

Public Policy 253 - Agricultural and Resource Economics 253
Fall 2006

Homework Assignment #2

Impact Evaluation of the PROGRESA program in Mexico
Due on Friday November 3, in class

While primary school is almost universal in Mexico, secondary education in rural areas is trailing behind national average, especially among poor households. In order to increase school enrollment among the youth in poor families of rural areas, the Mexican government introduced in 1998 the PROGRESA program that gives cash transfers to mothers in poor households if their children attend school regularly and receive periodical medical checkups. Implementation of the program was done as follows. From a general census of the rural communities in Mexico, all the communities categorized as poor were selected to receive the program. Within all communities, a census was conducted prior to the announcement of the program to determine eligibility of the household. The criterion of eligibility is based on a poverty index. All children 6-16 years old of a poor household are eligible to receive the cash grant conditional on the fact that they go to school. The program started in 1998, and was progressively extended to cover all rural Mexico in 2000.

Several documents from their evaluation of the program are available on the IFPRI web site. See in particular a summary of their findings: "Is Progresas Working?" by Emmanuel Skoufias and Bonnie McClafferty. (http://www.ifpri.org/themes/progresas/progresas_report.htm).

For the purpose of the evaluation of the program, 506 communities (a small number compared to the size of the program) were randomly assigned to be incorporated either in the first phase of the program in fall 1998 or in the third phase in fall 2000. All of these communities were however surveyed in 1997 and followed up with bi-annual surveys until fall 2000. The communities targeted for late incorporation thus serve as control communities. Observations relating to 1997 were done before the program and constitute a benchmark survey. We will use this large data set collected to better understand the determinants of school enrollment and evaluate the effects of the program. The data consist in a panel of 24,000 households, in 506 villages from 7 states of Central Mexico. They include a baseline survey in 1997 and follow-ups in 1998 and 1999. The data set that has been prepared for you contains information on 18,805 children between 10 and 15 years old. Information from all three surveys is combined in the data file accessible on the course homepage.

I. The schooling situation in the control villages.

Consider for now the children from the control villages only, i.e., villages where PROGRESA is not implemented. Each child is characterized by the grade s/he has completed by the fall of 1998 (grade98). Primary school extends to 6th grade, junior high is 7th to 9th grade, high school is 10th to 12th, and post-secondary above. .

In this section, you will illustrate and discuss the two problems of low enrollment and high failure rates.

- a) To document issues of enrollment rate prepare a table that shows the proportion of children that are not enrolled, by age.
- b) The children that quit school in 1998 are characterized by being enrolled in 1997 (enroll97=1) and not being enrolled in 1998 (enroll98=0) while those that continue school are enrolled in 1998 (enroll98=1). Prepare a table that shows the dropout rate by grade level.
- c) To further illustrates the importance of the problem of entry into secondary school. Consider thus only the children that have completed the 6th year of primary school in the fall of 1998 (grade98=6). Report dropout rates of children by gender, by poverty status, and by distance to secondary school. Perform tests for the difference in dropout rates between these groups.
- d) Failure of a grade is characterized by the fact that the child was enrolled in 1997 and the completed grade at the beginning of the 1998 academic year was equal to that at the beginning of the 1997 academic year. To illustrate issues of failure rate, prepare a table that gives the failure rate by grade. Discuss your results.

Taking those results together, describe the schooling problem in the poor communities of rural Mexico. Evaluate the coverage and targeting schemes of PROGRESA (i.e., to whom should transfer go in priority and to whom do they go).

II. Impact analysis on entry into secondary school and performance based on random assignment of the program

Since the placement of the program has been randomized, a simple difference between average behavior of the eligible children in treatment and control communities gives the average impact of the program. We focus on the decision to continue school to the secondary level at the end of primary school. The population of interest is thus the children that were in school in 1997, had achieved the 6th grade (last primary grade) by the beginning of 1998, and are poor (eligible for the program).

- a) Estimate the impact of the program on the continuation into secondary school by simple difference. Check if PROGRESA has a differential impact by gender, and according to whether there is a school in the village or not.
- b) What aspects of the PROGRESA program could improve performance and reduce failure rates? What aspect could increase failure rates?
- e) Looking now at those children that indeed continued school in 1998, estimate the impact of the program on the failure rate by grade level by simple difference.

III. Assessing the quality of randomization

- a) To assess the quality of the randomization process, compare mean values of a selected number of exogenous variables in the treatment and control groups (among the eligible).
- b) Compare the pre-program mean values of the failure rates. What does it suggest for the validity of the simple difference?

IV. Robustness check and estimation by double difference

- a) To check robustness, calculate the impact of PROGRESA on continuation rate in secondary school in a regression model, adding individual covariates (age, parents' education, etc.) and the presence of a secondary school in the village. Compare to the impact estimate found in II a).
- b) Use the results on the covariates to comment on the main correlates to school attendance. Does this suggest complementary programs that could further increase enrollment rates?
- c) As a check of robustness, compare the 1998 failure rates of the non-eligible children in the treatment and control groups.
- d) Comparing the pre- and post program failure rates in the treatment and control group, give the double difference estimation of the impact of the program on failure rates of the last year of primary school and the first year of junior high. Comment. (Note: to find the standard error on the difference of the two estimates, use the formula $\text{var}(x - y) = \text{var}(x) + \text{var}(y)$ for two non-correlated variables x and y)

V. Policy recommendations

Several Latin American countries are thinking of implementing similar programs (Nicaragua, Honduras, Argentina, Brazil). This is a good time to make suggestions to these governments. Use your results and the conclusions of the IFPRI evaluation of PROGRESA to make policy recommendations for similar programs in similar context.