 + a_1 T_i + \sum_{j=1}^{J} b_j X_{ji} + e_i$$

where L_i measure leisure time of individual I, T_i represents a binary variable equal to 1 if individual i lives in a treatment community and 0 otherwise, and X_{ji} represents the vector of J control variables for individual i in time t (described below).

Note that since we only have one round of data for time use, the impact of PROGRESA is measured by a simply dummy variable indicating whether the family lives in a treatment community or a control community.

Participation in activities is also straightforward to analyze, we use probit models for its analysis, which for each participation in activity A can be modeled as follows:

$$P_i^A = a_0 + a_1 T_i + \sum_{j=1}^{J} b_j X_{ji} + e_i$$

where $P^A{}_i$ measures participation in activity A of individual I, T_i represents a binary variable equal to 1 if individual i lives in a treatment community and 0 otherwise, and X_{ji} represents the vector of J control variables for individual i in time t (described below).

[13] We exclude from our analysis children who were interviewed on Sunday or Monday, as they presumably would not have attended school the previous day.

Looking at hours spent on activities, nevertheless, complicates the analysis somewhat,. Whereas leisure has the advantage of having no censored values so that simple ordinary least square regression methods may be used, in the case of different work activities, OLS cannot be used to compare the impact of PROGRESA on time spent on activities precisely because a large number of children/adults do not participate in each activity, so that there are a large number of censored values. We use Heckman selection correction equations: the model is the following for the case of hours spent in each activity:

$$H_i^A = a_0 + a_1 T_i + \sum_{j=1}^{J} b_j X_{ji} + s\, l_i + e_i$$

where $H^A{}_i$ measures hours spent in activity A of individual i, T_i represents a binary variable equal to 1 if individual i lives in a treatment community and 0 otherwise, X_{ki} represents the vector of K control variables for individual i and λ represents the selection correction derived from the probit participation equations of each activity above[14]:

Market work consists of all salaried work as well as work corresponding to a business or selling products. Farm work is defined as working on land (including but not limited to on family land) as well as caring for animals. Finally domestic work consists of a) realizing purchases for the family, b) making clothes for family members c) taking a family member to school, work, health center or hospital d)cleaning the house e)washing and ironing clothes f) cooking g) fetching water, firework or disposing of trash and h)caring for small children, elderly or sick individuals. Leisure is defined as total hours in a day (e.g. 24) minus time spent in all work activities as well as in other non-work areas such as transportation.

For adult women, we also consider participation in two other activities of analysis which may increase due to the requirements of PROGRESA. While the time use survey is not particularly well-focused towards measuring the possible time requirements (taking children to school, health clinics, picking up monetary benefits etc), there are two categories which to some extent may provide information on these commitments. These categories include taking individuals to health

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[14]The underlying continuous model is the following: $H_i^* = a^* + BX^*{}_i + e^*$ where $H = H_i^*$ for $H_i^* > 0$ and $H = 0$ for $H_i^* \le 0$. But, the actual equation estimated under this model is: $H_i = a + BX_i + e_i$ Using OLS to estimate this equation will result in biased estimates of the parameters because the mean of $\varepsilon \neq 0$. Heckman has shown (1979) that the mean of the error term can be derived as:

$$E(e_i \mid e_i \ge -a - bX_i) = \frac{s f(a + \mathrm{B}X_i)}{F(a + BX_i)} = s\, l_i \text{ where } l_i = \frac{f(a + \mathrm{B}X_i)}{F(a + BX_i)}$$

σ is the standard deviation of the true error term, f is the probability density function of a standard normal variable, and F is the cumulative distribution function. λ_I can be calculated through the estimation of a probit model of the participation equation above so that the corrected equation estimated in the Heckman procedure can be shown to be the following: $H_i = a_i + B' X_i + s\, l + e_i$.

clinic, school etc. and participation in community work. While participation in community work is not required to receive benefits according to the rules of PROGRESA, there is some evidence (Adato, 2000) that beneficiaries are encouraged by promotoras or doctors to participate in community work, associating it with PROGRESA and that some non-beneficiaries (that is, those living in the same community but who were not selected to be beneficiaries) of PROGRESA refuse to participate.

Note that the reference period for the time use questions refers only to time spent in the activity during the previous day. This is not particularly ideal, as for some individuals, the survey may refer to a day which was not "typical" of normal activities. Additionally, many activities may be activities which are done infrequently (i.e. not daily) such that the survey is likely to underestimate participation in certain activities. The survey was carried out in this way as it was thought it would reduce recall bias, given the large number of activities included in the questionnaire. [15]

Nevertheless, the format implies that the impacts on these variables must be interpreted with caution. In particular, in the case of schooling children may in fact be enrolled in school, but not attending the previous day. That is, our participation measure in schooling effectively captures both enrollment and attendance. We are fortunate nevertheless to have more direct information on enrollment from the main ENCEL survey so that we are able to evaluate the extent to which our school participation variable underestimates enrollment. As expected, comparing the percentage of children who report spending some time in school the previous day results in a lower estimate of children enrolled in school versus the more direct measure of enrollment, e.g. is your child attending school. The bias is overall about 15%, that is of children reporting they were enrolled in school, about 15% reported 0 hours spent at school the previous day in the time use survey. [16]

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[15] Analyses of time use generally suffer from the defect that individuals may engage in more than one activity simultaneously, for instance cooking and caring for children at the same time. The survey actually tries to get at this point through a series of questions which ask individuals about the activities where they spent most time and which activities they carried out at the same time. While well intentioned, the questions are very difficult to analyze, particularly as there is no way to judge how much time was spent doing both two activities at the same time. Furthermore, many of the reported activities done simultaneously are difficult to interpret, for instance for almost a third of cases where individuals report doing 2 activities at the same time, one of the activities is transportation whereas the other activity is in most cases either school attendance or paid work activities. It does not seem plausible that both were done at the same time, rather they are activities which are related but done at different times. For this reason, we ignore the issue of activities which may be done at the same time so that our estimates of leisure and time spent in each activity may run the risk of being slightly over-estimated. In particular, that of time spent in domestic work may be overestimated. It should not bias the impact results on time spent unless it is the case that PROGRESA makes beneficiaries more (or less) likely to do more than one activity at the same time. To the extent that it is possible to check this point with the available data, it does not appear that this is the case.

[16] This would seem to suggest a rather high rate of absenteeism. This high rate of absenteeism is largely explained by the point that the school year is almost over and absenteeism

Our basic control variables are identical to those included above in the labor force participation analysis. To identify the Heckman models, for children we use distance to school and to local labor markets as identifying variables for children, which we hypothesize will affect the probability of activity participation in school or work, but not the amount of time spent in each activity. For adults, we only use the distance to local labor markets as identifying variables in our participation in work equations. [17]

6. DESCRIPTIVE EVIDENCE ON LABOR MARKET PARTICIPATION AND TIME USE IN PROGRESA COMMUNITIES

Labor Force Participation Prior to Program Implementation

In this section, we provide a general description of labor market activities in the communities of analysis. We begin first with the activities of children under the age of 18 and then proceed to a description of male and female adult labor market activities. It should be emphasized that these communities are isolated, poor communities and are not representative of all rural communities. Communities selected are generally very small. Our evaluation sample has an average community size of about 50 households. For this descriptive analysis, we use the sample of eligible families for PROGRESA under the criteria *dens-poor*.

Because of the relatively high prevalence of unpaid work activities and their distinctive nature, we distinguish in the analysis between paid (salaried) work and other types of work, which includes basically self-employment and unpaid family work. We initially considered a division based on three different categories of work, including salaried work, self-employment and unpaid activities. Nevertheless, the distinction between self-employment and unpaid activities is a difficult distinction to make as it frequently occurs that heads of households report they are self-employed and their children report they work as unpaid workers but both actually work in

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is higher at the end of the school year. The reasons most commonly given for a child missing days of school are illness, work and the teacher not showing up at school.

[17] Note that through its benefits, PROGRESA is likely to increase school enrollment, nevertheless, those students who re-enroll in school (who were not enrolled prior to the program) are not necessarily representative of those students who were attending before receiving program benefits. For instance, they may be students who are lower ability students and less likely (or able) to spend time doing homework, so that they may actually lower the average time that children dedicate to schooling, as compared with the control group. It might then appear (falsely) as if PROGRESA had reduced (or had a lower increase than expected) on the amount of time spent on schooling. One way to correct for this issue is if one knows which children were in school prior to the program. While our time use survey was only carried out once after the program we do have other variables on school enrollment carried out from a survey prior to program implementation which we can link to our time use sample. Therefore, we repeat the analysis, eliminating children from the sample who were not previously in school but re-enrolled after beginning to receive PROGRESA benefits. The results were similar and are not reported here.

the same family business so that the distinction is not necessarily relevant. (See Beegle, Frankenberg, and Thomas, 1999).

Graphs 1 and 2 show the school enrollment rate and the labor force participation of boys and girls by age using the sample of all children from households eligible to receive PROGRESA benefits between ages 8 and 17 prior to implementation of the program, (i.e. from the ENCASEH of November 1997). It is noteworthy that for boys the school enrollment rate is close to 95 percent while the labor force participation is quite low (less than 5%) up until the ages of about 10 to 11 when the percentage of boys enrolled in school begins to decline and the percentage participating in the labor market begins to grow substantially. At early ages, participation is generally dominated by unsalaried work, that is primarily self-employment and helping in family businesses. That is, when children begin to work, they are likely to begin working in more non-salaried work rather than salaried work. It is only by the age of 14 when the percentage of children in salaried work begins to exceed that of other types of work. By the age of 16, the majority of boys report working and the majority of these workers are in salaried work.

For girls (see graph 2), it is also the case that labor force participation is extremely low at early ages, nevertheless, unlike that of boys, growth with age is quite slow. Even girls the age of 17 have a very low participation rate in the labor market at 17 percent. For those who do work, however, the same overall pattern of type of work is evident, that is those girls who begin working at very young ages tend to be in non-salaried activities. At older ages (above the age of 12), approximately the same fraction of girls participates in salaried activities as in unsalaried activities.

We now turn to the labor force participation of adult men and women. Table 2 presents the distribution of labor force participation for both men and women by age group for the same sample of households eligible for PROGRESA benefits before the implementation of PROGRESA. As was the case with girls, the labor force participation of women at all ages in the communities of analysis is quite low. For no age group do overall labor force participation rates exceed 18%. The majority of women who do work tend to participate in unsalaried activities; this is particularly true of women over the age of 35. It is interesting to note the decreasing relative participation in salaried work versus unsalaried activities with age of women.

Men, on the other hand show very high labor force participation rate, which are over 90% for men between the ages of 24 and 55. The majority of men are salaried workers, nevertheless the percentage in salaried work tends to decrease with age and consequent increases in other types of work are observed. For male workers over the age of 55, almost half participate in non-salaried activities.

