Preliminary. Not to be cited without permission.

Better coating for the silver bullet:
Improving conditional cash transfers in Urban Mexico.

Orazio P. Attanasio[♣], Costas Meghir[♣], Ana Santiago[♦] and Andrew Shephard[♣]

October 2008

[♣] UCL and IFS
[♦] IADB

1. Introduction

Conditional Cash Transfers programmes have been hailed as one of the most effective policy instruments to tackle long run poverty while at the same time ameliorating life conditions for poor households in the short run. The hype that CCT have received is amply justified by a number of rigorous evaluations, first and foremost the evaluation of PROGRESA, the predecessors of *Oportunidades* in rural areas. The results of that evaluation exercise are robust and clear, as they are based on the random allocation of the programme across communities. They indicated particularly large effects of the programme on school enrolment of children aged 12 to 17, as well as a number of other effects on health and nutrition.[1]

The success of Conditional Cash Transfers programmes to increase school enrolment was confirmed in several other contexts. For instance, the evaluation of *Familias en Acción,* the Colombian version of the CCT, found large effects on enrolment for the same age group, which were particularly strong in rural areas. However, as in Mexico, the effects of the programme on primary school children was very small and often insignificantly different from zero. Moreover, even the effect on secondary school children was considerably lower in the 'cabeceras municipales' of the small (less than 100k inhabitants) municipalities included in the evaluation.

In Mexico, the results of the urban evaluation of *Oportunidades* also pointed out to results that were not as large as those obtained in rural areas- as we recall in what follows. One of the main concerns regarding the urban component of *Oportunidades* is the low participation into the programme. In the first few years of the programme, it was not clear whether participation rates around or below 50% were due to the lack of information about the program and to the procedures used to register eligible households or to the fact that eligible households in urban areas find the programme less attractive, on average, than eligible households in rural areas. However, it has become increasingly clear that the latter explanation is probably the more plausible one. A particularly convincing piece of evidence is the fact that in areas where special registration drive were implemented, the initial high participation rates dropped to

[1] It should be stressed that CCT do not work everywhere and in all dimension. For instance, in several places, their effect on the prevalence of anaemia among young children has been limited. And, more generally the effect on the nutritional status of children was confined at certain subgroups and certain areas. Finally, some dimensions that are probably crucial for the long run objectives of the programme, such as children cognitive development, have not been addressed directly by CCTs and, not surprisingly, might not have been affected much by them.

roughly the same levels as in other areas where the traditional approach had been followed.

The next question, then, is to establish what are the main reason for the relative unattractiveness of the programme. Is because of the cost imposed by the conditionalities? Is it because the job market opportunities for urban youth are much higher, relative to the grant, than those for rural children?

The evidence on the limited effects of the urban programme in Mexico (and in some urban areas in Colombia) points out to the fact that the programme impacts can be very different in different areas. Indeed, some evidence on the heterogeneity of impacts also exists for the rural programme in Mexico: Attanasio, Meghir and Székely (2004), point out that most of the impact on enrolment in the original evaluation sample is driven by the three states of Michoacan, San Luis Potosí and Querétaro, while the impacts in the other four, poorer states in the evaluation sample is much smaller.

This evidence points out to the fact that it is very difficult to extrapolate the observed impact in a given region or country to other contexts or expect the same results with the same programme in different realities. Therefore, there is scope to improve the performance of CCT by adapting to different realities. In order to do so there are two complementary strategies. On the one hand, one wants to understand the mechanisms that determine the observed results in regions and contexts where the programme has been evaluated. Estimating how households react to specific incentives might help to change the structure of the grant to adapt it to different realities. On the other hand, one should start piloting innovations in some of the areas of interest to check what are those that work best.

An agenda to improve the functioning of the urban programme has to address these issues, as well as the problem of improving the impact of the programme on school enrolment and other outcomes of interest. In this document, we discuss and motivate some proposals that could be piloted in the near future to establish in which directions to improve the programme. We also discuss possible ways to finance the proposed changes.

The rest of the document is organized as follows. In section 2, we present some back ground information on the urban component of *Oportunidades*. We mainly cite from studies that have been done in the context of the urban evaluation and keep the details to a minimum.

In section 3, which is the core of this document, we discuss changes to the structure of the education grant. For this purpose, we use simulations of a structural model of

individual behaviour. The current draft still uses a simplified version of the model, results based on more sophisticated versions described in Section 3 will be forthcoming.

In Section 4, we discuss some additional possible changes to the programme: (i) the introduction of incentives to performance; (ii) changes to the conditionalities.

Obviously these innovations do not exhaust all possible or interesting innovations. In particular, we do not discuss innovations regarding the nutrition and health objectives of the programme, or innovations to the targeting mechanism used to determine eligible households, or innovations targeted to other outcomes such as young children cognitive developments. This is not because these are not important, but because of the limited scope of the present document.

We struggle to use as much quantitative evidence we have to justify the proposals we make. In some case we use data generated by the evaluation surveys both in urban and rural areas. In other case, we refer to evidence from studies of other Conditional Cash Transfers. In other cases, we cannot avoid to be more speculative.

Section 5 concludes this note.

2. Background on urban *Oportunidades*

Oportunidades is probably the largest welfare programme currently operated by the Mexican government. Although it originated in rural areas (under the name of PROGRESA), between 2002 and 2003 was expanded to urban areas. Indeed, in the last five years, most of the expansion of the programme happened in urban areas.

The expansion of the programme to urban areas was accompanied by an evaluation effort. Unlike the rural evaluation, however, the urban evaluation was not based on a randomized design. Instead, the program first targeted 'poorer' areas, based on the percentage of poor households in the 2000 census. Control 'manzanas' to be compared to the 'treated' ones were chosen in the control areas so to be as similar as possible to 'treated' one in terms of several observed characteristics. The evaluation then made substantial use of difference in difference techniques, as data were collected both before the start of the programme (in 2002) and after (2003 and 2004).

The evaluation had to deal also with the issue of the unexpectedly low take up of the program. This is in itself an important issue that we discuss in the next sub-section. We then go on to report some of the estimated impacts of the programme on enrollment rates.

