Exploring the Differential Impact of Public Interventions on Indigenous People: Lessons from Mexico's Conditional Cash Transfers Program[++*]

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Abstract: This paper uses experimental panel data for Mexico from 1997 to 2000 in order to test assumptions on the impact of a conditional cash transfer program on child labor and school attendance, adding to the literature by emphasizing the differential impact on indigenous households. Using data from the conditional cash transfer program PROGRESA (later on known as OPORTUNIDADES/ PROSPERA), we investigate the interaction between child labor, education and indigenous households. While indigenous children had a greater probability of working before the intervention, this probability is reversed after treatment in the program. Indigenous monolingual children also had lower school attainment compared with Spanish-speaking or indigenous bilingual children. After the program, school attainment among indigenous children increased, reducing the gap. In terms of child labor, the larger reduction is in the group of bilingual children.

JEL classification code: I21, I32, J13, J24
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[*] This article is based on Bando et al. (2005).

1. Introduction and Relevant Literature

Estimates from the International Labour Organization (ILO, 2013), indicate that around 168 million children in the world between ages 5 and 14 are in child labor (almost 11 percent of the entire child population); a situation that affects their capacity to attend school and their eventual school achievement. Low school attendance and educational attainment hinder human capital accumulation, which in turn, limits access to economic opportunity and upward mobility (Ferreira et al. 2013). A variety of policies have been put forth to deal with child labor, proposals that range from banning child labor through legislation to formalizing the contracts under which children work in order to improve their working conditions. Within these, Conditional Cash Transfer (CCT) programs—which provide stipends to poor households in exchange for their children's school attendance—are considered a successful instrument in increasing demand for schooling in several countries (Fiszbein and Schady, 2009).

Children belonging to vulnerable populations, such as indigenous groups in Latin America, can be at an even higher risk of child labor (Hall and Patrinos, 2012). According to the Economic Commission for Latin America and the Caribbean, there are around 45 million indigenous peoples in Latin America, or about 8.3 percent of the region's population—and indigenous children frequently live in conditions of extreme poverty (ECLAC, 2014). At 17 million, Mexico holds the largest indigenous population in the region in terms of number of people (or 15.1 percent of its national population) (*idem*). In this country, even though access to formal education has expanded overall in recent years, and improvements have taken place in indigenous areas, educational levels in these areas remain lower than in non-indigenous ones. Indeed, about 12.8 percent of Mexican children between 6 and 14 years living in indigenous municipalities did not enroll in school, while 32.5 percent of individuals older than 15 years in these municipalities did not know how to read or write, at the beginning of the twenty first century (*Instituto Nacional Indigenista*, 2002).

Indigenous children are expected to have a higher likelihood of being employed and not in school due to factors such as language problems, school access (distance) and "cultural" differences. Guarcello, Mealli and Rosati (2003) show that indigenous households in Guatemala have a lower school attendance and higher work participation

rate than the rest of the population. According to Psacharopoulos and Patrinos (1994) the child labor force in Latin America is larger in indigenous areas than in non-indigenous areas. On the other hand, Lahi, Orazem and Sedlacek (2000) explore the relationship between child labor and future adult earnings and poverty status in Brazil. They find that indigenous individuals have a smaller future wage, less income, and are more likely to fall into poverty. Additionally, child income plays a slightly greater role in total family income in indigenous areas than in non-indigenous areas. Furthermore, the contribution of child labor to family income increases with age, while increasing educational attainment reduces the contribution.

In a simple household production model, the supply of child labor is a function of the economic and demographic characteristics of the household, age and sex of the children, and the costs and returns of alternatives uses of time of children. It is hypothesized that individual child characteristics such as age, sex and birth order will be important determinants of child labor.

Family characteristics have an important role to play in a child's decision to attend class or work. The father's education has a significant negative effect on child labor; the effect is stronger for girls than for boys (Grootaert and Patrinos, 1999). Patrinos and Psacharopoulos (1997) find that, in Peru, the number of siblings, who are not enrolled in school, proves to be an important control variable in at least one specification of the empirical model. Moreover, their results suggest that child labor is not always detrimental to school attendance. However, they find that rural residence and being indigenous both do have a negative impact on age-grade distortion. Indeed, the largest factor determining age-grade distortion for indigenous children is employment. Per their results, indigenous children who work are much more likely to be older than the usual schooling age. Being indigenous and rural residence both have a large impact on the likelihood that the student also works. Their analysis suggests that, in order to increase educational attainment and performance of rural, poor and/or indigenous children, appropriate targeting mechanisms must be designed—accounting also for factors such as family size.