Table 3 presents the occupational position of both men and women aged 18 years and over. The Table shows that men primarily participate in agricultural day laborer activities whereas only a small percentage of women participate in agricultural activities. Women are much more likely than men to be unpaid workers in family businesses, self-employed or in other non-agricultural work. Over a quarter of women work as unpaid family workers.

Table 4 summarizes characteristics of work for working men and women. Both men and women in paid and unpaid work tend to work more than 5 days a week, with those in paid work working 8.2 hours per day and those in unpaid work working slightly less (7.4 hours per day). Men tend to work slightly more hours per day than women. Average monthly earnings, by any measure, are quite low at about 600 pesos monthly for women and 870 for men. Very few workers (2.6% of female salaried workers and 2.3% of male salaried workers) have health benefits associated with their employment. Table 4 also demonstrates that a substantial minority of men and women's work is seasonal as many individuals do not work the entire year, especially in unremunerated work. Seventy five percent of men and about two thirds of all women in paid work report working all year, as opposed to working a few months a year or once in a while. These trends indicate the further precariousness of work among the population in extreme poverty in these in these isolated regions.

Descriptive Evidence on Time Use Prior to Program Implementation

In this section, we turn to an analysis of the patterns of time use in the communities where PROGRESA operates, meant to illustrate patterns prior to implementation of the program. This analysis we carry out using the control group, which provides us with an approximation of individual time use prior to the implementation of PROGRESA.

Table 5 shows overall participation and daily hours spent for each of our groups of analysis in each of the 18 activities covered by the time use survey. Since the reference period is the previous day only, the overall levels of participation are likely to be lower than those based, say on a two-week re-call period. For instance, whereas it is likely that at least one individual of the family goes to the market at some point over the two week period (e.g. that the participation rate using a two week period of reference would be close to 100%) the fact that our reference period is short will underestimate the percentage of individuals who carry out this activity.

Considering first children, the table shows that about two-thirds of children report attending school the previous day, of those attending almost all report spending some positive time doing homework, approximately 1 hour a day, with no overall differences by gender. With respect to work activities, the Table 5 shows some general differences by gender in terms of the type of work children perform. Boys are more likely to be in salaried work than girls, although overall participation rates of both groups are low. Girls on the other hand have much higher participation in domestic activities such as cleaning, cooking, sewing and preparing food, activities where boys have very minimum levels of participation. The only domestic activity where boys have a similar participation level as girls is the category of fetching water, firewood and/or throwing out trash. Boys, however, do have slightly higher participation levels in working the family land and taking care of animals.

Turning to men and women, the differences in types of work displayed by girls and boys is again reflected between men and women, although the differences are much greater. Men as expected, have much higher participation in salaried or day wage labor where women have participation levels less than 10 percent. On the other hand, in domestic activities such as cooking and cleaning, women have high participation levels whereas men participate at rates less than 10%. For instance, more than 80 percent of women aged 18 and over report spending some time

cooking the previous day, compared with only 3.7 percent of men. With respect to time spent in agricultural activities, men have a much higher participation rate than women working the family land (28% versus 4%) whereas women are more likely to tend to the family animals.

While revealing, this disaggregation of activities obscures to some extent the actual number of hours an individual may work. We now present participation and time spent in our three types of work (as defined above): market work, farm-work, domestic work, as well as schooling for children.

Graphs 3 and 4 show participation in school and work for boys and girls aged 8 to 17. The graphs show the clear relationship between declining school enrollment and increasing participation in work for both boys and girls. By the age of 12, about half of all children report working. It is interesting to note, however, given the broad definition of work used here, that, comparing Graphs 3 and 4, girls actually have a higher overall participation in work than boys.

By type of work, there are also substantial differences by gender, for girls domestic work is the most likely type of work, by the age of 15, the proportion of girls doing domestic work is higher than the proportion attending school. For boys, by the ages of 16, all three types of work have approximately the same prevalence. It is perhaps surprising the relatively high level of participation of boys in domestic work. This is largely due to the activity category of fetching wood, water and getting rid of the trash in which boys have a high participation (Table 5).

Participation is clearly not the only relevant indicator of work, time dedicated to each work activity is equally important. While one hour of work daily may not interfere with school activities, clearly an eight hour work day would interfere. The next graphs (Graphs 5 and 6) shows hours dedicated to each activity, for those who participate in each activity. Beginning with our measure of overall work, the graph shows the number of daily minutes for a child who reports participating in work. It is interesting to note that average time dedicated to work (for child workers) increases with age. Whereas an 8 year old child who reports working, works only about one and a half hours daily, this increases steadily until by the age of 17, the average male works about 6 hours per day.

Looking at types of work, it becomes evident that some types of work are more demanding for children than others. When boys participate in market work, it is evidently full time, averaging by age 14, about 7 hours daily. Farm work ranks second in terms of time dedicated, the average child working in agricultural activities works three to four hours daily by the age of 15. Domestic work for boys is overall a low time consuming task, averaging about an hour to an hour and a half daily at all ages for those who participate.

Girls, on the other hand, show different tendencies, domestic work being the most time-consuming. While market work for girls who work is very time intensive as is the case for boys, very few girls overall participate. Domestic work, on the other hand, is a significant time activity, although even for girls as old as 17, average time in domestic work does not surpass three hours daily. Time spent in farm work, while significant, does not surpass more than two hours daily on average for any age group. These trends for girls are suggestive that at least some

girls may combine domestic work with schooling, assuming that these domestic activities could be done after school.

Adults

Overall leisure time for males in working ages is about 15 hours daily (Table 6), implying that 9 hours on average is spent in work activities, transportation etc. This, at first glance, would seem to imply a reasonable portion of the day is dedicated to work activities and does not portray these highly poor populations as "over-worked". Nevertheless, it is important to add that overall work does not increase substantially on the weekends. This is consistent with much of the work in these communities, which is based on agricultural activities, which presumably do not cease over the weekend. Overall, leisure time increases by only about 10% on weekends, implying an average work week for a male in working ages in these communities is approximately 60 hours per week.

Perhaps surprisingly, given other studies based on urban areas in Mexico, average leisure time for women is higher than men's at all ages groups, ranging from 16 to 17 hours per day (Table 6). This is contrary to studies which have generally shown, that once household work is taken into account, women tend to work more hours than men. This may reflect that the survey has under-estimated hours dedicated to domestic work by, for instance, not including all activities that encompass domestic work in these poor communities. It may also reflect, however, the low overall participation of women in income-earning activities. Typically, the women with highest hours worked, for instance, in urban areas, are those women who work outside the home, as generally they remain responsible for a large fraction of domestic work (INEGI, 1998).

Looking at participation in different types of work, Table 6 shows that men and women participate in different activities according to traditional divisions of labor. Almost 100% of all women report participating in domestic work, whereas very low percentages participate in market work and farm work. Men, on the other hand, have the highest participation in market work, followed by farm and domestic work.

The preceding has provided a brief vision of men's, women's and children's activities in poor communities prior to the implementation of a large scale anti-poverty program. We now begin our analysis of the potential impact of PROGRESA on labor force participation and time use.

7. RESULTS OF THE IMPACT OF PROGRESA ON LABOR FORCE PARTICIPATION

In this section, we present our results on the impact of PROGRESA on labor force participation. Our impact analysis derives from regression analysis with a number of control variables. Given the large number of regressions, we only report the results of the impact of PROGRESA, the complete results with the control variables are available on request.

Impact of PROGRESA on the Labor Force Participation of Children

Tables 7a and 7b presents the results of the impact of PROGRESA on children's labor force participation, using our two different eligibility indicators as described above, (*incor-poor* and *dens-poor*). The results consider first the group of children aged 8 to 17 and then focuses in particular on the age groups of children 12 to 13, 14 to 15 and 16 to 17. These age groups may show larger impacts of PROGRESA, given previous research which has shown that the highest educational impacts of PROGRESA are at the secondary level of schooling (Schultz, 2000, Coady and Parker, 2000). This tends to be linked to the very high (over 90%) enrollment rate of children in primary school (Schultz, 2000) implying that the impacts in primary school on enrollment are necessarily low.

The results are presented showing the initial level of labor force participation (that is prior to program implementation) and the impact estimates for each round of the ENCEL carried out after program implementation. The impact from each round should be interpreted as the percentage point difference from the pre-program level (not from the previous round). In other words, the estimates reported represent the marginal effects of being in a household receiving PROGRESA benefits on the probability of being in the labor force.[18]

Considering first the results based on Table 7a using the eligibility indicator of *incor-poor*, that is, children in families who have received at least one payment from PROGRESA, the results show clear negative impacts of PROGRESA on children's labor market participation. Beginning with the overall group of boys aged 8 to 17, the results show consistently negative impacts on work in every round of the ENCEL, accounting for a reduction of approximately 10 to 14% in the probability of working for this group. For instance, in November of 1999, the results show a reduction in 3.1 percentage points of the probability of working for boys aged 8 to 17, whereas overall participation rates prior to the program were 22.4 percent.

We now focus in particular on boys aged 12 to 17, where we may expect potentially larger results to be obtained. For boys aged 12 to 13, PROGRESA results in a reduction in the probability of working of from 15 to 20%, relative to their probability of working prior to the program. For boys aged 14 to 15, the effects show also a consistent and significant reduction of 15% of the probability of working. Nevertheless, for boys aged 16 to 17, there is no significant reduction in the probability of working.

For girls, in spite of their overall lower participation level prior to the program, there are also significant reductions associated with PROGRESA. With the exception of the ENCEL round of June, 1999, the analysis shows negative and significant (although only at the 10% significance level) reductions in the probability of working of girls, corresponding to approximately a 15% reduction in the probability of working. The average participation rate of girls aged 8 to 17 prior to the program was 8.6 percentage points, and PROGRESA reduced this participation by 1.2 percentage points.

[18] The estimates reported were obtained using the "dprobit" command in STATA v5.0.

As with boys, the analysis shows larger effects on girls aged 12 to 17, principally concentrated on girls aged 14 to 15. For girls aged 12 to 13, the effects are significant only in the first after program round, and show a reduction in participation equivalent to a reduction from the pre-program level of about 15%. For girls aged 14 to 15, the effects are consistently large and significant overtime, showing a reduction in the probability of work ranging from (depending on the round) of about 18 to 25%. As with boys, the effects of PROGRESA on work are not significant for girls aged 16 to 17. PROGRESA does not appear to have much success at reducing the work of boys and girls in this age group.

Given the evidence that children show a reduction in their probability of working, we next consider what type of work is affected by PROGRESA. In particular, we distinguish between participation in salaried and other work activities. As described earlier, other work activities principally include self-employment and unpaid work activities such as working in a family business. Our descriptive analysis showed that work in salaried activities tended to be full-time whereas other activities were likely to be characterized by a high proportion of those working in part-time work. It thus seems likely that non-salaried work may be more flexible, or less demanding and thus more easily combined with school than paid market activities.