2.1. Participation

Angelucci and Attanasio (2008) discuss at length the issue of low participation and present the results of estimating a model of the probability of participating into the programme as a function of several observable variables. They find that both demographic and economic variables are important predictors of participation. In particular, they find that:

> "An increase in the number of children neither going to school nor working does not change the likelihood of being a program recipient, with the exception of children aged 0 to 5; the participation rate drops by 2.3% points for each extra child in this age group. This result may be due to the higher opportunity cost of leaving the house for mothers of very young children[2]. On the other hand, having young children who go to school is associated with significantly higher probabilities of participation. The likelihood of being a program recipient is 3.6 and 5.5 percentage points higher for any child aged 6 to 12 and 13 to 15 who was attending school before the program started, while elder children's school attendance does not affect take-up rates. Lastly, child employment is correlated with lower take-up rates; the probability of participation is 6.5 and 4.0 percentage points lower for any child aged 13 to 15 and 16 to 20 who was working in 2002. These results indicate that program participation is much higher among families whose kids would have gone to school irrespective of the program.

Angelucci and Attanasio (2008) argue that a possible explanation of these findings is that "the monetary incentives offered are probably not sufficient to induce some potential participants to move children from employment to schooling . […] In program blocks, 16.2% and 43.7% of eligible respondents aged 13 to 15, and 16 to 20, respectively, had a job in 2002, with average monthly wages of 885 and 1451 pesos (and median wages of 800 and 1310 pesos). The monthly scholarship for program participants in 2003, however, was between 305 and 390 pesos for enrollment in lower secondary education (grades 7 to 9), and between 510 and 660 pesos for upper secondary enrollment (grades 10 to 12). These transfers amount to 270, 345, 451, and 584 pesos at 2002 prices. Thus, the opportunity cost of switching from employment to schooling is much higher in urban than in rural areas, where the scholarships were between one half and two thirds of children's full time wages (Schultz 2004), and where the participation rates were much higher."

In addition to the role of children of various ages and to monetary incentives, Angelucci and Attanasio, also consider various other economic variables. The three main findings in this respect are:

[2] To comply with the health component conditionalities.

> "First, poverty is a strong correlate of participation. According to the estimated effects, the household in the 75% percentile of the poverty distribution, which has a poverty level of 2.01, is 16 percentage points or 69% more likely to be a program participant than the household in the 25% percentile, which has a poverty level of 1.04. Second, the concentration of health centers in the block is positively related to participation. The magnitude of the effect, however, is quite small, as the inter-quartile range in this case is only 2.8 percentage points. Third, participation is inversely related to both consumption and income, but not to temporary shocks."

Angelucci and Attanasio (2008) conclude their discussion of participation proposing two alternative explanations of their results.

> "One possible interpretation of these results is that the low participation rate depends on low expected benefits of the program for some eligible households. Only sufficiently poor households, with children who would have gone to school anyway, and with relatively easy access to health centers, enroll in Oportunidades. The low incentives to participate could be due to a mix of uncertainty about eligibility (e.g. for households who suspect they may not be poor enough), and inadequate monetary incentives (e.g. for children who work). It would be interesting to experiment with changes in the targeting rules. For example, one could identify some strong correlates of poverty that the potential recipients can easily recognize and offer the program to all households with that given set of characteristics.
>
> One alternative explanation for our results is that poorer households may have better access to information about the program. For example, since the program was advertised by driving around the treated neighborhoods, it is possible that households with a higher opportunity cost of time, such as less poor families, may have not been aware of its existence. However, while low participation in the early stages may be compatible with scarce information about the program's existence or its rules, the enrollment rate in 2004 is only marginally higher than the one in 2003. Moreover, although the intensity of advertising may be correlated with locality characteristics, explaining part of the observed positive correlation of poverty and availability of health centers with enrollment, information alone can hardly explain the different enrollment rates by age, school enrollment or employment status of potential scholarship beneficiaries. To conclude, the available evidence suggests that both insufficient information and inadequate financial incentives may be responsible for the observed low participation rate to Oportunidades, and that further research to estimate the relative importance of these determinants is needed.
>
> Irrespective of the relative importance of the incentive and information motives, participation appears to be correlated with permanent, rather than temporary factors. Poverty level and consumption are strongly significant; shocks such as loss of business and natural disasters do not have a statistical effect."

Since then, it has become clearer that the first explanation of the relatively low participation to *Oportunidades* in urban areas is probably the relevant one. Indicative is the fact that participation rates do not change much over time, which would not be true if the lack of information was the main problem. Particularly revealing is the fact that

where the programme tried to push participation high by changing the method of registration of eligible households (and adopting a method much more similar to the one used in rural areas), participation into the programme dropped to initially high levels to rates that are similar to the ones observed in other areas.[3]

2.2. Impact on enrolment

As for the impact of urban *Oportunidades,* we mainly focus on the impact on enrolment in school. For this outcome, Behrman et al. (2005) report that the programme had modest impacts. As we mentioned in the introduction, the non-random allocation of the programme across areas induced evaluators to estimate impacts using a diff-in-diff with matching strategy. Behrman et al (2005) estimated a participation equation in treatment areas, imputed a propensity score for control areas and compared the changes in the probability of school enrolment for eligible individuals who were enrolled in the programme in treatment areas with eligible individuals in control areas with a similar probability of participating into the programme. Under a certain number of assumptions these assumptions deliver the Average Treatment on the Treated (ATT) that is the effect of the programme on those who receive it, in that they are not only eligible and live in treatment areas, but actually participate into the programme.

We report some of the results obtained by Behrman et al. (2005) in Table 1. The effects are larger (although not very precisely estimated, for the 15-18 and the 19-20 age group. Perhaps that is not too surprising as these are the ages where the effect can be larger, given the high enrolment rates at younger ages. This type of results, by and large, is also observed in rural areas, at least qualitatively. The only surprising feature is the fact that the effect on the youngest group (aged 6-7) seems to be larger than the results for the following age group. The estimates, however, are quite imprecisely estimated.

While Behrman et al. (2005) focus on the ATT, another important parameter, especially in the context of our discussion, is the Average Intention to Treat (AIT), which measures the average impact of the programme on eligible individuals, regardless of whether they participate into the programme. Given the issue of low participation in urban areas we mentioned above, the AIT and the ATT are going to be very different in these areas, unlike in rural areas, where participation rates into the programme were very high

A rough estimate of the AIT can be obtained multiplying the impact by the participation rates into the programme, if one assumes that the programme does not affect the

[3] These facts were cited in personal communications of *Oportunidades* officials.

enrolment rates for households who do not participate. [4] In our case, as participation rate are around 50%, one can simply divide the impacts in Table 1 by two. This makes the smallish impact of *Oportunidades,* much smaller.