Household factors are expected to exert considerable impact on child labor and school enrollment rates. The composition of income is also a factor, as households that

are self-employed are more likely to rely on family labor. Since poverty is correlated with low schooling levels, parents in poor households are less likely to either provide children with meaningful assistance with schoolwork or to enable a positive home learning environment, thus indirectly reinforcing the cycle to child labor. In a study of four countries, Grootaert and Patrinos (1999) find that children of indigenous groups are less likely to work full-time or to work for wages compared to children of other groups. Looking at Bolivia, Colombia, Côte d'Ivoire, and the Philippines, they find that indigenous children are likely excluded from formal sector employment, just like their parents.

An unexpected feature of child labor, which makes it even more difficult to address, is the potential presence of a positive stigma associated, for example, parents taking pride in the children of the household working in the family farm. Lopez-Calva (2001) models the positive stigma of child labor, where families engage in child labor despite the fact that income (or consumption) per household member exceeds a subsistence level. In an empirical application of this model, and using data from Guatemala for both indigenous and nonindigenous people, Patrinos and Shafiq find that improvements in socioeconomic status or increased school options could be insufficient to eradicate child labor in households with a positive stigma for child labor. Conditional programs, providing cash transfers in exchange for children's school attendance, could be helpful in these instances.

Throughout Latin America, children of indigenous groups are more than twice as likely to be working as other children. This makes indigenous children prime candidates for targeted programs to increase school attendance and decrease child labor. The question is, do incentive programs such as CCTs impact the indigenous population at all, to the same degree as non-indigenous children, or more? Do incentive programs reduce child labor—and is there a differential impact for indigenous children? This paper aims to contribute to the literature by testing assumptions on the impact of Mexico's CCT program on child labor and school attendance, emphasizing the differential impact on indigenous households.[2]

[2] Indigenous population in this paper is defined based on language; i.e., as the individuals that speak an indigenous language but not Spanish (monolingual indigenous population) as well as by people that speak

There have been several evaluations of the impact of Mexico's main CCT program, PROGRESA, in several dimensions, although practically none have tested the differential impact on indigenous vis-à-vis non-indigenous people (for a summary of assessments, see IFPRI, 2000). Perhaps the only exception in this respect refers to Parker, Rubalcava and Teurel (2003), who provide an empirical estimation of the impact of language barriers in determining school achievement and the potentially ameliorating role of bilingual education. Using large household datasets from the PROGRESA program, the authors find that, controlling for family resources and school quality, language represents an important barrier for indigenous schoolchildren. In particular, they show that there is a large gap in the educational performance of monolingual indigenous children relative to bilingual indigenous children, and that bilingual primary schools narrow this gap. These results are rather consistent with our findings below.

2. Empirical Methodology

The initial logit or probit econometric approach to study child labor and school attendance to estimate the probability of an indigenous child going to school or to work misses the relationship between the school and work decisions. The school and labor supply independence assumption is untenable. Therefore, more recent approaches, for instance Freije and Lopez-Calva (2000), deal with the interrelated nature of these events.

In this paper, we use two econometric models for dealing with the work/school multiple choice problem: multinomial logit and sequential probit. These multinomial logit and sequential probit models have been used in a comparative study (Grootaert and Patrinos, 1999).

The multinomial logit model assumes that the household faces a single decision process, choosing among a set of options. On the other hand, the sequential probit assumes that a household makes choices among options in a sequential manner (see Freije and Lopez-Calva, 2000, for further details). We also use the two models in order to check whether the results are robust to different estimation techniques. It should be highlighted that the estimated parameters of these models are not directly comparable.

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both an indigenous language and Spanish (bilingual indigenous population). The identification protocol based on language is a useful methodology to look at survey data; this by no means implies that indigenous identity is solely defined by language.

They refer to either conditional probabilities, to marginal probabilities, or to joint probabilities. We thus look to the direction and significance of the effect, and compare whether the direction of the effect, not its size, is the same across models.

The control variables in $X_{i,k}$ are the same in the two models and can be classified into four groups. The first group consists of children's individual characteristics; the second includes characteristics of the household head; while the third refers to household characteristics. The fourth group of independent variables is of special importance since by testing its significance we assess the validity of the hypothesis listed in the introduction. It consists of a set of three dummy variables for individuals who only speak an indigenous language, those who are bilingual, and those who only speak Spanish. The direction of the effect is a direct test of differences among indigenous (monolingual and bilingual) and non-indigenous households.