The bottom panels of Table 1a show that for boys, the reductions in participation occur in both salaried and non-salaried work. Nevertheless, for boys aged 12 to 13, the most consistently significant reductions occur in salaried work activities, with effects in all three program rounds representing a reduction in participation of up to 25%. For boys, aged 14 to 15, there are both reductions in paid work and other activities, which vary according to the time period. For boys aged 16 to 17, there are no effects of PROGRESA, with the exception of a significant reduction in the probability of participating in "other" activities in the first after-program round.

For girls, the results on whether participation in salaried or other work activities is affected to a greater degree by PROGRESA vary substantially depending on the age group analyzed. For girls aged 12 to 13, there are only significant reductions in the probability of participating in salaried activities. Nevertheless, for girls aged 14 to 15, the reductions in work are apparently due to a reduction in participation in other activities. Overall, it is difficult to say that one or another type of work is being affected to a larger degree than other types of work. Both types of work are clearly being affected under PROGRESA.

We now turn to the results based on our alternative eligibility criteria *dens-poor*. As described earlier, this eligibility criteria is expected to provide lower estimates, potentially underestimating the impact of PROGRESA, given that the sample includes a number of families in the treatment group, who, due to operational difficulties, were never incorporated into the program and thus whose behavior is unlikely to have been affected by the Program. It is useful, however, at the least as a robustness check on our results.

Based on the identical sample of children, table 7b reveals that the negative impacts on child work are matched by positive and significant impacts on the probability of being enrolled in school. In general the displacement of the incidence of child work is smaller than the gain in schooling for both boys and girls. When significant, the estimated marginal effects of PROGRESA on the probability of school enrollment of boys turn out to be only slightly higher

(in absolute value) than the marginal effects of the program on the probability that boys participate in the labor force. For example, in November 98 PROGRESA results in a decrease of the labor force participation of boys between 8 and 17 years of age by 2.7 percentage points and an increase in the incidence of school enrollment by 3.3 percentage points.

One way of interpreting these results is that the increased enrollment of boys in school is obtained mainly by boys withdrawing from labor force activities rather than combining school with work. In other similar programs such as the Food for Education program in Bangladesh, the lower incidence of child labor was found to account for 25 percent of the increase in the enrollment of boys in school (Ravallion and Wodon, 2000). The lower incidence of child work due to the PROGRESA program appears to be considerably higher ranging from 65 percent of the increase in the enrollment of boys in school in November 1999 (at the second school year after the start of the program) to 82 percent in November 1998 (at the first year of the program).

In contrast to boys, the estimated marginal effects of PROGRESA on the probability of school enrollment of girls are considerably higher (in absolute value) than the marginal effects of the program on the probability that girls participate in the labor force. Given that the labor force participation of girls is already quite low, these results suggest that most of the increased enrollment of girls in school is most likely occurring by girls combining domestic work with school. Unfortunately, whether this indeed the case can only be addressed by closer investigation of the time use survey in the later half of this report.

As a test of the sensitivity of our results, Table 7c repeats the impact estimates using *dens-poor* as the eligibility criteria. As expected, the results show a lower impact of PROGRESA and in some groups lose significance, nevertheless, there continue to be large and significant impacts of PROGRESA on reducing the labor force participation of boys and girls, particularly those between the ages of 12 and 15. The average proportional reduction in work is on the order of 10 to 15% in these age groups.

Thus, in summary, the results show important negative effects on the probability of children participating in work, both for boys and girls. In fact, in proportional terms, the reduction in the probability of working is similar for boys and girls, although given the higher pre-program participation rate of boys in work, the absolute reductions for boys are of course larger. In terms of whether salaried work is affected to a larger degree than other types of work, overall the effects are ambiguous. For some age groups, principally 12 to 13 year olds (both boys and girls) salaried work is that which is most likely to be reduced with the benefits of PROGRESA. Nevertheless, for other age groups, self-employment and participation in family business activities is more likely to be reduced. In general we can say that both types of work are being reduced under PROGRESA.

Finally, it is worth noting that the lowest effects on work appear to occur in the June round of the 1999 ENCEL. This may reflect seasonality in the work of children, e.g. there may be a greater need for child work during the summer months. Alternatively, it may reflect that many interviews were likely carried out at, or close to, the end of the school year and so, children may have fewer conflicts with the time they dedicate to work. That is, during the summer months when school is not in session, the incentive of PROGRESA to reduce children's work effort may

be to a large degree eliminated. We will return to this issue below in the analysis on time spent in work.

Impact of PROGRESA on the Labor Force Participation of Adults

Tables 8a and 8b presents the results for the impact of PROGRESA on labor force participation of male and female adults using the *incor-poor* and the *dens-poor* eligibility criterion. As in the descriptive analysis, we divide the analysis into 5 age groups, ages 18 to 24, 25 to 34, 35-44, 45-54 and 55 and over.

Beginning with men using *incor-poor* as the eligibility criteria of those men living in families who received at least 1 PROGRESA payment over the period of analysis, the results of the impact of PROGRESA on overall participation levels show little impact of PROGRESA. The only exception are men are the age groups 35 to 54, for whom in the round of the ENCEL of November, 1999 show actual positive and significant increases in the probability of working. The magnitudes of these effects, however, are relatively small, reflecting the already high pre-program participation of men in the labor market.

Looking at the decomposition between salaried work and other types of work, there are, nevertheless, some impacts, particularly in the first round of the data carried out after PROGRESA was implemented in these communities. In this round, there is a universal, for all age groups, increase in the probability of working in salaried work and a corresponding decrease in the probability of working in non-salaried work. These effects remain present in the next round of the data (June, 1999) only for men aged 25 to 34 and disappear by the last round of the ENCEL. The results seem to suggest that, at least initially, families may have used some part of the grants to seek work in salaried activities and to reduce their participation in perhaps less profitable family enterprises. This impact, however, appears to disappear over time.

For women, the results show few overall impacts of PROGRESA on participation in the labor market. For women in the age group 45-54, there is a significant reduction in participation according to the first after program round of the ENCEL, nevertheless this impact does not hold up over time. As with men, there is also a significant reduction in the probability of participating in non-salaried work activities in the first after program round, but again these effects do not hold up over time. In short, these data do not show particularly significant or lasting effects of PROGRESA on labor market participation. Rather, they are consistent with a story that PROGRESA does not affect participation of men and women.

Results based on our alternative criteria of eligibility *(dens-poor)* (Table 8b)are consistent with those based on *incor-poor* in Table 8a. There are no overall significant effects of PROGRESA on either reducing or increasing male adult labor force participation. The tendency of a substitution towards salaried work and away from self-employed work in the period shortly after beginning to receive benefits is present although less pronounced and again, is eliminated in the later program rounds. In the case of women, there are two age groups for which PROGRESA has a negative effect on the labor force participation of women in the early rounds, again this does not hold up over time. Thus, in general, the results show that there has been no particular reduction in labor market participation rates, as may have been predicted by some economic

models of behavior. Two years after the households of analysis began to receive PROGRESA benefits, there is no evidence that overall labor market participation rates have decreased.

8. RESULTS OF THE IMPACT OF PROGRESA ON LEISURE AND TIME USE

In this section, we turn to the results of the impacts of PROGRESA on time use, which are derived from the module carried out in June, 1999 as part of the larger ENCEL. Before presenting these results, it is worth recalling that the results previously presented on the labor force participation of children showed that the lowest impacts generally occurred in the June, 1999 ENCEL. This is potentially related to the seasonality of work and/ or the point that children are approaching the end of the school year and thus absenteeism is likely to be higher than normal. It is perhaps unfortunate that this same period was when the only time use module was carried out. It seems likely that the results reported here may to some extent underestimate the impacts which might be obtained if data had been carried out during other months of the year.

Depending on the time at which the survey was carried out, some children may have already been out of school and thus their time allocation is much less likely to have been affected by the Program. While school did not officially get out until the middle of July, we consider it possible that schools in rural areas may end early, or that rates of attendance may decrease as the end of the school year approaches. To make sure we are excluding interviews when school is no longer in session, we exclude all interviews that were carried out after July 4th. For interviews carried out after July 4th, the proportion of children who report attending school the previous day decreases considerably. [19] For this section, we use *incor-poor* as our measure of program eligibility.

Impact of PROGRESA on Time Use and Leisure of Children

Table 9 presents the results on the impact of PROGRESA on total leisure time for boys and girls. In this table, we consider again both definitions of eligibility discussed previously. For boys, PROGRESA does not appear to have significant effects on leisure time of boys. The results of the impact of PROGRESA show consistently insignificant effects for boys at all age groups. Nevertheless, for girls, PROGRESA has a negative and significant effect on leisure time. The size of the impact for the overall group of girls aged 8 to 17 is however, relatively small, corresponding to about 0.2 hours per day (or 1.4 hours per week). Nevertheless, this negative effect is largely concentrated on girls aged 12 to 13, who show larger reductions in leisure time, corresponding to about 0.4 hours per day, or about 2.8 hours per week. These effects suggest, given the large impact of PROGRESA on increasing school enrollment of girls, (Schultz, 2000)

[19] The possibility that school may end earlier in these rural isolated communities (or that absenteeism may be higher) than according to the national schedule set by the Secretary of Education is, of course, worrying. More analysis is necessary to understand the reasons why children appear to have a lower attendance towards the end of the school year.

that girls may increase schooling by more than they reduce work. This hypothesis we will look at in more detail below.

Table 10 presents the results for the impact of PROGRESA on participation and hours dedicated to school and work including impacts on overall work and impacts by our three categories of work: market work, farm work and domestic work. Here, we carry out disaggregations by age group identical to those performed above (e.g. 12 to 13, 14 to 15, and 16 to 17). Nevertheless, note that these impact estimates by age group leads us to begin to run into sample size problems. Given the necessary data cleaning exercise which took place (e.g. eliminating interviews where the reference period was Saturday or Sunday as well as those interviews carried out after early July) for these age groups, we have less than 1000 cases overall, which can correspond to, for some of our work categories, to only 100 cases of positive work hours. For this reason, we put more emphasis on our results for the overall groups of children aged 8 to 17 and those 12 to 17, rather than those further disaggregated by age group.

Beginning with the work and school activities of boys, Table 10 shows that for the group of boys aged 8 to 17, PROGRESA has a significant increase in participation in school. The size of the impact corresponds to, for the group of boys aged 12 to 17, approximately 4 percentage points, which is an increase of about 8 percent in participation in school. This impact appears to be largely concentrated on boys aged 12 to 13, which is broadly consistent with previous studies of the impact of PROGRESA on schooling (Schultz, 2000) and (Behrman et al, 2000). With respect to hours spent in school, the only significant impact is an increase in time dedicated to school for boys aged 16 to 17 of almost one hour daily.