Table 1

Impact of urban *Oportunidades* on enrolment

Age group/ gender	Enrolment in 2002 treatment	Enrolment in 2002, control areas	Impact in 2003	Impact in 2004
Girls 6-7	0.84	0.92	0.060	0.076
			(0.026)	(0.025)
Girls8-11	0.96	0.98	0.017	0.024
			(0.009)	(0.014)
Girls 12-14	0.88	0.92	0.010	0.001
			(0.025)	(0.033)
Girls 15-18	0.58	0.61	0.031	0.012
			(0.047)	(0.062)
Girls 19-20	0.13	0.22	0.082	-0.021
			(0.077)	(0.101)
Boys 6-7	0.84	0.90	0.047	0.046
			(0.026)	(0.028)
Boys 8-11	0.95	0.98	0.024	0.022
			(0.009)	(0.011)
Boys 12-14	0.93	0.90	0.013	-0.030
			(0.020)	(0.031)
Boys 15-18	0.60	0.53	0.085	-0.041
			(0.041)	(0.081)
Boys 19-20	0.22	0.13	0.102	0.012
			(0.093)	(0.012)

Standard errors in parentheses.
Source: Behrman et al. 2005. Estimates obtained by diff in diff with matching. Bandwidth of 0.3

3. Proposed changes to the grant structure

If one looks at the effects that urban *Oportunidades* has on school enrolment, the main issues to consider are the relative unattractiveness of the grants offered by the programme (compared to what is available on the labour market), the low take up rate of the program and the relatively small impacts on enrolment for most age groups. At the same time, the reality the programme has to operate within is one in which primary school enrolment is almost universal. There is therefore little scope for the programme to have impacts on enrolment for primary school children.

[4] Even under this assumption one could get more sophisticated estimates of the AIT than what we discuss here.

These considerations suggest a number of changes to the structure of the *Oportunidades* grant. First and foremost, it might be worth considering larger grants for both junior (s*ecundaria*) and especially senior high school (*preparatoria*). Obviously, such increases can be expensive. If one increases the grant for high school by, say, 50% the increase in cost generated by such a change for that component of the programme is likely to be more than 50%, as take up and enrollment might increase as a consequence of the programme. It might therefore be worthwhile to consider also possibilities of re-adjustments that would allow savings.

Given the limited impact that the programme seems to have on primary school enrolment, one obvious possibility would be to abolish or decrease such a grant to pay for the increases in the secondary school grant. Such a suggestion is almost obvious if the only goal of the programme is to increase school enrolment. However, it might be the case that the cash transferred under the heading of primary school scholarships serves other purposes, possibly improving nutrition for the young children in the eligible households who receive this subsidy and even increasing enrolment for secondary school, if those cash transfers allow eligible households to overcome binding liquidity constraints and permits a better quality of study. We discuss these issues below. Before that, however, we focus our discussion on school enrolment. For this purpose we embed the changes we propose in a behavioural model that allows us to evaluate the effects of the proposed changes ex-ante.

3.1. Changes to the level of primary and secondary education

In what follows, we consider two types of changes to the structure of the grant within the simulation model we consider. First, we 'abolish' the primary school grant and use the savings to finance an increase in the secondary school grant. In particular, we increase the level of the secondary school grant (both junior and senior levels) up to the point in which the operation is cost neutral, taking into account the relevant behavioural changes. Within this exercise, and with these restrictions, however, there are different ways we can change the grants in junior and senior high school. One possibility is to increase the grant proportionally for all years. Another is to concentrate the increases where they are most needed, which is in senior high school. We present results for both cases and, in both cases, we give the level of the grant that, taken into account the behavioural responses, can be financed by the elimination of the primary school grant. We obviously also document the effect that this different grant structure would have.

Alternatively, one can simply increase the secondary school grant without eliminating the primary school grant. After presenting the results of these type of simulations (for different levels of the increase in grant) we also report the implied increase in costs.

3.2. Using a simulation model to assess the proposed changes ex-ante.

As mentioned above, to assess the impact of these proposed changes we estimate and simulate a behavioural model. The model is very similar to that estimated by Attanasio, Meghir and Santiago (2004) using data from the rural ENCEL. Indeed, in addition to the urban preferences we will also be presenting and discussing some simulations from that paper, to put our results into context. The model is also similar to that estimated and simulated by Todd and Wolpin (2006).

3.2.1. The model

We describe in a non-formal way the functioning of the model. A more formal and accurate description is presented in an Appendix.

We assume that that each households decides, on each child separately, whether to send him or her to school comparing the utility value of doing so with the utility value of not doing so, which in our model implies sending the child to work. The model can be generalized to take into account the possibility that the child does neither. The utility of each choice is made of two components: the current utility and the utility that the child will generate from next period to the end of the programming horizon.

The *current* utility of going to work depends on the wage that the child can earn, while the utility of going to school depends on various background variables (such as parental education), (negatively) on a number of variables reflecting the cost of going to school (including the distance from school), as well as age and the highest grade received. This latter variable, which turns out to be empirically important, introduce another important dynamic aspect to the model, in that current schooling choices will affect the taste for schooling in the future. Such a variable also introduces an endogeneity problem which is solved by modeling explicitly the current years of schooling for each child as a function of past schooling opportunities and costs. For households living in treatment areas, the utility of going to school also reflect the *Oportunidades* grant.

Future utility depends on the age and school grade of the child. The former evolves deterministically, while the latter depends on current choices: if the child works, the school grade does not advance, while if he/she goes to school it increases by one with a

certain probability reflecting the probability of passing a grade. The probability of passing a grade is estimated from actual data and is assumed to depend on age and grade.

In the last period of the child's programming horizon (age 18), utility is assumed to depend only on the completed grade. This will reflect the long term gains to education, that is the different earning potentials afforded by different levels of education. While ideally one would like to observe the perceived to education, the lack of appropriate data forces us to estimate it.

Future utility in each period is computed recursively, starting from the last period. Utility of schooling at age t depends on the current utility of schooling plus the expected value of future utility at age t+1. Utility at age t is then the maximum between the utility of schooling and the utility of working., Having computed value of future utility at time t, one goes on to compute the value of future utility at age t-1.

In addition to observed determinants of utility we assume the existence of time varying cost shocks that are i.i.d. over time and across individuals. We also assume the presence of variables that are known to the household but unobservable by the econometrician. These variables can represent innate ability which makes schooling more or less attractive for different individuals. We represent these variables as discrete random variables that can take a certain number of values with a certain probability.

The model's parameters are estimated by maximum likelihood using the data from the Encel survey. We do not report our estimation results here. The results for the rural model and their interpretation can be found in Attanasio, Meghir and Santiago (2005). The results for the urban programme are available upon request..