Taking advantage of the availability of data for these households at two different points in time, we are able to make a comparison: before the intervention and after the treatment. For the sequential probit regressions we consider three dependent dichotomous variables where the dummy takes the value of 1: first, if the child goes to school and does not work; second, if the child goes to school and works; and third, if the child does not go to school and works. We omit the case where the child does not go to school and does not work. We also run a multinomial logit equation for three cases of interest compared to a child who goes to school and does not work: the probability that the child goes to school and works, the probability that she does not go to school and works, and the probability that she does not go to school and does not work. Finally, we follow Parker and Skoufias (2001) to exploit the panel structure of the data, and calculate difference-in-difference estimators of the program´s effect on households of different language groups.

3. Data Description

The data used was obtained from survey instruments from the experimental phase of the Mexican PROGRESA CCT program (later on OPORTUNIDADES/PROSPERA), which ask whether the person speaks an indigenous language. The survey also includes data on earnings, household structure, school, work and social transfers. The program

represents one of the first comprehensive demand-side financing (or conditional cash transfer) programs in the world. It provides cash stipends to poor families in exchange for ensuring their children's school attendance.

Evaluations, such as Parker and Skoufias (2001), indicate that the program has led to significant improvements in educational indicators and outcomes. In fact, the program has led to higher school attendance rates and lower school dropout and repetition rates. There is also evidence of reduced child labor. The program nearly eliminated the school enrollment gap between rich and poor, while it was also very cost-effective. Importantly, the program has had the effect of increasing the income of poor households, which are largely indigenous in Mexico, especially in rural areas and the poor southern states. No evaluation, however, has looked specifically at the differential impact on indigenous peoples. The objective of this paper is to assess the impact of this CCT program on indigenous children's progress in school and work activities. It looks to analyze the determinants of schooling and work, as modeled according to Grootaert and Patrinos (1999), to see whether there is a differential impact between language groups, using two different points in time. Also, following Parker and Skoufias (2001), we exploit the panel data structure to identify difference-in-difference estimators of the program's impact on different groups.

In terms of data, we use the Mexican national household surveys *Encuesta de Evaluación de los Hogares*, November 2000 (ENCEL00N); *Encuesta de Evaluación de los Hogares*, November 1999 (ENCEL99N); and *Encuesta de Características Socioeconómicas de los Hogares*, November 1997 (ENCASEH97), in order to obtain information from the experimental phase of the program. These surveys are part of a round of surveys to evaluate PROGRESA.[3] The full evaluation consists of a base survey and six consecutive surveys following the same household over a three-year period. This panel data is representative of the disadvantaged rural communities with a population ranging from 20 to 2,500 individuals, in seven states across the country. It includes approximately 138,000 individuals in 26,000 households in 506 localities; with 320 as the treatment group and 185 in the control group. It includes micro-data on household characteristics, especially those that refer to education and health. The panel includes

[3] *Programa de Desarrollo Humano Oportunidades* (http://www.oportunidades.gob.mx/).

demographic characteristics of the household, with individual information for all family members.

In both years, population is separated into three groups: indigenous, Spanish and bilingual. Indigenous is defined as people that only speak an indigenous language but not Spanish. Bilingual is defined as the people that speak both an indigenous language and Spanish. Finally, Spanish stands for people that only speak Spanish but not an indigenous language. Children are defined as individuals between 8 and 16 years of age.

The localities are divided into control and treatment groups in order to look at changes in incidence before and after the program. As detailed in Behrman and Todd (1999), the process by which the treatment and control samples were collected is the following. First, a subset of localities in Mexico was chosen to participate in the experiment. Randomization is implemented at the locality rather than at the household level given that the program's benefits—such as improvements in local schools and health facilities—occur at the locality level, and therefore it would be difficult to have both treatment and control groups in the same small locality. In selecting localities, the probability of being chosen is weighted by population; meaning that the household data subsamples are self-weighting. Since the program was targeted primarily at poor families, criteria for selection into the experiment are based on empirical measures of poverty within the locality. After selecting a subset of localities to participate in the evaluation, the households within each locality that would be eligible to receive benefits were assigned on the basis of poverty-related criteria. Finally, each locality was randomly assigned to be a member of either the treatment or control groups. In localities assigned for treatment, all eligible households within the locality were offered—and usually took advantage of—the program's benefits/services. In localities assigned to the control group, none of the households received benefits. A total of 320 localities was ultimately assigned to the treatment group and 185 to the control group. It is important to note that our empirical methodology has to take into account the fact that sampling was not meant to be representative of different language groups. Thus, this has to be controlled for when estimating the effects.