Turning now to work, we first consider overall participation in work of boys using the broad definition of work which includes market work, domestic work and farm activities. The results show that overall participation in work is significantly reduced for the group of boys aged 8 to 17, and concentrating on the group of boys aged 12 to 17 shows larger absolute and proportional reductions of 4 percentage points from a pre-program level of 55 percent. It is interesting to note that these reductions in work are practically identical to the increase in schooling participation described above. This provides some evidence on the possible substitution which may exist between work and school in these communities for boys (Ravallion and Wodon, 2000). [20] It is also important to note that overall hours dedicated to work are not affected. This suggests that the impacts of PROGRESA are primarily to increase school enrollment the number of children in school and to reduce the number of children who are working, but not necessarily, for instance, to reduce the hours worked of children who attend school.

Looking at the impact of PROGRESA on type of work for boys, the results show negative impacts of PROGRESA on participation in market work for the group of boys aged 8 to 17, and larger reductions on the group of boys aged 12 to 17. Consistent with the results on schooling

[20] It is interesting to note that in the case of Pakistan, Ravallion and Wodon (2000) find much lower proportional reductions in work compared with school in the context of a food subsidy program linked to children's school attendance. This may reflect the different nature of the benefits provided, or it may be related to the point that here we use a broad definition of work, whereas their definition uses only market work activities.

participation, the largest reductions in participation in market work appear to be concentrated on the age group of boys aged 12 to 13, who show reductions in market work due to PROGRESA of approximately 40 percent from initial levels. Nevertheless, there are no impacts of PROGRESA on hours worked of boys in market work for any age group.

With respect to other types of work, the results show a reduction in participation in domestic work for boys, particularly for boys age 14 and over. With respect to farm work, whereas all the coefficients are negative, none are significant at conventional levels, implying there is no evidence that participation in farm work for boys is reduced with PROGRESA.

We now turn to the estimates of PROGRESA on school and work of girls (Table 10). Beginning with schooling, the estimates on participation in school are much larger than boys, consistent with previous studies (Schultz, 2000). In fact for the group of girls aged 8 to 17, the average impact of PROGRESA on girl's participation in schooling is almost twice the impact of boys impact. For girls aged 12 to 17, from an average level prior to the program of 51%, the impact of PROGRESA is to increase participation by 7 percentage points, a percentage increase of about 14%.

Turning to participation in work, our measure of overall work, which again includes participation in household work, farm activities as well as market activities shows significant reductions as a result of PROGRESA. Decomposing the analysis by type of work, the results show few impacts of PROGRESA on reducing market work for girls, with the exception of the group of girls aged 14 to 15, where participation in work is significantly reduced, although there is no impact on hours. The largest reductions in work for girls, nevertheless, correspond to the reductions in domestic work, particularly for girls aged 14 and over which show reductions in participation in domestic work of about 10 percent. While all the estimated coefficients are negative, there are no significant effects of PROGRESA at reducing time spent in domestic work of girls. Again, the conclusion that appears to be emerging from the analysis is that PROGRESA is successful at increasing school participation and reducing participation in work, nevertheless there is little impact on reducing the hours of children who work.

In summary, the results show the largest impacts of the program on the time use of children above the age of 12. These age groups correspond with enrollment in secondary (junior high) school and is consistent with the previous point that PROGRESA has the largest impacts on children at this level. Consistent with previous studies, we have found much larger impacts of PROGRESA on school participation for girls than boys, impacts which are nearly double the size of those on boys.

What is also of interest, however, is that these increases in schooling are associated with reductions in work, for boys, there are reduction in both market work and domestic work whereas for girls there are significant reductions in domestic work. For boys, the reductions in participation in work are approximately equivalent to the increases in participation in school, providing evidence that work and school can be viewed to some extent as competing activities. For girls, however, whereas there are significant reductions as well in participation in work, these impacts tend to be smaller than the increases in school participation. This suggests, consistent with the descriptive analysis above, that the work activities of girls may be more

"compatible" with school, that is, they tend to be activities which can be done with in the span of a few hours daily. Thus the impact of PROGRESA on the overall time use of girls appears to be to reduce slightly their leisure time. Given that the reported leisure time of girls was slightly greater than boys prior to the program, this is not necessarily a point for concern for the Program.

Impact of PROGRESA on Leisure and Time Use of Adults

Table 9 presents the results for adults in terms of the effect of PROGRESA on leisure. Note that one hypothesis of the impact of PROGRESA on leisure mentioned above, is that, if the PROGRESA transfers are perceived as strict income transfers, and leisure is a normal good, one might expect leisure to increase with PROGRESA. Nevertheless, the structure of the grants which reduce the price of schooling of children and thus may reduce the work of children may imply that overall hours dedicated to household production work (previously done by children) might increase. This would then imply that the Program would have an ambiguous effect on the leisure time of adults, e.g. one might expect to see reductions in market work, but an increase in other forms of work related to household production.

Overall, the results do not show significant impacts of PROGRESA on the leisure time of men or women. There are some small negative impacts of PROGRESA on leisure for men for one age group, namely men aged 18 to 24, which corresponds to increases in work for this group of men of about 0.3 hours daily, or about 2 hours weekly. Nevertheless, there are no significant impacts on any other age groups for males. The results for women are insignificant in all specifications and for all groups. Overall, then we can say that there is not much evidence to support the hypothesis that PROGRESA has reduced the leisure time of men and women. There is certainly no evidence to support that leisure time has increased under PROGRESA.

Note, however, that the results on leisure do not necessarily suggest that there has been no reallocation of time between work activities for adults. For instance, there may have been a substitution towards more time in domestic activities and less time in market work, particularly given the evidence on children which showed a reduction in domestic work. We now turn to an analysis of the impact of PROGRESA on different types of work of adults.

The overall results of the impact of PROGRESA on time use in different types of work do not provide much evidence for the hypothesis that the types of work adults carry out have undergone important changes for men (Table 11). There are few generalizable impacts of the Program on male time use. For the age groups of men aged 25 to 34 and 45 to 54, the results show some evidence of reductions in participation in domestic work although their magnitude is quite small. Also, for the male age groups 18 to 24 and 45 to 55, some increases in the time dedicated to farm work. In the case of adult females, there are also no obvious patterns to the changes in the composition of work. The only exception is there is evidence of some reduction in women's participation in domestic work, although again the impacts are small in size. For instance, women in the age group 35 to 44 show a reduction of about 2 percentage points due to PROGRESA, from an initial value, prior to program implementation of over 90 percent.

Finally, we examine the hypothesis that PROGRESA has increased the time demands on women given that to receive benefits, women must fulfill the requirements of PROGRESA, namely

taking children to school and health clinics, making sure appropriate school and health clinic registration forms are filled out, as well as picking up monetary benefits. We previously showed that overall leisure time of women has not decreased under PROGRESA, which suggests that the Program has not unduly affected the work of women. Note, however that we did show some reductions in participation in domestic work for some female age groups. This may imply that the time demands of PROGRESA have to some extent been associated with reductions in the time women have available to dedicate to other work activities. Nevertheless, the overall number of hours spent in work (assuming most or all relevant activities are included in the survey) which shows that on average women work about 7 hours daily does not suggest that women are overly time constrained. More plausibly, a lower participation in domestic work may be to some extent a choice associated with receiving benefits, that is, women may spend less time in domestic activities if the PROGRESA benefits facilitate, for instance, purchasing food in greater quantities, so that shopping may be done more infrequently.

The data on the time use module is not particularly good with respect to analyzing the time demands that may be associated with PROGRESA. In particular, the fact that the period of reference refers only to the previous day is likely to severely underestimate the proportion of women who report participation in these activities. Nevertheless, we analyze the impact of PROGRESA on two categories which are related to the potential time demands associated with participating in PROGRESA which include: 1) taking other individuals to school/health clinics and 2)community work. Taking children to school and health clinics is associated with the requirements for receiving benefits which require school attendance of children and regular health clinic visits of all family members. The second category, that of community work, refers to a point for which there is qualitative evidence that women report they are required by school or medical personnel to participate in community work, such as cleaning schools (Adato, 2000), although participation in these activities is not a requirement of PROGRESA and theoretically should not occur. We thus look at these two categories to analyze the extent to which women in PROGRESA appear to have increased their time in these activities. We use simple descriptive techniques given the overall low percentage reporting participation in these activities (again likely due to the short reference period).

Table 12 reports mean participation and time spent in these two activities for women in the treatment and control group. Program impact is estimated simply by comparing means and testing for significant differences between the means. In spite of the relatively low participation in these activities, there do appear to be, in fact, significant differences between the treatment and control group. That is, PROGRESA does increase the percentage of women who report spending time taking individuals to school and health clinics, and the percentage of women who report participating in community work, particularly in the age groups between 25 and 44, age groups where women have children and so it is plausible that PROGRESA increases the time they must spend for instance, taking family members to health clinics. While again the relative percentages participating are low because of the short reference period, the implied impacts are sizable, for instance, implying participation levels in community work as much as twice the size of those not receiving PROGRESA benefits. Given the deficiencies of the data in measuring possible time obligations associated with PROGRESA, these data should perhaps not be used to provide a definitive answer to this important issue. They do however, point at some potentially significant time obligations associated with PROGRESA. Particularly, the point of possible

extra community work to some extent being "required" of beneficiaries should be examined in future, more detailed studies.

9. CONCLUSIONS

PROGRESA now extends over the large majority of all rural communities in Mexico and includes about 40% of all rural families as beneficiaries. In this report, we have analyzed the impact of PROGRESA on labor force participation and time use of children and adult men and women. Overall, we have found that PROGRESA reduces the labor force participation substantially of children, both girls and boys. For adults however, we have found no evidence that PROGRESA reduces (or increases) their labor force participation. Some initial apparent substitution of males between salaried work and other work activities including self-employment did not hold up overtime. We have also found few changes on participation or hours worked in other types of work, in particular domestic and household farming activities with the exception of some groups of women, who show a reduction in participation in domestic activities. Nevertheless, there are no overall effects of the program on adult leisure.

One important implication of this analysis is that it suggests that adult beneficiaries do not use the benefits to work less and increase their leisure. One possible reaction to the benefits (and one predicted generally by some economic models of labor supply) would be that of increasing leisure by working less. Nevertheless, this does not appear to be the case with PROGRESA beneficiaries.

With respect to women, there is some weak evidence that PROGRESA has slightly reduced participation in domestic work. Note that reductions in domestic work should not necessarily be viewed as "negative", for instance, women may spend less time cooking if the PROGRESA benefits alter their diet or permit them, for instance, to buy ground corn rather than grinding corn themselves to make tortillas. Beneficiaries generally report that they are able to buy in larger quantities, PROGRESA benefits may reduce the frequency or time spent in purchasing daily food products.