The model incorporates many strong assumptions. Some of them could be relaxed, although this would make the computation of the solution to the model much harder.

Notice that this model allows, unlike Todd and Wolpin, different effects of the *Oportunidades* grant and of the wage. In Todd and Wolpin a reduction in the wage is completely equivalent to an increase in the grant. Here we can identify two different parameters due to the fact that we use data both from treatment and control zones, while Todd and Wolpin only used data from control areas. The effect of the grant can then be deduced from the effect of the wage on schooling and working decisions. Our estimation results, especially in rural areas indicate that this restriction is a very strong one, in that we can reject the hypothesis that the effect of the wage and of the grant are the same. In particular, we find that an increase in the grant is more effective in reducing work and increasing school enrolment than a reduction in the wage paid to children.

3.2.2. Simulations

Having estimated the model, we can use its parameters to the simulate the individual behaviour of the households in the sample. In particular, given the parameters of the model, one can compute, for each individual in the sample, the probability of going to school. Having obtained this baseline estimates of the impact, one can then simulate the model under different scenarios. As a first basic exercise we simply remove the grant. Comparing the probabilities of going to school with and without the grant in treatment areas gives an estimate of the programme's impact. One can then change the nature of the programme and compute the impact of these alternatives.

3.2.2.1. Changing the programme in rural areas

Although the main focus of the proposals we make is to change the structure of the programme in urban areas we start by presenting the results of simulating changes in rural areas. These results are taken from Attanasio, Meghir and Santiago (2005). There are two reasons to present these results. First, the model we estimate makes explicit use of the variation induced by the presence of the grant and, to an extent, considers that as exogenous. This assumption is justified in rural areas by the fact that the programme was allocated randomly across areas for the evaluation period. Second, the impact of the existing programme estimated in rural areas are larger and more precisely estimated. As the impact of the program is what we use to estimate the effect of the programme in the model (which we then extrapolate to assess the effect of different versions of the programme) we feel more comfortable with more precise and robust estimates. A detailed discussion of the model and of the estimation results can be found in Attanasio, Meghir and Santiago (2005).

In Figure 1, we report the results of two simulations. The first is performed to estimate the effect of the programme, as estimated by the model. In particular, we first compute the probability of school enrolment under the existing programme in treatment areas and compare them to the same probabilities computed in the absence of the programme. We average these differences by age and plot the difference as the blue line in Figure 1 against age.

The results that we obtain are not too different from those that have been obtained in the evaluation of *PROGRESA* This simulations, therefore, constitutes an important

check on the ability of our model to fit some basic features of the data set. What we show is that the model is able to reproduce the impact of the program as estimated by a randomized trial.

As the impact estimates obtained with the experimental data are so much easier to computed than those obtained by first estimating and then simulating our structural model, one might want to ask what is the utility of such a model. The answer lies in the ability to generate the red profile plotted in Figure 1, which represents the impact of a version of the programme different from that observed in the data. The red profile is constructed as follows: given the model parameters, we compute the probability of school enrolment for each child in the simulation in a situation in which we have removed the primary school grant and use the resources saved to increase the secondary school grant (which in our rural sample is only given in grades 7, 8 and 9). The amount by which the secondary school grant is increased is such that the overall amount of resources spent under the two alternative programs is the same, taking into account the behavioural responses.

Figure 1 shows that even the rural program has large potential to improve what is considered one of his main objectives. As the impact at young ages is very small, abolishing the primary school grant does not have large costs in terms of attendance. On the other hand, increasing the grant for secondary school can have much larger impacts. This is due to two related reasons. On the one hand, as primary school attendance is almost universal even in rural areas, the primary school component of the programme is quite expensive. Therefore, by abolishing it, one can increase the secondary school component quite substantially. Second, as the enrolment in *secundaria* is quite low, there is substantial room for improvement.

In addition to experimenting with changes in the structure of the grant, we can also evaluate alternative policies. In Figure 2 we report the results of some alternative simulations. In the first experiment, we check what would be the impact of a measure that would reduce children wages, by an amount equivalent to the size of the grant paid by *Oportunindades*. The picture show that even the substantial decrease considered in the experiment would not have very large impacts. For instance, at age 15, the effect is substantially half than that of the wage. This is due to the fact that our estimates show that the grant is much more effective than the grant as a way to increase enrolment.

In the second experiment, we consider the impact of a school construction programme. In the rural sample, the median child lives at 3 km from a secondary school. In the

programme we look at the impact of a programme that would construct schools so that no students would live at more than 3km from a secondary school. Once again, this gives us a positive impact, but not as large as that of the grant. It would be interesting to compare the relative costs of these interventions.

Finally, rather than considering different interventions we consider the fact that the programme can have heterogeneous impacts. As we mentioned above, the programme allows for the presence of unobserved variables, probably reflecting individual ability, which affect the probability of going to school. We have approximated these variables with a discrete random variable that can take three different values. The third line in the Figure computes the impact for the 30% of youth who have a relatively 'low' cost of schooling (or the most able children). As can be seen from the picture, the impact of the programme is particularly strong for these children.