4. Descriptive Statistics

Descriptive statistics suggest that child labor is higher among indigenous-monolingual populations. An "indigenous-monolingual population" is a location where more than 30 percent of households report a household head that is indigenous-monolingual. Child labor incidence decreased from 16.3 percent to 7.4 percent between 1997 and 2000 (see Table 1). Whereas child labor incidence decreases overall, it does so by a higher magnitude among indigenous-monolingual children: Spanish-speaking children's labor supply decreased by 8.2 percentage points, while it decreased by 8.9 percentage points among indigenous-monolingual children. On the other hand, as children grow older, child labor increases. The steepest change observed occurs in 1997, with a 25.5 percentage point increase in the indigenous-monolingual group between those children 8 to 12 years of age and those in the 13-16 years age range (see Table 2 and Figure 1). In both years, for the three groups child labor increases with age. This pattern is maintained when children are separated into the treatment and control groups (see Table 3).

All groups in both treatment and control groups displayed an overall decrease in child labor incidence, as illustrated by Table 3. The higher effect observed took place in the Spanish-speaking 13-16 years of age treatment group, with a 16.2 percentage point decrease in child labor incidence; followed by a 15.7 percentage point decrease in the indigenous monolingual 13-16 years treatment group. For bilingual children the biggest decrease was 8.4 percent in the 13 to 16 year old treatment group. Child labor decreased for all groups in 1997 compared to 1997. In all three groups, child labor incidence decreased and differences between the treatment and control group narrowed.

In terms of average years of education, results are very similar for bilingual and Spanish-speaking children at all ages. On the other hand, bilingual and Spanish-speaking children have a higher education level with respect to indigenous-monolingual children (see Table 4 and Figures 2 and 3).

When the panel is constructed to perform a difference-in-difference analysis, the groups have different magnitude of attrition. The estimated impact of the program may be sensitive to the composition of the sample, making it important to consider the possible effects of attrition.

Table 5 presents the sample composition by spoken language prior to the implementation of the program (ENCASEH 97). The sample mean of children who speak an indigenous language is 0.285; that of Spanish-speaking children is 0.975; while the bilingual children's mean is 0.260. Table 6 presents the sample composition by spoken language once all the children have been matched in both surveys. The sample means in this case are 0.292, 0.970, and 0.262 for children who speak an indigenous language, who speak Spanish, and who are bilingual.

5. Econometric Results

After estimating the regressions with the panel data, we do not find important differences in the predictive ability of the two models. The percentage of correct predictions in the multinomial logit lies significantly above 85 percent. Comparing the different results allows us to check the robustness of the results to these assumptions. The same pattern of measures of fit was found for the data.

Results are expressed in terms of probabilities relative to a comparison group. In this paper, the comparison group refers to children that go to school and do not work. All coefficients should therefore be interpreted as such. A negative coefficient would then refer to the decreased probability of a child working, compared to a child that goes to school and does not work.

Age, gender and whether a child is indigenous have a significant effect on schooling and work decisions in every model. Older children are more likely to work and not attend school. Older children are also more likely to be in the not-working and not-going to school state. Girls are less likely both to go to school and work. However, girls are also more likely to stay in the no-school/no-work state than to go to school, only as shown by the negative coefficient for gender both in the sequential model, the first two negative coefficients in the multinomial logit model, and the positive third coefficient in the multinomial logit model. This evidence supports the findings of Canagarajah and Coulombe (1997), indicating that girls perform more household chores. As will be discussed in more detail below, indigenous children show a lower probability of going to school and a higher probability of working.

In terms of the characteristics of the household head, a more educated head increases the probability of a child going to school and decreases the probabilities of working, as shown by the first coefficient of the sequential probit model. Indeed, a more educated head decreases the probability of a child going to school and working, not going to school and working, or not going to school and not working; compared to children that go to school and do not work, as shown by the multinomial logit model. A married or living in free union head increases the probability of a child going to school and not working, as shown by the sequential probit model.

The composition of the household also shows significance in some cases. Interestingly, an increase in the number of children under the age of 12 is found to decrease the probability of going to school and increases the probability of working in 1997. This evidence from the household composition supports the quality/quantity tradeoff for children hypothesis, which centers on the notion that larger families lead to poorer educational outcomes for children. This hypothesis is formalized in the well-known quantity-quality trade-off in parental investments model developed by Becker (1960), Becker & Lewis (1973), and Becker & Tomes (1976). While the number of children under 12 had an effect, the number of children between the ages of 12 and 16 years is not significant in most of the cases. The effect of the number of adults and elderly (above 60) varies among models, but an increase in the number of adults tends to decrease the probability both of going to school and working.