On the other hand, there is some evidence that the time demands on women associated with satisfying Program obligations are significant. Women in PROGRESA are more likely to report spending time in both taking household members to schools, clinics etc. as well as having a greater participation in community work. Nevertheless, the short period of reference used by the data inhibit our efforts to accurately judge the extent to which these requirements are important constraints on women's time.

Turning now to children, there are important impacts of PROGRESA on children's participation in work. Estimates based on double difference models of labor force participation before and after the implementation of PROGRESA show important reductions in children's labor force participation for both boys and girls, in both salaried and non-salaried activities. Labor force participation for both boys and girls aged 12 to 15 shows reductions as large as 15 to 25% relative to the probability of participating prior to the program.

With respect to evidence from the time use module, children, in particular, boys and girls of secondary school age are much more likely to attend school and to spend more time on school activities. In terms of work, boys of secondary school age also show strong reductions in participation in both market work and domestic work. Girls, on the other hand, show reductions in participation and/or hours spent in domestic work at all ages.

The reduction in domestic work as a result of PROGRESA for girls is also noteworthy and we believe, one of the first studies to show that subsidizing school enrollment can reduce the time spent in domestic work. PROGRESA is associated with both increasing enrollment and reducing domestic work, which implies that domestic work does compete with time spent on school, although many girls nevertheless combine both domestic work and school. Market work, we have shown, is a much more important deterrent to school attendance for boys than for girls, in accordance with the higher level of participation of boys relative to girls.

Related to this point, we now return to the relationship between school and work and the extent to which work appears to be a deterrent to school. For boys, the reductions in work, where work uses a broad definition to include market, domestic and farm work, are, to a large degree, comparable with the increases in schooling. Nevertheless, for girls, the reductions in work implied by the coefficients are significantly less than the increases in schooling. This would seem to confirm that while child labor is an important deterrent to school for both boys and girls, it is less of a deterrent for girls, although still important. This is again likely related to the trends shown earlier, that while many girls participate in domestic work, many work a (low) number of hours which may permit them to combine both school and work. An associated point is that the overall leisure time of girls has shown small decreases with PROGRESA, consistent with the lower reductions in work than the increases in school.

These findings then permit us to conclude that work, using a broad definition of work, is an important deterrent to school, particularly for boys, in the poor rural areas of Mexico where PROGRESA operates. This would appear to provide some validation for the design feature of PROGRESA which provides grants for attending school and thus substitutes for children's contributions through work. The issue of the impact of PROGRESA on child labor is not only relevant in the context of this evaluation, but it is also to some extent relevant as a test on one of the basic assumptions behind the design of PROGRESA, that is, children do not go to school because their parents take them out of school to send them to work. This hypothesis has been convincing enough to motivate a number of other Latin American countries to adopt or to consider adopting similar programs to PROGRESA, including Honduras, Nicaragua, Colombia, Jamaica, Argentina. The analysis here shows a large degree of support for the idea that schooling and work are incompatible and that work can be reduced through subsidizing schooling. The results should thus be viewed as an encouraging sign for other countries interested in linking grants to children's school attendance as a method to reduce poverty in their countries.

We conclude with a final commentary on our results related to the point that market work for adults does not appear to be reduced with the PROGRESA transfers. In other countries, such as the United States, monetary transfers to poor families are defined on the basis of income, and

therefore if individuals earn extra income, benefits are reduced. These designs clearly provide negative incentives for labor force participation of poor individuals. Nevertheless, in the case of PROGRESA, benefits are provided to families for three years, irrespective of family income, so that there is no disincentive effect on work, (except clearly for the work of children). The results found here are thus important not just for the implication that PROGRESA does not reduce adult work participation, but for their possible implications on the design of poverty programs in other parts of the world. Whereas the conventional wisdom is that there are tradeoffs between providing benefits to a population in need and stimulating work, the analysis here shows that, thus far, there is not necessarily any such tradeoff in the program PROGRESA.

Here, however, it should be noted that the three year period of benefits is expiring for the first cohort of PROGRESA beneficiaries and that re-certification procedures are now in process. If beneficiaries are more likely to perceive they will be included/excluded from further benefits depending on how "poor" they appear, this may have implications both for future work effort and reported work effort. Thus, the evaluation of PROGRESA on work patterns of beneficiary families should be continued into the future.

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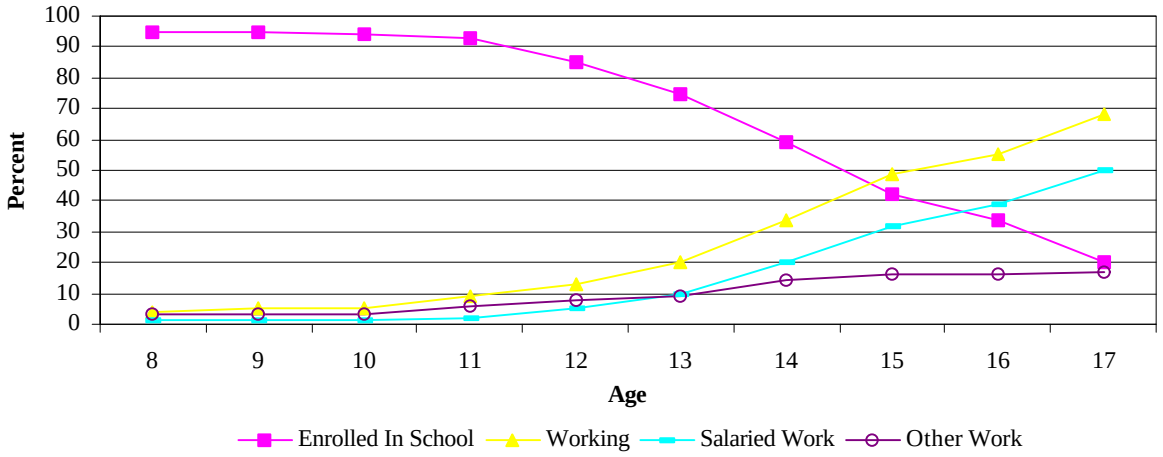
Table 1 — Monthly amount of Educational Grant (Pesos) Second Semester 2000

Grade	Boys	Girls
Primary		
3rd year	90	90
4th year	105	105
5th year	135	135
6th year	180	180
Secondary		
1st year	260	275
2nd year	275	305
3rd year	290	335

Graph 1— School Enrollment and Labor Force Partcipation of Boys in PROGRESA Communities Prior to Program Implementation



Graph 2— School Enrollment and Labor Force Participation of Girls in PROGRESA Communities Prior to Program Implementation

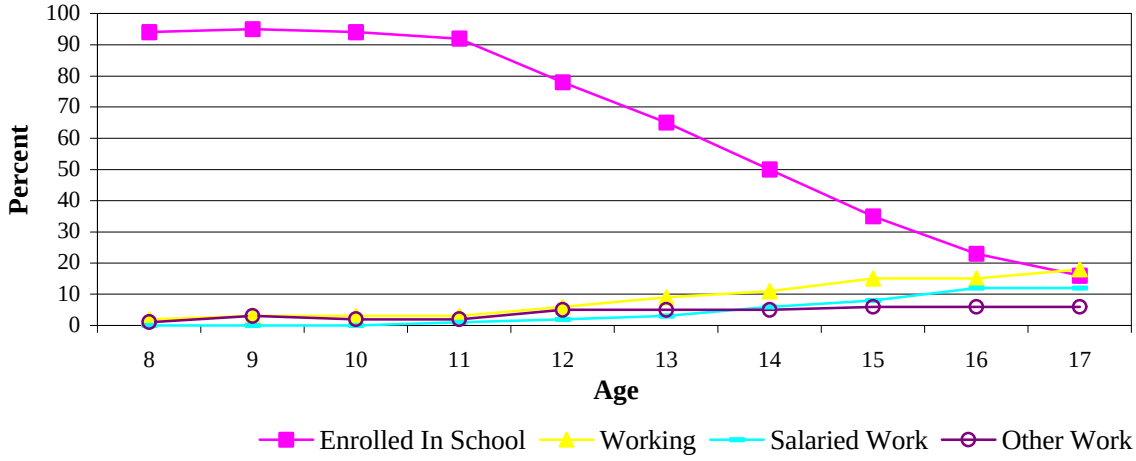


Table 2— Percentage of Men and Women Working in the Labor Market Prior to Program Implementation: By Type of Activity and Age Group

Age	Women			Men		
	All work (does not include domestic activities)	Salaried work	Other work (e.g. self-employment)	All work (does not include domestic activities)	Salaried work	Other work (e.g. self-employment)
18-24	16%	8	8	84	63	19
25-34	15	6	9	94	70	24
35-44	17	5	12	95	66	29
45-54	18	6	12	93	63	30
55 +	15	4	11	77	42	35

Table 3— Occupational Distribution of Male and Female Workers in Extreme Poverty: Ages 18 and Over

	Female	Male
Day agricultural worker	23.5	62.9
Non-agricultural worker	19.2	9.1
Self-employed	25.2	10.8
Business Owner	0.7	0.3
Unpaid family worker	26.2	6.9
Unpaid worker (not family)	0.9	0.2
Cooperative member	0.1	0.1
Ejidatario	3.1	8.9
Others	1.2	1.0
Total	100.0%	100.0%

Table 4 — Characteristics of Employment: Men and Women Ages 18 and Over: Population in Extreme Poverty Prior to Program Implementation

	Women		Men	
	Salaried Work	Other Work	Salaried Work	Other Work
Average days worked per week	5.20 (1.41)	5.32 (1.59)	5.34 (1.27)	5.41 (1.29)
Average hours worked per day	8.04 (1.95)	6.18 (1.94)	8.16 (1.52)	7.40 (1.21)
Average monthly earnings	611 (698)	-	874 (957)	-
Average hourly earnings	5.10 (10.3)	-	5.32 (8.67)	-
With health benefits	2.62%	0.22%	2.36%	1.40%
% working all year	59.7%	63.8%	75.0%	67.6%
% working a few months a year	22.8%	20.5%	14.2%	25.2%
% working once in a while	16.9%	12.8%	10.7%	6.9%

Note: Income in other work is excluded due to large number of unpaid workers in this category.