Figure 1

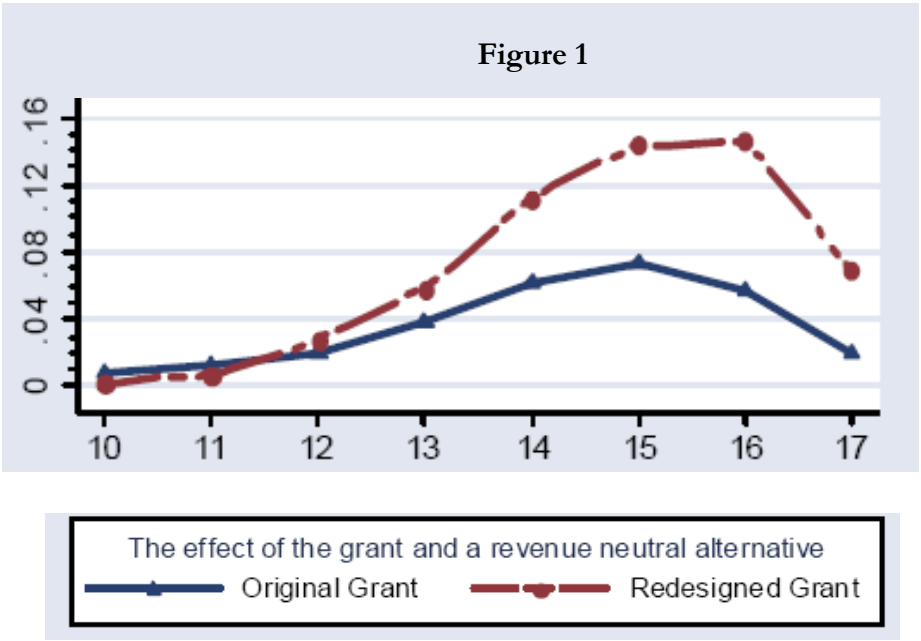
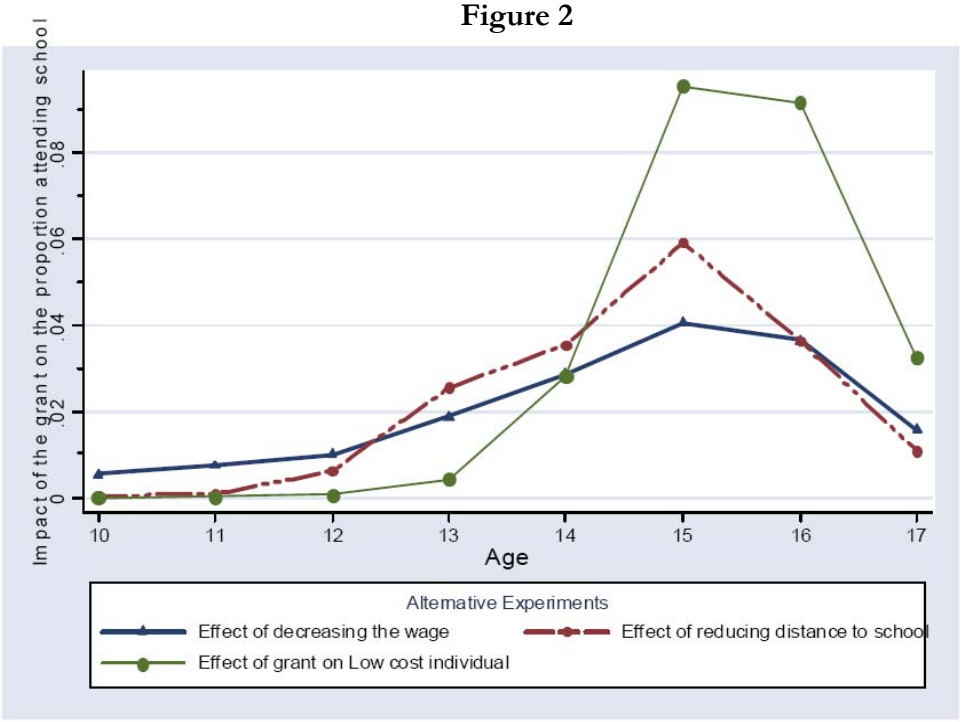


Figure 2



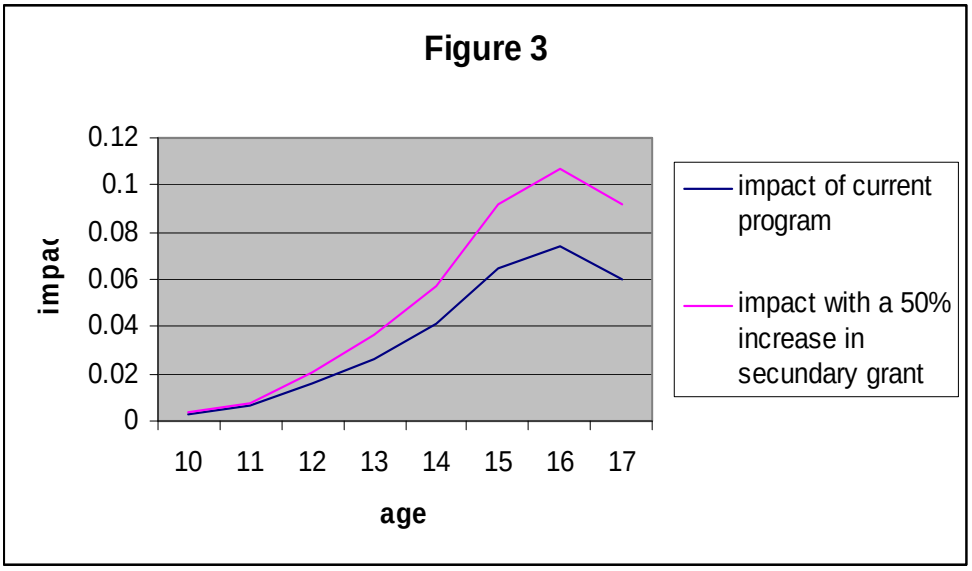
3.2.2.2. Changing the programme in urban areas

A similar exercise can be performed in urban areas. For this purpose, we set about estimating a version of the model in Attanasio, Meghir and Santiago (2005) on data from the urban evaluation. A number of changes are however necessary to adapt our model to the different reality of urban Mexico. First, both in terms of the utility of schooling and in modeling the initial conditions, we do not use the distance from the closest school as an indicator of schooling costs or school availability. The reason is that in urban areas, the density of school is much higher than in rural areas and distance does not really constitute an important determinant of school attendance. No student will decide on whether to attend school or not because a school is 10 minutes rather than 5 minutes away. Instead we consider variables that represent monetary cost of schooling in the area of residence (such as the cost of fees and uniform, as well as transport costs) as well as variables that represent school availability and quality (such as teacher student ratios, number of students per school and so on). Second, we need to model programme take up, as participation rates are so much lower than in rural areas. For such a purpose we need an instrumental variable strategy: we therefore need a variable that determines take cup and does not affect directly school enrolment. As reported by Angelucci and Attanasio (2008), participation is determined by the density of health centres, probably

because mothers living in areas with many health centres find it less onerous to comply with the conditionalities imposed by the health component of the programme. Analogously, working women might find it harder to participate into the programme. We therefore use these variables as determinants of the participation decision in treatment areas and estimate the effect of the programme taking into account this selection into the programme.

Having said this, for the preliminary results we have obtained up to now we modeled neither participation into the programme nor initial conditions because we are waiting for data on school availability. For this reason, the impacts we estimate are not necessarily accurate. However, we believe that the simulations we present should give a good idea of *how the impact would change when changing the structure of the grant.* We will circulate the simulations of the fully specified model as soon as we have them.

In the specification we estimate, all the coefficients have the expected sign. We control for parental background, age of children, grade of children. Both the coefficients on the wage and on the grant are significantly different from zero. The estimation results are available upon request. In what follows we report results for boys. The data used were those from the ENCEL 2003.



