Conditional Transfers and Indigenous Children’s Schooling and Child Labor++

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Abstract: This paper uses panel data for Mexico for 1997 to 2000 in order to test the differential impact on indigenous households’ child labor and school attendance of a conditional cash transfer program (CCT). We find that while indigenous children had a greater probability of working in 1997, this probability is reversed after treatment in the program. Indigenous children also had originally lower school attendance compared with Spanish-speaking or bilingual children, but we find that treatment reduces the gap.

JEL classification code: I21, I32, J13, J24

Keywords: Child labor, Mexico, Indigenous, conditional cash transfers

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1. **Introduction**

It is estimated that more than 120 million children around the world between ages 5 and 14 are working full time for wages. Child labor incidence is higher in indigenous areas (Hall and Patrinos 2005). In Latin America there are over 40 million indigenous people and approximately two million of them are children working for wages. Throughout the region 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 literature on the correlates of child labor incidence among indigenous populations show that child income plays a slightly greater role in total family income in indigenous areas than in non-indigenous areas. Guarcello *et al* (2003) find that indigenous households have lower school attendance and higher work participation rate than the rest of the population. Ilahi *et al* (2000) explore the relationship between child labor and future adult earnings and find that indigenous individuals have lower future wages and are more likely to fall into poverty, conditional on them working during childhood.

Mexico is not an exception in this respect. Even though access to formal education has expanded in recent years, educational levels remain low among indigenous populations. In 2000, 12.8 percent of children between 6 and 14 years living in indigenous municipalities did not enroll in school and 32.5 percent of individuals older than 15 years did not know how to read or write (INI 2002). In 1997, the Mexican government launched a conditional cash transfers program (CCT) called Progresa, which was expanded after the change in government in 2000, under the new name of Oportunidades. By 2005, Progresa-Oportunidades covered 5.1 million families, more than 20 million of the Mexican poor people.

The issue addressed in this paper is whether PROGRESA-Oportunidades had an impact on the indigenous population, and whether this impact is similar to the well-known effects on non-indigenous children. Language barriers, cultural features and geographical isolation may imply a differential response among these populations to general intervention. Learning about the potential existence of heterogeneous impact is a fundamental policy question.
2. Literature

There is a vast literature on the impact of Oportunidades in Mexico (for summary see Levy 2006). Yet, close to nothing has been done in order to test the differential impact of the program on indigenous versus non-indigenous people. In terms of schooling and indigenous households, Parker, et al. (2003) provide an empirical estimation of the impact of language barriers in determining school achievement and the potential ameliorating role of bilingual education. Non-parametric regression reveals that indigenous monolingual children have less years of schooling than non-indigenous and indigenous bilingual children after the age of six. By the age of 18, the average indigenous monolingual child has 2.5 years of schooling while his or her non-indigenous or bilingual counterpart has achieved about 7 years of schooling.

Finally, in a well-known work related to child labor, schooling and CCT programs, Parker and Skoufias (2001) estimate a model to determine whether Oportunidades can simultaneously increase school attendance and reduce the incidence of child labor. They find that the program significantly reduces the incidence of child labor and has positive and significant impacts on the probability of attending school.

Following a similar methodology as Parker and Skoufias (2001) this paper adds to the literature by looking at whether indigenous groups respond differentially to a CCT program like PROGRESA-Oportunidades.

3. Data Description

The data used come from the baseline survey of household characteristics of 1997 and the follow up surveys of 1998 and 1999.¹ The database consists of a baseline survey and six consecutive surveys of the same household in a three-year period. It includes approximately 138,000 individuals in 26,000 households in 506 localities, with 320 as the treatment group and 186 as the control group. It includes micro-data on household characteristics, especially those that refer to education and health. Language spoken is

¹ Encuesta de Evaluación de los Hogares, November 2000 (ENCEL00N); Encuesta de Evaluación de los Hogares, November 1999 (ENCEL99N); Encuesta de Características Socioeconómicas de los Hogares, November 1997 (ENCASEH97).
used to classify people as Spanish-speaking, indigenous-monolingual and indigenous-bilingual. Children are defined as individuals aged 8 to 16 years.

The empirical methodology has to take into account the fact that sampling was not meant to be representative of different language groups. That is controlled for when estimating the effects.

4. Descriptive Statistics

Child labor is higher among indigenous-monolingual populations, but decreased from 16.3 percent to 7.4 percent between 1997 and 2000. Table 1 shows that Spanish-speaking children’s labor supply decreased by 7.6 percent between treatment and control groups from 1997 to 2000. The indigenous-monolingual group has a higher incidence for children between 13 and 16 years. In all age groups the child labor incidence decreased and differences between the treatment and control groups narrowed.

Education is very similar for indigenous-bilingual and Spanish-speaking children at all ages. Both groups have a higher education level with respect to indigenous-monolingual children. When the panel is constructed to analyze 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.