Table 5— Time Use in Poor Communities Prior to Program Implementation (Control Group)

Type of Activity	Children Aged 8 to 17				Adults Aged 18 and Over			
	Boys		Girls		Men		Women	
	Percent Participation	Daily Hours*	Percent Participation	Daily Hours*	Percent Participation	Daily Hours*	Percent Participation	Daily Hours*
Working for salary or wage	8.4%	7.6	2.8%	7.7	53.20%	7.6	6.40%	7.1
Working in own business	0.3	3.8	0.3	3.8	3.2	6.1	2.4	5.4
Working family land	8.3	5.2	2.3	4.6	28.2	5.7	3.6	4.9
Attending school	67.5	5	64.3	5	1.9	5.8	1.4	5.3
Doing homework after school	66.5	1.1	63.7	1.1	1.3	1.2	1.3	1.3
Community work	1.5	2.5	1.4	2.4	3.9	4.6	1.2	2
Voluntary work for neighbors or other relatives	0.6	2.3	0.4	1.9	1.6	2.8	0.6	1.9
Purchasing food or other products for HH	1.1	1.6	2.7	1.1	3.8	2.2	15.7	1.3
Sewing, making clothes for HH members	0.3	1.4	2.9	1.2	0.7	2.1	13.9	1.3
Taking HH members to school, clinic, or work	0.1	1.3	0.4	0.5	0.6	1.1	2	1.8
Cleaning house	0.5	1	29	1.1	5	1.1	77.3	1.4
Washing and ironing clothes for HH membes	0.2	1.1	20.1	1.5	2.3	1.4	63.8	1.8
Preparing food	0.2	1.5	21.4	1.3	3.7	1.3	80.6	1.6
Fetching water, firewood or throwing out trash	28.6	1.1	25.5	0.9	32.5	1.2	35.5	1.1
Taking care of animals	11.2	1.6	7.2	1.1	13.6	1.3	19.2	1
Taking care of small children, elderly and sick	2.5	1.7	8.1	2.3	3.8	1.9	22.2	3.7
Making HH repairs	2.1	1.8	0.8	1	6.7	1.7	1.1	1.2
Transportation time to work, school, market etc.	58.7	0.4	50.6	0.4	53.6	0.7	12.9	0.8
Other activities	23.9	1.8	21.6	1.7	23.5	1.9	22.8	1.9

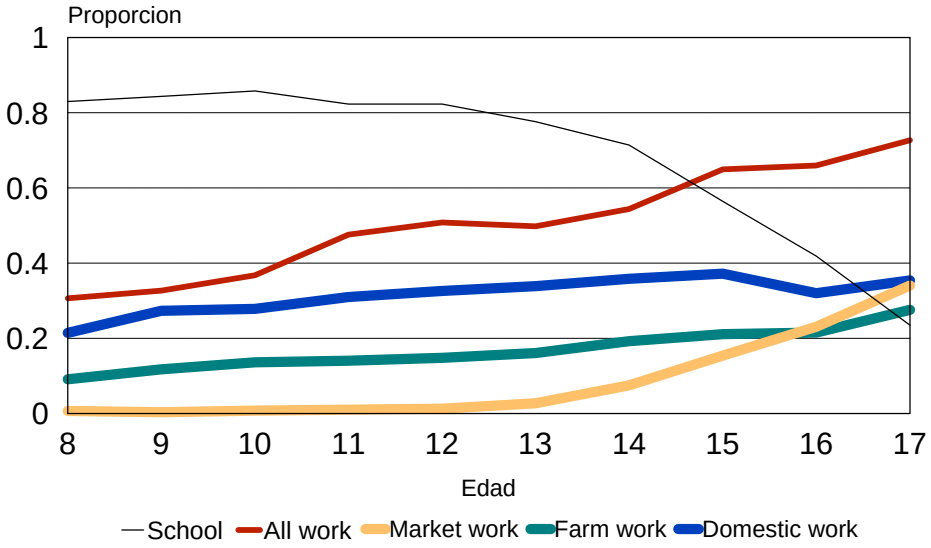
* Conditional on participating.

Table 6— Time Use of Men and Women in Poor Communities Prior to Program Implementation (Control Group)

	Men		Women	
	Proportion Participating	Daily Hours	Proportion Participating	Daily Hours
Leisure				
18-24		16.24		17.18
25-34		14.69		16.17
35-44		14.64		16.65
45-54		14.72		17.44
55 +		16.63		19.21
Market work				
18-24	0.56	7.74	0.11	7.37
25-34	0.69	7.76	0.08	6.52
35-44	0.66	7.62	0.07	6.66
45-54	0.63	7.70	0.07	6.75
55 +	0.42	7.19	0.06	6.62
Domestic				
18-24	0.39	1.87	0.85	5.88
25-34	0.46	1.91	0.93	6.82
35-44	0.44	2.20	0.95	6.27
45-54	0.47	1.88	0.93	5.56
55 +	0.41	2.13	0.81	4.48
Farm				
18-24	0.27	4.99	0.16	1.81
25-34	0.29	5.12	0.22	1.62
35-44	0.33	5.27	0.23	1.66
45-54	0.41	4.98	0.30	1.67
55 +	0.43	4.91	0.24	1.578

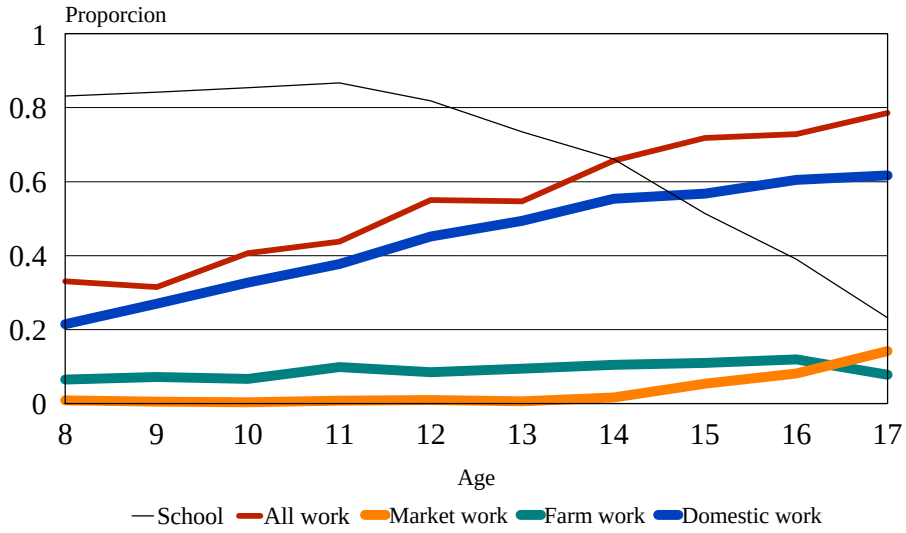
Graph 3 — Activities of Boys in Poor Communities: Proportion Participating by Age: Control Group

Time Use Module: ENCEL99



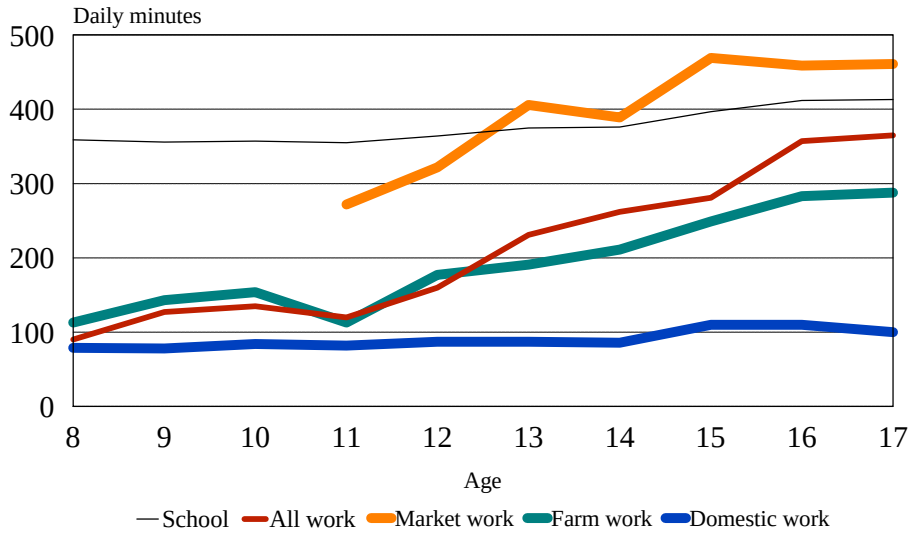
Graph 4 — Activities of Girls in Poor Communities: Proportion Participating by Age: Control Group

Time Use Module: ENCEL99



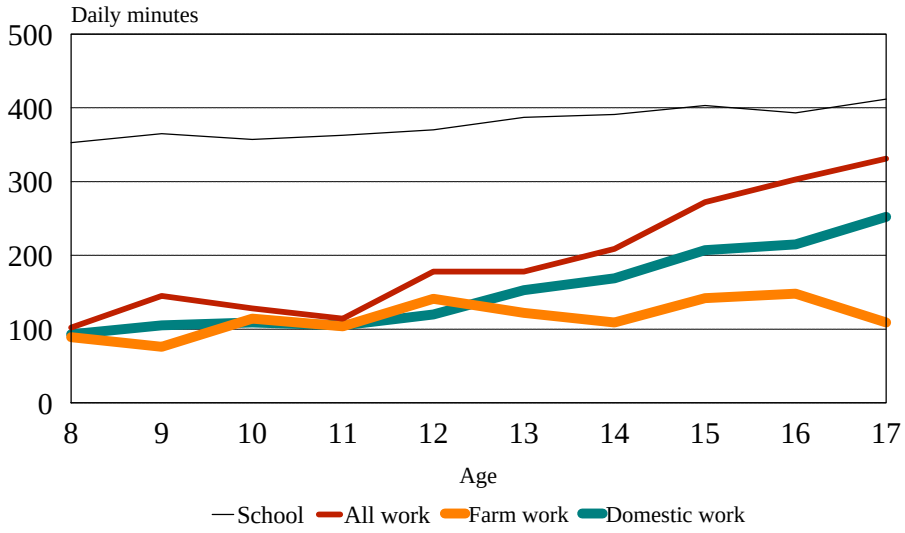
Graph 5 — Activities of Boys in Poor Rural Communities: Daily Minutes in Each Activity, Conditional on Participation

Time Use Module: ENCEL99



Graph 6— Activities of Girls in Poor Rural Communities: Daily Minutes in Each Activity, Conditional on Participation

Time Use module: ENCEL99



Note: Market work for girls not shown, due to small sample sizes.