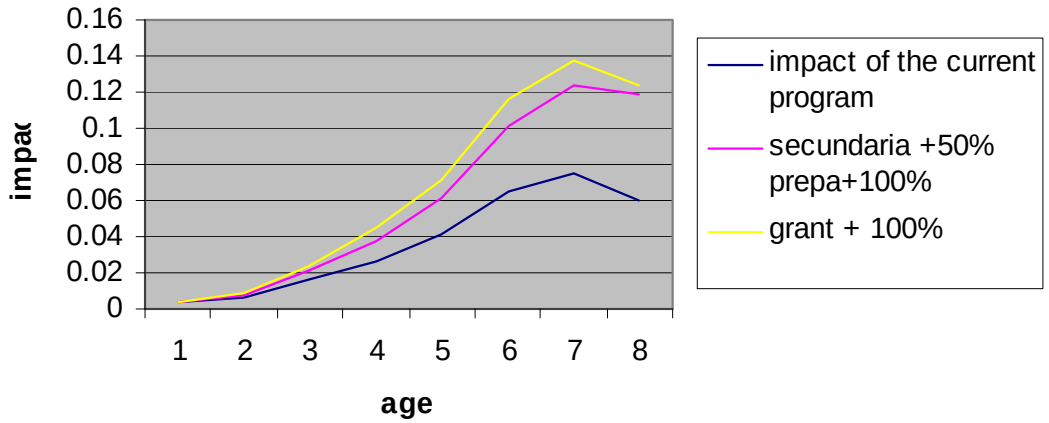
In the first experiment, whose results we report in Figure 3, we compute the impact of the programme as currently designed. We then increase the grant for all secondary education (*secundaria y preparatoria*) by 50% . The impact is plotted alongside the basic impact. As can be seen the impact of the current programme is not too different from

the estimates reported by Behrman et al. (2005). Our estimates peak at age 16 at almost 7%. The impact of the increased grant is considerably higher, although with roughly the same pattern over ages. The peak is again at 16, but it is now above 10%. Obviously the increased grant implies larger expenses. As we do not touch the primary school grant, the total amount spent on the education component of the grant increases by 36.7%.

In Figure 4, we plot against age, along the basic impact, the result of another two experiments. In both cases we leave the grant in primary school unchanged. In the first experiment, we increase the grant in junior high school (*secundaria)* by 50% and the grant in senior high (*preparatoria*) by 100%. As can be seen, now the impact of the program peaks at 12% and does not decline much between 16 and 17. In the second experiment we double the size of the grants in both *secundaria* and *preparatoria.* The effect of the program is now even higher and peaks at almost 14%.

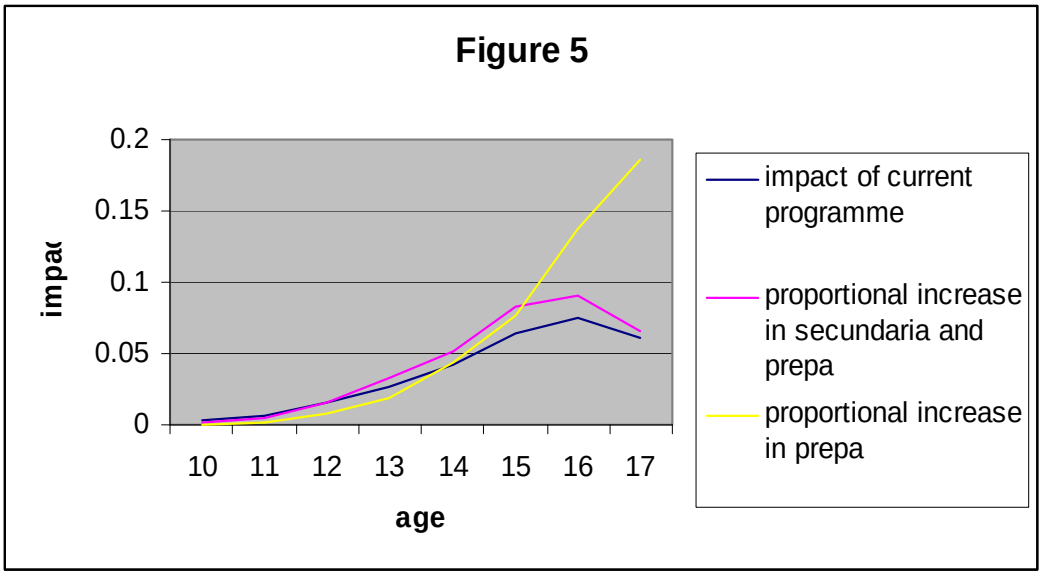
These changes in the structure of the grant, which still leave the primary school grant unchanged, obviously imply larger increases in cost of the education component of the programme: in the case of the first experiment it increases by 50%, while in the case of the second, it increases by 75%.

Figure 4



As we mentioned earlier, the effect of the primary education grant on school enrolment seems to be very small. For this reason, we present the results of another set of experiments in which we abolish the primary grant and use the resources saved in such a way to increase the grant in secondary education. We increase this grant up to the point

in which, taking into account the behavioural responses to such an increase, we exhaust the resources freed up by the abolition of the primary school grant. The results of the experiments that follow, therefore, are budget neutral.

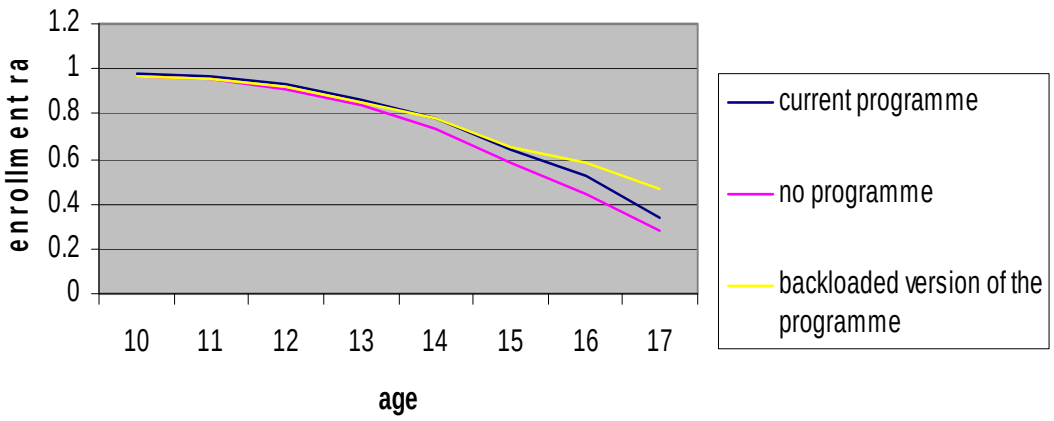


In the first experiment, whose results we plot once again alongside the basic impact we have reported in the other figures, we use the resources saved from the primary school grant to increase the grants in both *secundaria* and *preparatoria*. In particular, we put in place a flat grant of 539.2 pesos, during the three years of *secundaria* and the three years of *preparatoria*. This compares with a grant structure that in 2003 was: {300,315,335,505,545,575} for the last six years of school This change implies that on average the grant is increased by about 25% relative to the 2003 average. As we mentioned above, these level of the grant was chosen so that it would imply the same level of expenditure as in the current structure. The impact in this case still peaks at 16 and it is equal to 9%. The grant for the final six grades can be increased by over 25% in this experiment.