In terms of poverty, the sign of the coefficients for the sequential probit change from 1997 to 2000 favors the school and not-working situation among the poor. This supports the idea that parents will invest in schooling if the benefit from doing so is greater than the cost of schooling. On the other hand, in the multinomial logit model, poverty is not a significant factor compared to children that go to school and work. While in 1997 it decreases the probability of going to school and not working, of going to school and working, and of not going to school and working; in 2000 it increases the probability of going to school and not working and becomes insignificant for the other two situations.

In 1997, indigenous children had a lower probability of going to school and a higher probability of working. This evidence supports the Guarcello, Mealli and Rosatti

(2003) hypothesis, and the findings of Grootaert and Patrinos (1999). As it can be observed, by the year 2000 these effects were reversed by the program (PROGRESA). The evidence suggests that, as a result of the program, by 2000 an indigenous child had an increased probability of going to school and a decreased probability of working, consistent with the non-exploitative scenario in the theoretical models above.

Work and schooling probabilities do not change as significantly or as greatly for bilingual children as they do for indigenous children. In the sequential probit model, no changes were observed in terms of the probabilities of going to school and working, or not. A bilingual child did had a higher probability of not going to school and working in 1997, but a lower probability in 2000. Likewise, no changes were found for the probabilities of not going to school in the multinomial logit model. In this case, a bilingual child has a lower probability of going to school and working in 1997, while this coefficient becomes insignificant in 2000.

Spanish-speaking children did not display very significant changes in the signs of the coefficients of the model. In the sequential probit model, a Spanish-speaking child had an insignificant coefficient for working in 1997. These coefficients become significant in 2000: small but positive for the not-going-to-school and working case, and negative for the going-to-school and working case. The significance of the coefficients decreased in terms of the multinomial logit. While the coefficients were positive for a child to go to school and work, and not to go to school and not work in 1997, they became insignificant in 2000. There were no changes for the not-going to school and work coefficient.

In conclusion, age, gender and being indigenous do have a significant effect on schooling and work decisions under every model, supporting previous findings. Girls are less likely to go to school or work. A more educated household head increases the probability of a child going to school and decreases the probabilities of the child working. A married or living in free union head increases the probability of a child to go to school and not work. An increase in the number of children under the age of 12 decreases the probability of going to school and increases the probability of working in 1997 while these effects become insignificant in 2000. Bilingual and Spanish speaking children did

not experience as many changes in probabilities as the indigenous children, which means that the program could be having a stronger effect in the latter.

Finally, it is possible to exploit the panel structure of the data to estimate the differential effect of the program among language groups, thus verifying the robustness of the aforementioned results. In order to do this, the empirical specification of participation in work (school) is:

$$Y(i,t)= \propto +\beta_T T(i) + \beta_R(R) + \beta_{TR}(R*T(i)) +\Sigma\theta_j X_j(i,t) + \eta(i,t) + \beta_{TZ}(Z*T(i))$$

Where:

$Y(i,t)$ = the work (school) outcome indicator for individual i, in period t. School attendance is defined according to those who respond that the child attends school. The definition of working includes all workers who report that they worked the previous week. We also include individuals who worked in informal activities.

$T(i)$ = binary variable taking the value of 1 if the household belongs to a treatment community and 0 otherwise.

R = binary variable equal to 1 for the November 2000 ENCEL survey, 0 otherwise.

$X_j(i,t)$ = vector of household characteristics.

$\eta(i,t)$ = error term.

$\propto,\beta,\theta$ = fixed parameters to be estimated.

Z = binary variable, taking the value of 1 if the children speaks an specific language, 0 otherwise. (Spanish, indigenous language, both)

The control variables in vector X consist of age and education level of the mother and father of the child; whether parents speak Spanish; and whether they speak an indigenous language. Also included are variables that measure the demographic composition of the household, such as the number of children ages 0-2 and 3-5; boys and girls ages 6-7, 8-12 and 13-18; men and women ages 19-54; and men and women over 55. Missing variable dummies are also included, when data for the parents is not available. The estimates are obtained using a probit model. The results of the impact of the program and the interaction between language and treatment are shown below. Tables

7-9 present the results of the impact of PROGRESA on the probability of children working for each language group. The difference-in-difference estimator is the effect of the program, given as percentage a difference from the pre-program level. In addition, Table 10 presents the estimated change on the probability of working for each age and language speaking group.