Table 7a— The Impact of PROGRESA on the Probability of Working: Boys and Girls

Difference in Difference Estimates

Age Group	Boys							Girls						
		Impact							Impact					
	Pre-Prog	Nov. 98		Jun-99		Nov. 99		Pre-Prog	Nov. 98		Jun-99		Nov. 99	
	Level	Coef.	T-stat	Coef.	T-stat	Coef.	T-stat	Level	Coef.	T-stat	Coef.	T-stat	Coef.	T-stat
All work														
8 to 17	0.224	-0.027	-2.4	-0.025	-2.0	-0.031	-2.3	0.086	-0.012	-1.8	-0.005	-0.7	-0.013	-1.7
12 to 13	0.180	-0.023	-1.5	-0.028	-1.8	-0.041	-2.4	0.086	-0.016	-1.8	-0.007	-0.7	-0.009	-0.8
14 to 15	0.419	-0.059	-2.2	-0.060	-2.1	-0.054	-1.8	0.150	-0.037	-2.8	-0.026	-1.8	-0.039	-2.5
16 to 17	0.594	0.001	0.0	0.009	0.2	-0.025	-0.6	0.183	0.021	0.8	0.030	1.1	-0.012	-0.5
Salaried work														
8 to 17	0.130	-0.004	-0.6	-0.010	-1.6	-0.009	-1.5	0.041	0.000	0.1	-0.001	-0.3	-0.003	-1.5
12 to 13	0.083	-0.014	-1.7	-0.021	-2.5	-0.017	-1.8	0.028	-0.006	-2.0	-0.004	-0.9	-0.007	-1.8
14 to 15	0.269	-0.019	-0.9	-0.053	-2.3	-0.033	-1.4	0.089	-0.006	-0.5	-0.010	-0.9	-0.016	-1.4
16 to 17	0.425	0.058	1.6	0.043	1.1	0.012	0.3	0.120	0.044	1.9	0.028	1.2	-0.002	-0.1
Self-employed/family business														
8 to 17	0.092	-0.020	-2.8	-0.011	-1.4	-0.016	-1.6	0.042	-0.010	-2.0	-0.002	-0.4	-0.007	-1.0
12 to 13	0.095	-0.007	-0.7	-0.008	-0.7	-0.025	-2.0	0.054	-0.009	-1.2	-0.003	-0.3	-0.002	-0.2
14 to 15	0.149	-0.043	-2.6	-0.015	-0.7	-0.019	-0.9	0.060	-0.024	-3.2	-0.009	-1.0	-0.020	-2.3
16 to 17	0.168	-0.044	-2.0	-0.025	-1.1	-0.028	-1.1	0.058	-0.013	-0.9	0.006	0.4	-0.007	-0.5

Note: Impact estimates use incor-poor as eligibility criteria.

Table 7b — The Impact of PROGRESA on the Probability of Being Enrolled in School: Boys and Girls

Difference in Difference Estimates

Age Group	Impact						Impact					
	Nov. 98		Jun-99		Nov. 99		Nov. 98		Jun-99		Nov. 99	
	Coef.	T-stat	Coef.	T-stat	Coef.	T-stat	Coef.	T-stat	Coef.	T-stat	Coef.	T-stat
8 to 17	0.033	3.0	0.030	2.7	0.048	3.8	0.046	4.1	0.053	4.3	0.054	3.8
12 to 13	0.030	1.8	0.026	1.5	0.038	2.0	0.067	3.5	0.078	3.8	0.088	4.3
14 to 15	0.070	2.5	0.067	2.6	0.062	2.1	0.111	4.0	0.124	4.1	0.127	4.2
16 to 17	0.012	0.4	-0.001	0.0	0.040	1.4	0.025	1.0	0.002	0.1	0.009	0.4

Note: Impacts estimated using incor-poor as eligibility criteria.

Table 7c—The Impact of PROGRESA on the Probability of Working: Boys and Girls

Difference in Difference Estimates

Age Group	Boys							Girls						
		Impact							Impact					
	Pre-Prog	Nov. 98		Jun-99		Nov. 99		Pre-Prog	Nov. 98		Jun-99		Nov. 99	
	Level	Coef.	T-stat	Coef.	T-stat	Coef.	T-stat	Level	Coef.	T-stat	Coef.	T-stat	Coef.	T-stat
All work														
8 to 17	0.224	-0.024	-2.1	-0.022	-1.8	-0.030	-2.1	0.086	-0.012	-1.8	-0.006	-0.9	-0.012	-1.5
12 to 13	0.180	-0.016	-1.0	-0.025	-1.6	-0.038	-2.2	0.086	-0.015	-1.6	-0.011	-1.1	-0.007	-0.7
14 to 15	0.419	-0.045	-1.7	-0.041	-1.5	-0.042	-1.4	0.150	-0.032	-2.3	-0.023	-1.5	-0.038	-2.4
16 to 17	0.594	-0.028	-0.8	-0.016	-0.4	-0.052	-1.3	0.183	0.007	0.3	0.017	0.7	-0.020	-0.8
Salaried work														
8 to 17	0.130	-0.001	-0.1	-0.007	-1.2	-0.008	-1.3	0.041	0.001	0.4	0.000	-0.2	-0.003	-1.6
12 to 13	0.083	-0.009	-1.0	-0.018	-2.1	-0.013	-1.4	0.028	-0.004	-1.4	-0.004	-0.9	-0.006	-1.9
14 to 15	0.269	-0.005	-0.2	-0.042	-1.8	-0.024	-1.0	0.089	0.003	0.3	-0.007	-0.6	-0.016	-1.5
16 to 17	0.425	0.037	1.0	0.031	0.8	-0.004	-0.1	0.120	0.027	1.3	0.013	0.6	-0.013	-0.6
Self-employed/family business														
8 to 17	0.092	-0.017	-2.3	-0.009	-1.1	-0.014	-1.3	0.042	-0.010	-1.8	-0.002	-0.4	-0.005	-0.7
12 to 13	0.095	-0.003	-0.2	-0.006	-0.5	-0.024	-1.8	0.054	-0.009	-1.1	-0.004	-0.5	0.000	0.0
14 to 15	0.149	-0.039	-2.4	-0.007	-0.3	-0.014	-0.7	0.060	-0.025	-2.9	-0.007	-0.7	-0.019	-2.0
16 to 17	0.168	-0.039	-1.8	-0.028	-1.2	-0.030	-1.3	0.058	-0.009	-0.6	0.010	0.6	-0.004	-0.3

Note: Impacts estimated using dens-poor as eligibility criteria.

Table 8a—The Impact of PROGRESA on the Probability of Working: Adults

Difference in Difference Estimates

Age Group	Men							Women						
	Pre-Prog Level	Impact Nov. 98		Impact Jun-99		Impact Nov. 99		Pre-Prog Level	Impact Nov. 98		Impact Jun-99		Impact Nov. 99	
		Coef.	T-stat	Coef.	T-stat	Coef.	T-stat		Coef.	T-stat	Coef.	T-stat	Coef.	T-stat
All Work														
18-24	0.85	0.016	0.8	0.005	0.2	0.026	1.3	0.18	-0.013	-0.7	-0.018	-1.0	0.000	0.0
25-34	0.94	0.007	0.8	0.000	0.0	0.012	1.4	0.16	-0.010	-0.7	-0.016	-1.1	-0.009	-0.5
35-44	0.96	0.008	0.8	0.014	1.5	0.017	1.9	0.18	-0.016	-1.2	0.012	0.6	-0.012	-0.7
45-54	0.94	0.007	0.6	0.008	0.6	0.021	1.8	0.18	-0.043	-2.5	-0.020	-1.2	-0.005	-0.2
55 +	0.78	0.015	0.7	-0.016	-0.6	0.010	0.5	0.15	-0.007	-0.5	0.009	0.6	0.037	2.0
Salaried work														
18-24	0.64	0.071	2.6	0.033	1.2	0.046	1.5	0.10	0.006	0.4	-0.016	-1.2	-0.003	-0.2
25-34	0.70	0.044	1.7	0.045	1.9	0.025	0.9	0.07	0.002	0.3	-0.005	-0.5	0.008	0.9
35-44	0.66	0.047	1.7	0.041	1.5	0.020	0.7	0.07	-0.001	-0.1	0.004	0.4	-0.003	-0.3
45-54	0.62	0.068	2.0	0.041	1.2	0.047	1.5	0.05	-0.004	-0.3	-0.006	-0.5	0.008	0.7
55 +	0.43	0.063	1.8	0.034	1.0	0.026	0.8	0.04	0.004	0.6	0.005	0.6	0.015	1.8
Self-employed/family business														
18-24	0.21	-0.045	-2.2	-0.017	-0.8	-0.001	-0.1	0.08	-0.017	-1.8	0.000	0.0	0.012	0.9
25-34	0.24	-0.035	-1.5	-0.044	-2.2	-0.010	-0.4	0.09	-0.009	-0.9	-0.011	-1.2	-0.014	-1.2
35-44	0.30	-0.038	-1.5	-0.021	-0.8	0.001	0.0	0.11	-0.015	-1.7	0.017	1.1	-0.007	-0.5
45-54	0.32	-0.058	-1.8	-0.030	-0.9	-0.021	-0.7	0.13	-0.031	-2.7	-0.014	-1.1	0.000	0.0
55 +	0.35	-0.041	-1.5	-0.037	-1.5	-0.004	-0.1	0.11	-0.012	-1.06	0.005	0.5	0.021	1.3

Note: Impact estimates use incor-poor as eligibility criteria.

Table 8b —The Impact of PROGRESA on the Probability of Working: Adults

Difference in Difference Estimates

Age Group	Men							Women						
		Impact							Impact					
	Initial	Nov. 98		Jun-99		Nov. 99		Initial	Nov. 98		Jun-99		Nov. 99	
	Level	Coef.	T-stat	Coef.	T-stat	Coef.	T-stat	Level	Coef.	T-stat	Coef.	T-stat	Coef.	T-stat
All work														
18-24	0.85	-0.006	-0.3	-0.011	-0.6	0.001	0.0	0.18	-0.023	-1.3	-0.038	-2.2	-0.020	-1.1
25-34	0.94	-0.003	-0.3	-0.015	-1.5	0.002	0.2	0.16	-0.012	-0.8	-0.019	-1.3	-0.013	-0.8
35-44	0.96	0.005	0.5	0.009	1.0	0.013	1.4	0.18	-0.014	-1.0	0.011	0.6	-0.017	-1.0
45-54	0.94	0.000	0.0	-0.004	-0.3	0.014	1.2	0.18	-0.039	-2.4	-0.030	-1.9	-0.013	-0.6
55 +	0.78	-0.009	-0.4	-0.020	-0.9	0.000	0.0	0.15	0.003	0.2	0.011	0.8	0.032	2.0
Salaried work														
18-24	0.64	0.046	1.8	0.022	0.8	0.023	0.8	0.10	-0.004	-0.3	-0.026	-2.1	-0.017	-1.3
25-34	0.70	0.034	1.3	0.038	1.7	0.018	0.7	0.07	0.005	0.6	-0.003	-0.3	0.007	0.8
35-44	0.66	0.044	1.7	0.035	1.3	0.014	0.5	0.07	0.003	0.3	0.006	0.6	-0.004	-0.4
45-54	0.62	0.055	1.7	0.039	1.2	0.043	1.4	0.05	-0.002	-0.2	-0.006	-0.6	0.008	0.7
55 +	0.43	0.040	1.2	0.025	0.8	0.019	0.6	0.04	0.005	0.8	0.006	0.9	0.014	1.7
Other work														
18-24	0.21	-0.035	-1.8	-0.018	-0.9	0.000	0.0	0.08	-0.013	-1.3	-0.004	-0.4	0.009	0.6
25-34	0.24	-0.030	-1.3	-0.048	-2.6	-0.011	-0.5	0.09	-0.008	-0.8	-0.011	-1.2	-0.013	-1.1
35-44	0.30	-0.036	-1.4	-0.020	-0.8	0.002	0.1	0.11	-0.014	-1.5	0.020	1.4	-0.009	-0.7
45-54	0.32	-0.047	-1.5	-0.037	-1.2	-0.023	-0.8	0.13	-0.026	-2.2	-0.019	-1.5	-0.005	-0.3
55 +	0.35	-0.032	-1.1	-0.030	-1.2	-0.003	-0.1	0.11	-0.002	-0.2	0.007	0.7	0.018	1.2

Note: Impacts estimated using dens-poor as eligibility criteria.