In the second experiment, we concentrate all the resources saved from the abolition of the primary school grant in the last three years of secondary education, or *preparatoria*. As in the first exercise we implement a flat level for the grant during the last three years (*preparatoria*). In this case, we can afford to increase the grant given to the students to over 2,200 pesos which is almost 400% of the average grant in *preparatoria* with the current system. As a consequence, the impact on school enrolment for the last few ages, is much larger and reaches almost 19%.

To give a better idea of the impact of such a change in the programme, in Figure 6 we plot attendance rate without the program, with the current version of the programme and with the 'back-loaded to the last three years' version of the programme. As can be seen, the last version of the programme we have considered, reduces substantially attrition during *Prepa*.

Figure 6



3.2.3. Some caveats

The exercises we presented above are suggestive and indicate that there might be large gains to be obtained in terms of increasing school enrolment for youths aged 14 to 18 by changing the structure of the education grants provided by *Oportunidades* in urban areas. Several caveats, however, are in order.

1. The results are based on a specific model of behaviour and depend crucially on the ability of this model to predict outside the range of variation in grants observed in the data. While we are confident in the performance of our model, this first caveat should be kept in mind. Moreover, in the current draft we have used a simplified version of our model that. does not model the selection into the programme and the initial conditions.
2. In this note we have focused on the enrolment decision. In this dimension, it is pretty clear that the primary school grant achieves very little and therefore, it

would be wise to target those resources towards the secondary school enrolment, as done in the last set of simulations we performed. However, it is possible that the resources beneficiaries receive from the primary school grant is used for other purposes and achieves different goals. For instance it is possible that it affects nutritional outcomes (which can be very important for the long run achievements of cognitive development) or could ease up liquidity constraints that prevent enrolment of older siblings in high school or even college. Of course, it is difficult to disentangle these effects. One piece of evidence that speaks indirectly to this issue is the one presented by Attanasio and Rubio-Codina (2008) . In their paper, these authors compute, for the rural PROGRESA sample, impact on a variety of outcomes comparing eligible individuals living in treatment and control municipalities in the early evaluation. They then estimate separately the impacts on, say, young children nutrition and illness occurrence, or older children school attendance for those children who have siblings in primary school and those who do not. They do not find any differences in impact, an indication that the primary school grants does not seem to 'spill over' to other siblings in the same family. Of course the exercise is not perfect, because we would like to observe the counterfactual of the outcomes in households with both children in primary and children not in primary with and without the primary school grant, which we do not observe. However, it does constitute indirect evidence on the usefulness of the primary school grant.

3. While it is true that the abolition of the primary school grant and the contemporaneous increase of the secondary school one for many households reallocates the same amount of resources over time putting more incentives to secondary school attendance, it also implies that there will be times at which some beneficiary households will not have much contact with the programme. If the activities that the programme promotes (*platicas* etc.) or even the modification of the balance of power within the households that it is likely to generate are important, our exercise could be misguided.

Given these concerns, one could also think of different interventions in which the savings obtained with the abolition of the primary school resources could be partly used to increase the nutritional supplement. This scheme would have two advantages. First it would probably direct some resources (that would become unconditional on school

attendance) towards younger children and would also keep a closer link between the beneficiary households and the programme.

4. Other changes

In addition to changes in the structure of the grant, one can also think of additional modifications to *Oportunidades,* in order to improve its performance. As we mentioned in Section 2, the main issues we are concerned in this note are the low take up rate of the programme and the limited effects on enrolment rates. The changes we discuss in this section have the potential to address both of these issues because they should make the programme more attractive. However, they potentially also speak to other issues. It is increasingly clear, for instance, that a key issue for many poor households is the low proportion of youth who progress to tertiary education. Low enrolment in universities is particularly worrying, given the high returns that tertiary education carries and given that these returns have increased in recent years. There may be many reasons for such low rates, ranging from the lack of financial resources, to the lack of secondary education of sufficient quality. Some of the changes discussed below have the potential to address these issues.

While in the case of changes to the structure of the grant we used evidence from the impact evaluation and data collected around that exercise to assess *ex-ante* the effect of these changes, we will not be able to do something similar in the case of the proposed changes. The reason for this is that, while in the case of the changes in the grant we could extrapolate (with the help of the model described in Section 3) from the impact evaluation evidence, we cannot do the same for these other changes. The impact estimates (and the estimation of our model) exploit the fact that we observe eligible individuals facing different levels of the grant (in particular the current grant and no grant). We identify the strength of the incentives they respond to from this variation and extrapolate it to different incentives. In the case of the two different changes we discuss below (the provision of incentives to performance and a separation of the different conditionalities) we do not observe any variation in these dimensions in our data. We are therefore forced to discuss these proposals without a reference to direct evidence. However, we do refer to other evidence. In particular, in the case of the performance evidence we cite evidence coming from other countries and contexts.

4.1. Incentives for performance

Several papers have stressed that the effect that Conditional Cash Transfers have had on academic performance and achievements have been limited, although in some cases not negligible (see for instance Behrman et al. 2004). This is perhaps not surprising as CCTs are not, per se, designed to improve academic performance. And yet, the reality of very poor academic performance of youths from eligible households is startling. Improving the quality of education obtained by youths from poor families is surely a priority, as the level of academic proficiency prevalent in this population is likely to be a key determinant and explanation of the low level of university enrolment.

While it is clear that improving the quality of education is to a large extent a 'supply' intervention that should be obtained by changing the nature of the education services available and offered to the *Oportunidades* population, it might be argued that some improvements could be obtained by giving students incentives to perform. Moreover, retention until the end of the secondary school can also be improved by giving a 'graduation prize'. Such a prize could also be linked to final performance having an additional element linked to the score obtained in standardized tests (the *Enlace*).