As illustrated in the tables, the results show a consistently negative effect of the program on the probability of working. Among the different language groups, the bilingual speakers experience the greatest effect from PROGRESA, showing a reduction in the probability of working that ranges from 23 to 71 percent. Furthermore, the indigenous language speaking group shows high levels of reduction in the probability of working. In the case of children ages 8-11, the effects are consistently larger and significant over time.

The results of the impact of the program on the probability of attending school for each language group are presented in Tables 11-13. The results suggest that the program has a positive and consistent effect on the attendance rate for all language groups in 8-17 and 12-17. In the case of children ages 8-17, the increase in attendance rate for Spanish-speakers accounts for 3.3 percent, in the case of bilingual speakers for 3.4 percent, and for indigenous language speakers for 17.8 percent. In the case of children ages 12-17 the increase in the attendance rate for Spanish speakers is 8.6 percent, for bilingual speakers 7.3 percent and for indigenous language speakers 20.16 percent. These findings suggest that the indigenous language speakers experience a larger increase in the probability of attending school than Spanish-speakers and bilinguals.

6. Conclusions

In the sample under analysis, child labor is found to be higher for indigenous children. After the intervention from the program, however, child labor incidence decreased by 8 percent. The greatest effect was observable in the case of 15 year old indigenous children in the treatment group, with a 26 percent decrease in child labor incidence, followed by a 25 percent decrease for the entire treatment group. Comparing before and after the intervention, differences in child labor between the treatment and control group narrow. The probability of attending school is very similar for bilingual and Spanish children at all ages, but higher than that of indigenous children. This difference decreased, especially for older age groups.

Older children are more likely to work and not attend school. Older children are also more likely to be in the not-working and not-going-to-school state. Girls are less likely to go to school or work. Among the characteristics of the household head, a more educated household head increases the probability of a child of going to school and decreases the probabilities of the child working. Being married (or in an unmarried couple) increases the probability of a child to go to school and not work. The number of children under the age of 12 had a negative impact on the probability of a child going to school and a positive effect on working; though this becomes insignificant after the start of the program. Poverty does increase the probability of going to school and not working after treatment in the program. Bilingual children did not experience as many changes in probabilities as the indigenous (monolingual) children. Spanish-speaking children did not show significant changes. When the panel structure of the data is used, results confirm that there is indeed a differential impact whereby bilingual children benefit the most in terms of the reduction in child labor, while indigenous monolingual children show greater increases in the probability of attending school.

This analysis adds a new perspective on Mexico's PROGRESA conditional-cash-transfer programs in terms of its effect on indigenous individuals. The program had a robust differential impact on indigenous children, especially those who are bilingual. These results are consistent with findings in other papers related to indigenous schooling barriers, such as Parker *et al*. (2003), whereby monolingual indigenous children have a higher hurdle to overcome when compared with those who are bilingual. These results

could also shed some initial light on the causes and consequences of incorporating specific components targeted to indigenous people in CCT programs in developing countries.

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Table 1. Child Labor

Group	1997	1999
Indigenous-monolingual	16.3%	7.4%
Bilingual	11.6%	7.7%
Spanish-monolingual	14.9%	6.7%

Table 2. Child Labor by age groups

	1997		1999	
Group	8 to 12	13 to 16	8 to 12	13 to 16
Indigenous-monolingual	5.6%	30.6%	1.0%	15.9%
Bilingual	3.9%	22.6%	2.3%	14.7%
Spanish-monolingual	5.5%	27.5%	1.5%	13.5%

Table 3. Child labor in Treatment and Control Groups

	8 to 12 year-old children				13 to 16 year-old children			
	Treatment		Control		Treatment		Control	
	1997	1999	1997	1999	1997	1999	1997	1999
Indigenous-Monolingual	4.7%	1.1%	7.2%	0.9%	30.5%	14.8%	30.8%	18.1%
Bilingual	4.5%	2.2%	2.9%	2.5%	22.8%	14.3%	22.2%	15.1%
Spanish-Monolingual	6.5%	1.7%	3.9%	1.1%	29.3%	13.1%	24.7%	14.1%

Table 4. Average years of Education

Average years of education

	8 to 12 year-old children		13 to 16 year-old children	
	1997	1999	1997	1999
Indigenous-Monolingual	2.6	3.4	4.7	6.4
Bilingual	3.1	3.4	5.9	6.4
Spanish-Monolingual	3.3	3.4	6.0	6.5

Table 5

Speak Indigenous Language	Speak Spanish		
	NO	YES	Total
NO	0	22,823	22,823
YES	795	8,318	9,113
Total	795	31,141	31,936

Table 6

Speak Indigenous Language	Speak Spanish		
	NO	YES	Total
NO	0	11,983	11,983
YES	505	4,450	4,955
Total	505	16,433	16,938

Source: Author´s calculations from the panel data.