Table 9— The Impact of PROGRESA on Leisure Using Different Measures of Program Eligibility: Boys and Girls

ENCEL 99N

Age Group	Boys					Girls				
		Impact					Impact			
	Pre-Prog	Dens-Poor		Incor-Poor		Pre-prog	Dens-Poor		Incor-Poor	
	Daily Hours	Coef.	T-stat	Coef.	T-stat	Daily Hours	Coef.	T-stat	Coef.	T-stat
Leisure										
Children										
8 to 17	17.37	-0.018	-0.2	0.038	0.5	17.74	-0.196	-2.4	-0.205	-2.4
12 to 13	17.38	-0.113	-0.7	0.083	0.5	17.55	-0.317	-1.9	-0.373	-2.1
14 to 15	16.82	0.020	0.1	0.046	0.2	17.37	-0.211	-1.0	-0.188	-0.8
16 to 17	16.80	0.204	0.8	0.133	0.5	18.00	0.010	0.0	-0.054	-0.2
Adults										
18-24	16.24	-0.321	-1.9	-0.327	-1.7	17.18	0.026	0.3	0.087	0.5
25-34	14.69	0.122	1.0	0.222	1.3	16.17	-0.236	-1.6	-0.156	-0.8
35-44	14.64	-0.061	-0.7	-0.163	-0.9	16.65	-0.016	-0.1	-0.047	-0.3
45-54	14.72	0.060	0.3	0.129	0.6	17.44	0.023	-0.1	0.077	0.4
55 +	16.63	-0.144	-0.7	-0.116	0.6	19.21	0.090	0.6	0.110	0.6

Table 10 — The Impact of PROGRESA on Time Use-Work and School of Boys and Girls

Age Group	Boys						Girls					
	Participation			Daily hours			Participation			Daily hours		
	Pre-Prog	Impact		Pre-Prog	Impact		Pre-Prog	Impact		Pre-Prog	Impact	
	Level	Coef.	T-stat	Level	Coef.	T-stat	Level	Coef.	T-stat	Level	Coef.	T-stat
School												
8 to 17	0.68	0.022	1.9	6.07	0.073	1.5	0.64	0.040	3.4	6.03	0.121	2.5
12 to 17	0.57	0.042	2.5	6.30	0.038	0.5	0.51	0.065	3.5	6.30	0.111	1.5
12 to 13	0.76	0.041	1.9	6.16	-0.157	-1.6	0.71	0.066	3.0	6.11	0.138	1.4
14 to 15	0.58	0.034	1.2	6.36	0.084	0.6	0.52	0.079	2.7	6.55	-0.004	0.0
16 to 17	0.31	0.034	1.2	6.40	0.489	2.3	0.23	0.040	1.5	6.38	0.186	0.4
All work												
8 to 17	0.47	-0.023	-1.9	3.82	-0.148	-1.3	0.52	-0.032	-2.5	3.42	-0.112	-1.1
12 to 17	0.55	-0.035	-2.2	4.70	-0.260	-1.7	0.63	-0.032	-2.0	4.00	-0.202	-1.5
12 to 13	0.44	-0.014	-0.5	2.97	-0.667	-3.1	0.53	-0.015	-0.6	2.83	-0.274	-1.4
14 to 15	0.58	-0.046	-1.7	4.50	0.025	0.1	0.65	-0.043	-1.6	3.90	-0.281	-1.3
16 to 17	0.69	-0.044	-1.5	6.36	-0.245	-0.9	0.76	-0.045	-1.7	5.19	-0.044	-0.2
Market												
8 to 17	0.09	-0.006	-1.8	7.47	-0.169	-1.0	0.02	0.000	-0.1	7.47	-0.436	-1.2
12 to 17	0.15	-0.021	-2.3	7.60	-0.168	-1.0	0.05	0.000	0.0	7.58	-0.912	-2.4
12 to 13	0.05	-0.020	-3.1	6.49	2.039	0.8	0.01	0.003	1.2	6.25		
14 to 15	0.13	-0.012	-0.7	7.74	-0.274	-0.8	0.04	-0.015	-1.8	8.55		
16 to 17	0.30	-0.024	-0.9	7.76	-0.118	-0.6	0.12	0.013	0.7	7.78		

continued

Table 10 — Continued

Age Group	Boys						Girls					
	Participation			Daily hours			Participation			Daily hours		
	Pre-Prog Level	Impact		Pre-Prog Level	Impact		Pre-Prog Level	Impact		Pre-Prog Level	Impact	
		Coef.	T-stat		Coef.	T-stat		Coef.	T-stat		Coef.	T-stat
Domestic												
8 to 17	0.34	-0.020	-1.7	2.87	-0.016	-0.3	0.48	-0.040	-3.2	2.87	-0.076	-0.8
12 to 17	0.37	-0.024	-1.6	1.65	-0.034	-0.4	0.58	-0.043	-2.6	3.31	-0.161	-1.3
12 to 13	0.31	0.022	0.9	1.48	-0.090	-0.7	0.51	-0.023	-0.9	2.45	-0.249	-1.5
14 to 15	0.42	-0.044	-1.6	1.54	0.257	0.9	0.61	-0.045	-1.6	3.33	-0.203	-0.6
16 to 17	0.40	-0.063	-2.1	1.99	-0.443	-1.5	0.69	-0.071	-2.4	4.26	0.001	0.0
Farm												
8 to 17	0.18	-0.006	-0.7	2.01	-0.119	-0.7	0.09	0.000	-0.1	2.00	0.287	1.4
12 to 17	0.21	-0.015	-1.2	4.11	-0.163	-0.7	0.10	-0.004	-0.5	2.11	0.541	1.9
12 to 13	0.18	-0.014	-0.8	3.07	-0.242	-0.7	0.10	-0.005	-0.4	2.34	0.006	0.0
14 to 15	0.21	-0.007	-0.3	4.26	-0.339	-0.8	0.10	0.003	0.2	1.24	1.322	3.0
16 to 17	0.26	-0.016	-0.63	4.73	-0.179	-0.4	0.10	-0.010	-0.6	2.06	0.736	1.4

Notes: Impact on market hours for girls by age are omitted due to small number of cases. Also, impact estimates use inco-poor as eligibility criteria.

Table 11—The Impact of PROGRESA on Daily Work Hours of Adult Men and Women by Type of Work

Age Group	Men						Women					
	Participation			Daily hours			Participation			Daily hours		
	Pre-Prog Level	Impact		Pre-Prog Level	Impact		Pre-Prog Level	Impact		Pre-Prog Level	Impact	
		Coef.	T-stat		Coef.	T-stat		Coef.	T-stat		Coef.	T-stat
Market												
18-24	0.56	-0.014	-0.6	7.74	0.105	0.9	0.11	-0.012	-1.0	7.37	-0.066	-0.2
25-34	0.69	-0.025	-1.3	7.76	0.174	1.8	0.08	0.000	-0.1	6.52	0.145	0.3
35-44	0.66	-0.032	-1.5	7.62	0.151	1.5	0.07	0.013	1.4	6.66	-0.374	-0.1
45-54	0.63	-0.052	-2.1	7.70	-0.002	0.0	0.07	0.024	2.0	6.75	0.548	0.0
55 +	0.42	0.017	0.7	7.19	0.133	0.1	0.06	0.000	-0.1	6.62	-0.605	0.0
Domestic												
18-24	0.39	-0.024	-1.1	1.87	0.123	0.3	0.85	-0.029	-2.0	5.88	-0.144	-0.3
25-34	0.46	-0.063	-3.0	1.91	-0.296	-2.1	0.93	0.011	1.6	6.82	0.172	1.0
35-44	0.44	-0.022	-1.0	2.20	-0.022	-0.1	0.95	-0.016	-2.2	6.27	0.154	0.8
45-54	0.47	-0.046	-1.8	1.88	-0.150	-0.9	0.93	0.010	1.0	5.56	-0.180	-0.9
55 +	0.41	0.011	0.5	2.13	-0.042	-0.3	0.81	-0.028	-1.7	4.48	-0.092	-0.5
Farm												
18-24	0.27	-0.018	-0.9	4.99	0.529	1.8	0.16	-0.016	-1.1	1.81	0.034	0.0
25-34	0.29	-0.015	-0.8	5.12	0.056	0.2	0.22	-0.011	-0.7	1.62	-0.344	-0.7
35-44	0.33	0.024	1.2	5.27	0.451	1.5	0.23	-0.007	-0.4	1.66	-0.171	-0.8
45-54	0.41	0.022	0.9	4.98	1.361	3.2	0.30	-0.056	-2.4	1.67	-0.452	-0.3
55 +	0.43	-0.019	-0.9	4.91	0.018	0.1	0.24	-0.021	-1.2	1.578	-0.269	-1.3

Note: Impact estimates use incor-poor as eligibility criteria.

Table 12— The Impact of PROGRESA on Activities Associated with Being Beneficiaries: Women Aged 18 and Over

Age Group	Percentage of Beneficiaries Participating			Daily Hours (Conditional on Participating)		
	Treatment Group	Control Group	T-stat for Sig Diff.	Treatment Group	Control Group	T-stat for Sig Diff.
Taking HH members to school, clinic, or work						
18-24	1.74	1.28	-0.89	1.57	1.61	0.05
25-34	3.10	1.83	-2.11	1.41	2.08	1.20
35-44	3.08	1.71	-2.07	1.65	1.81	0.27
45-54	2.00	1.30	-1.01	2.28	1.44	-0.96
55 +	1.34	1.28	-0.13	1.29	1.72	0.65
Community work						
18-24	0.82	0.83	-0.01	3.35	1.70	-2.08
25-34	2.37	1.00	-2.72	2.04	1.56	-0.93
35-44	2.38	0.86	-2.75	2.45	2.31	-0.16
45-54	1.73	0.72	-1.76	3.52	3.57	0.03
55 +	0.90	0.88	-0.03	2.40	1.74	-0.71

Note: Impact estimates use incor-poor as eligibility criteria.