5. Econometric Results: Difference in Difference Estimates

The econometric methodology exploits the panel data structure of the data to estimate the differential effect of the program among language groups. In order to do this, the empirical specification of participation in work (school) is:

\[ Y(i,t) = \alpha + \beta_T T(i) + \beta_R R + \beta_{TR} (R \times T(i)) + \sum \theta_j X_j(i,t) + \eta(i,t) + \beta_{TZ} (Z \times T(i)) \]

Where

- \( Y(i,t) \) = the work (school) outcome indicator for individual i, in period t.
- \( T(i) \) = binary variable taking the value of 1 if the household belongs to a treatment community and 0 otherwise.

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2 An “indigenous-monolingual population” is a location where more than 30 percent of households report a household head that is indigenous-monolingual.
R = binary variable equal to 1 for the November 2000 ENCEL survey, 0 otherwise.

$X_{ij}(i,t)$ = a vector of household characteristics.

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

$\alpha, \beta, \theta$ = 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 languages).

The vector of controls consists of education level and age of the mother and father of the child, whether parents speak Spanish and also whether they speak an indigenous language. It also includes variables that measure the demographic composition of the household. The estimates are obtained using a probit model. Table 3 presents the estimated change on the probability of working for each age and language speaker group. The difference in difference estimator is the effect of the program, as percentage difference from the pre-program level.

The results show a consistently negative effect of the program on the probability of working. Among the different language groups, the bilingual speakers have the greatest effect from PROGRESA. Also, the indigenous language speakers group shows high levels of reduction in the probability of working. For children ages 8-11, the effects are consistently larger and significant over time.

Table 4 presents the results of the impact of the program on the probability of attending school for each language speaker group. The table reveals that it has a positive and consistent effect on the attendance rate for all language speakers groups for the ages 8-17 and 12-17. The findings also suggest that the indigenous language speakers have a larger increase in the probability of attending school than Spanish monolinguals and bilinguals.

8. Conclusions

We employ difference-in difference analysis to examine whether conditional cash transfers (CCT) programs such as PROGRESA have any impact on the indigenous
population, and whether this impact is similar to the known effects on non-indigenous children.

Consistent with the literature, in the sample under analysis, child labor is higher for indigenous children. Child labor incidence decreased after PROGRESA by 0.08 between 1997 and 2000. Among all the language and age groups, the higher effect in the reduction of the probability of working was noticed for the bilingual speakers with a reduction of 0.074 in the probability of working and with a 32% decrease in child labor. Comparing 1997 and 2000, differences in child labor between the treatment and control group narrow.

When the panel data structure of the data is used, results confirm that there is indeed a differential impact, and bilingual children benefits the most in terms of reduction in child labor, while indigenous monolingual children show larger increases in the probability of attending school.

This analysis adds a new perspective on conditional cash transfer programs, while showing that, in the case of Mexico, the program had a robust differential impact on indigenous children, especially those who are bilingual. Moreover, it is consistent with findings in other papers related to indigenous schooling barriers, such as Parker et al. (2003). In principle, these results could also shed light on the causes and consequences of incorporating specific components targeted to indigenous people in conditional cash transfer programs in developing countries.
References


Table 1. Child labor in Treatment and Control Groups

<table>
<thead>
<tr>
<th></th>
<th>8 to 12 year-old children</th>
<th>13 to 16 year-old children</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Treatment</td>
<td>Control</td>
</tr>
<tr>
<td>Indigenous-monolingual</td>
<td>4.7%</td>
<td>1.1%</td>
</tr>
<tr>
<td>Indigenous-bilingual</td>
<td>4.5%</td>
<td>2.2%</td>
</tr>
<tr>
<td>Spanish-speaking</td>
<td>6.5%</td>
<td>1.7%</td>
</tr>
</tbody>
</table>

Table 2. The impact of Progresa-Oportunidades on the probability of working: Spanish speakers, Panel 1997-2000

| Age Group | Pre-Program Level | Treatment * Spanish Coefficient | P>|z| | Difference in Difference Estimator | 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 to 13  | .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 the program on the probability of working.

Table 3. Estimated Change on the Probability of Working

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Change in Probability</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Spanish Speakers</td>
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<tr>
<td>8 to 17</td>
<td>-.206</td>
</tr>
<tr>
<td>8 to 11</td>
<td>-.433</td>
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<tr>
<td>12 to 17</td>
<td>-.203</td>
</tr>
<tr>
<td>12 to 13</td>
<td>-.217</td>
</tr>
<tr>
<td>14 to 15</td>
<td>-.293</td>
</tr>
<tr>
<td>16 to 17</td>
<td>.250</td>
</tr>
</tbody>
</table>

Significant differences are in bold

Table 4. Estimated Change on the Probability of Attending School
<table>
<thead>
<tr>
<th>Age Group</th>
<th>Change in Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Spanish Speakers</td>
</tr>
<tr>
<td>8 to 17</td>
<td>0.033</td>
</tr>
<tr>
<td>12 to 17</td>
<td>0.086</td>
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</tbody>
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