Table 7-The impact of the CCT program on the probability of working: Spanish speakers, Panel

Spanish Speakers					
Age Group	Pre-Program Level	Treatment * Spanish		Difference in Difference Estimator	
		Coefficient	P>|z|	Coefficient	P>|z|
8 to 17	.1645419	.0425256	0.311	-.0339318	0.000
8 to 11	.0358161	.0035254	0.873	-.0155356	0.040
12 to 17	.2565811	.0655684	0.462	-.0523258	0.000
12 to13	.1079027	.496897	0.000	-.0234642	0.022
14 to 15	.2516139	-.0594643	0.661	-.0739125	0.002
16 to 17	.4440728	.8901097	0.000	.1113543	0.525

Note: The coefficients reported are the marginal effects of PROGRESA on the probability of working.

Table 8-The impact of the program on the probability of working: Indigenous language speakers, Panel

Indigenous Language Speakers					
Age Group	Pre-Program Level	Treatment * Indigenous		Difference in Difference Estimator	
		Coefficient	P>|z|	Coefficient	P>|z|
8 to 17	.1398003	0.007921	0.365	-0.033965	0.000
8 to 11	.0254907	-.0083282	0.177	-.015511	0.039
12 to 17	.2262042	.0197704	0.157	-.0524772	0.000
12 to13	.0902490	-.0174917	0.081	-.0240099	0.021
14 to 15	.2335563	.0345426	0.172	-.0742184	0.002
16 to 17	.3957766	.1088261	0.026	.1178969	0.501

Note: The coefficients reported are the marginal effects of PROGRESA on the probability of working.

Table 9-The impact of the program on the probability of working: Bilingual speakers, Panel

Bilingual Speakers					
Age Group	Pre-Program Level	Treatment * Bilingual		Difference in Difference Estimator	
		Coefficient	P>|z|	Coefficient	P>|z|
8 to 17	.1419812	.0100024	0.255	-.0339859	0.000
8 to 11	.0217583	-.0079738	0.197	-.0155212	0.039
12 to 17	.2251373	.0216797	0.123	-.0524601	0.000
12 to13	.0855226	-.0163776	0.106	-.0241142	0.020
14 to 15	.2314869	.0327684	0.195	-.0742455	0.002
16 to 17	.3941967	.1118758	0.023	.1182147	0.500

Note: The coefficients reported are the marginal effects of PROGRESA on the probability of working.

Table 10- Estimated change on the probability of working

Age Group	Change in Probability		
	Spanish Speakers	Indigenous Language Speakers	Bilingual Speakers
8 to 17	-20.622	-24.295	-23.936
8 to 11	-43.376	-60.849	-71.334
12 to 17	-20.3935	-23.199	-23.301
12 to13	-21.7457	-26.604	-28.196
14 to 15	-29.3754	-31.777	-32.073
16 to 17	*25.07562	*29.788	*29.988

*Not significant

Table 11-The impact of the program on the probability of attending school: Spanish speakers, Panel

Spanish Speakers					
Age Group	Pre-Program Level	Treatment * Spanish		Difference in Difference Estimator	
		Coefficient	P>|z|	Coefficient	P>|z|
8 to 17	.7055164	-.209729	0.018	.0238355	0.030
8 to 11	.9757879	-.2089127	0.000	-.0029341	0.681
12 to 17	.5099313	-.2929613	0.052	.0441744	0.028
12 to13	.7845961	-.7337533	0.000	.020892	0.224
14 to 15	.4862754	-.9428619	0.000	.0579912	0.118
16 to 17	.2050894	.9406989	0.000	.2015202	0.282

Note: The coefficients reported are the marginal effects of PROGRESA on the probability of attending school.

Table 12-The impact of the program on the probability of attending school: Indigenous language speakers, Panel

Indigenous Language Speakers					
Age Group	Pre-Program Level	Treatment * Indigenous		Difference in Difference Estimator	
		Coefficient	P>|z|	Coefficient	P>|z|
8 to 17	.1398003	-.0258398	0.037	.0250238	0.023
8 to 11	.0254907	-.0060759	0.412	-.0030702	0.679
12 to 17	.2262042	-.0322563	0.104	.0456171	.0240
12 to13	.090249	-.0155259	0.460	.0213195	0.219
14 to 15	.2335563	-.0649559	0.076	.0597375	0.109
16 to 17	.3957766	-.0046834	0.917	.2012054	0.283

Note: The coefficients reported are the marginal effects of PROGRESA on the probability of attending school.

Table 13 -The impact of the program on the probability of attending school: Bilingual speakers

Bilingual Speakers					
Age Group	Pre-Program Level	Treatment * Bilingual		Difference in Difference Estimator	
		Coefficient	P>|z|	Coefficient	P>|z|
8 to 17	.771219	-.0331492	0.008	.025252	0.021
8 to 11	.9755954	-.0073791	0.330	-.0030958	0.676
12 to 17	.6298556	-.0396297	0.047	.0457484	0.023
12 to13	.8418111	-.0191934	0.366	.021258	0.221
14 to 15	.6186589	-.0757911	0.040	.0599338	0.108
16 to 17	.3750885	-.0015021	0.974	.2011682	0.283

Note: The coefficients reported are the marginal effects of PROGRESA on the probability of attending school.

Figure 1. Child labor by age groups

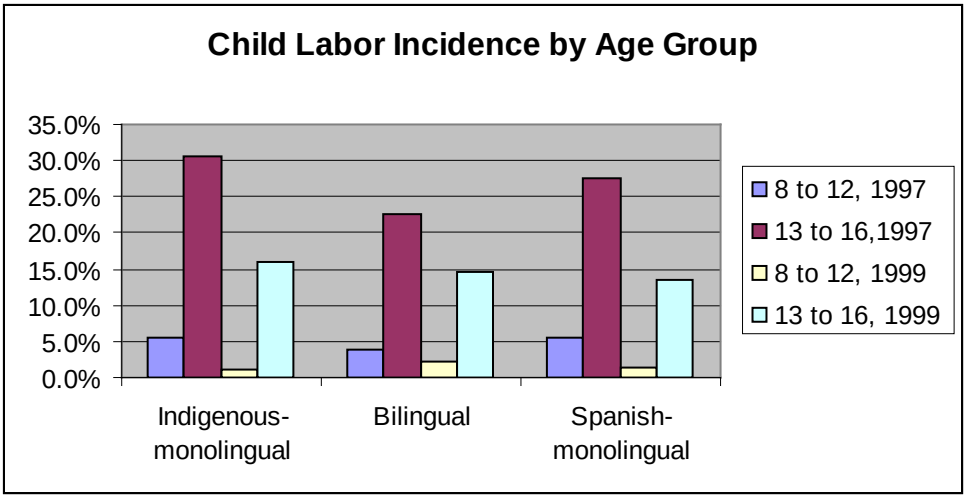

Figure 2. Average years of education

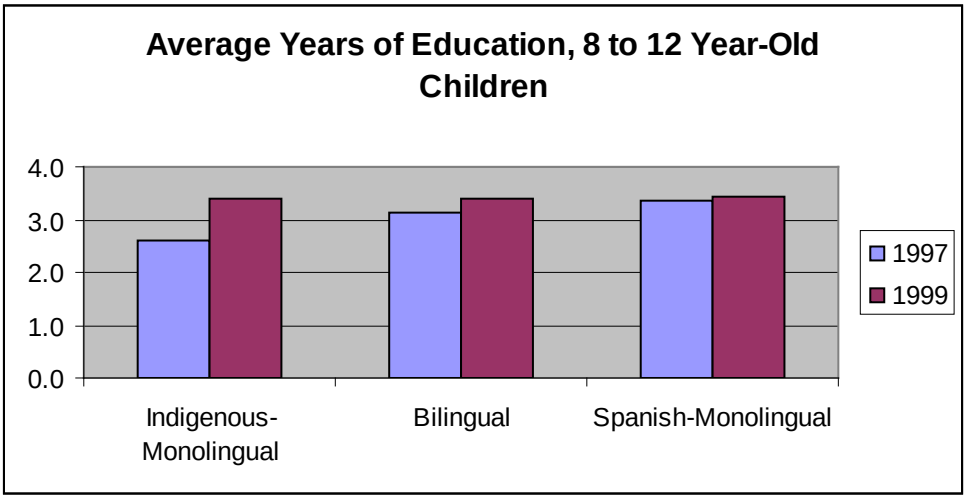

Figure 3. Average years of education