The provision of graduation prizes and of performance prices could also have an additional advantage in that it might provide necessary liquidity to progress to the following step of the academic career, namely university. Applying to universities can be expensive and the opportunity cost of attending university can be high, especially for youth from poor families with little access to loans and other forms of financing.

The proposal we make, which could be piloted in some urban contexts, is to introduce two separate components to the *Oportunidades* grant. First, one can consider a 'graduation prize' which can be in the order of 5,000 Mexican pesos and that would be payable upon graduation. A possible alternative design could reduce the basic graduation prizes but increase it substantially if the youth enrolls in university. A second alternative design would be to complement a basic and relatively low graduation prize with the payment of application fees and possibly the first year of fees in University. These different alternatives can be piloted in different areas to establish their effectiveness. Notice that all of them make the *Oportunidades* grant more attractive as it gives the option to achieve these additional components. They should therefore stimulate, albeit indirectly, participation into the programme.

Second, we propose to introduce a performance prize to be paid to the youths who achieve a score in the *Enlace* that puts them in the top 15% of the *Enlace* distribution, *in*

the school they attend. The prize should refer to the performance relative to peers in the same school, as an absolute level (or relative to the national performance) would probably be unrealistic given the background of these students.

The first change proposed is somewhat similar to the existing *Jóvenes con Oportunidades* component of the programme. This component is currently under study and a pilot is being conducted in the state of Veracruz to check whether the component would have different effects if it the payment was, at least in part, front-loaded. Our proposal is to increase the graduation component and possibly integrate it for those students who decide to go to college or technical schools.

While the new *Jóvenes con Oportunidades* pilot is being evaluated, no strong evidence exists on the effects of a component such as the one we are proposing. A similar intervention, however, was piloted two years ago in Bogotá, Colombia and a rigorous evaluation of this pilot exists (see Barrera et al. 2008). The municipality of Bogotá in 2006 tried three versions of a CCT targeted to the urban poor: the first is a basic CCT, the second is partly backloaded at the end of the school year and the beginning of the following, when students have to re-enrol and sustain a number of expenditures. The third is one where there is a graduation prize and an additional incentive to enrolment in tertiary education. The most noticeable result is the size of the impact of the last scheme on tertiary enrolment but also on graduation, retention, repetition etc.

As for the first proposal, no much evidence exists on incentives to performance in Mexico, although a scheme based on incentives to students, teachers and principals is currently being piloted by the Ministry for Education (SEP). Some evidence, however, exists from other countries. Kremer et al. (2004) study a programme in Kenya where girls performing well were rewarded with the payment of school fees during next academic year and a cash transfer. The evaluation of this programme showed significant improvements in the performance of girls. The evaluation also shows significant spill over effects to boys and to teachers' presence in school.

4.2. Changes to the conditionalities

As we mentioned in Section 2, it is possible that the low take up rate of the programme is originated by the difficulty in complying with the many conditions imposed by the programme. Anecdotal evidence seems to indicate that eligible households find particularly onerous to comply with some of the conditions imposed by the health

component of the programme. Women have to attend a health centre a potentially large number of times to qualify for the programme. This difficulty seems to be confirmed by the evidence presented by Angelucci and Attanasio (2008) who indicate that the density of health centres (probably inversely related to the cost of attending one) is a good predictor of participation into the programme, in that households living in regions with a high density of centres are more likely to take up the programme.

For this reasons, we propose two possible changes to the operation and rules of the programme. First, as it has been discussed for some times in the programme, it might be advisable to make access to health centres easier, possibly lengthening the hours available for visits by *Oportunidades* beneficiaries. Second, it might be possible to decouple the education conditionalities from the health nutrition conditionalities. According to these rules, it would be possible for a family to enroll in just one of the components of the programme and comply with the conditions imposed by that component. In such a situation, failing to attend all the *platicas* and health visits would not jeopardize the ability to receive the scholarships for school age children.

5. Conclusions

The conditional cash transfer programme *Oportunidades* has shown to be an important tool in increasing school enrolment, particularly in rural areas. However, success in urban areas has been moderate and there should be room for substantial improvements in its effectiveness. The key issue in urban areas is of course the abundance of labour market opportunities for young people. In this paper we use a dynamic model to consider the possibility of restructuring the grant to improve its effectiveness, possibly without increasing it costs. We have shown, that transferring the funds to children attending Secundaria and above can increase participant from a peak f 7.5% to 9%. By transferring al resources to Preparatoria students alone the increase in participation there can be as high as 19%.

These results are more than suggestive, in that they demonstrate clearly that delaying the grant, but substantially increasing the amount given during the secondary school years, can have important school participation effects. However, if the increase in the secondary education grants is obtained reducing or eliminating the primary school grants, we need to consider a number of important issues.

First, we do not know the long term effects via nutrition or better he environments of the programme on the schooling performance of young children (primary). Initial results suggests this is not much, but this goes against the held view that early interventions can be more effective. Here more work needs to be done and we hesitate to advise that the grant should be removed completely from families with very young children. However, the fact remains that increasing the grant to older children will improve their participation substantially.

Second, we have not factored into our analysis the way people take up the programme. To date the take-up issue is very serious and unless we understand clearly why take-up is so low we cannot be certain of how best to design the programme. However, it is well established that take up is strongly related with the value of the potential entitlement. Thus increasing the grant fro *Secundaria* and *Preparatoria* students may indeed increase take-up by a large margin and thus have stronger effects than we predict here.

Finally, it is important to keep in sight other possible policies that can improve schooling. It seems imperative to recognize that increases in school participation without increase in resources can lead to dilution of quality and we may end up with lower quality for all. In addition, more thought needs to be placed in improving the quality of education at all levels, and particularly so in primary and *Secundaria* so as to ensure more pupils can qualify for *Preparatoria*. Here it is important not to focus just on the marginal students but to go deeper and encourage both the potential high achiever as well as those falling seriously behind. We need to consider devising programmes that will challenge the former and aid the latter. Such programmes may involve extra tuition for special groups, summer programmes and afternoon clubs. The key point is that we need to accompany the efforts of improving participation with efforts of making sure the quality goes up throughout the system so as to ensure that individuals from poorer socio-economic groups can qualify for all levels of education.

References

Angelucci, M. and O. Attanasio (2008), "*Oportunidades*: program effect on consumption, low participation, and methodological issues", *Economic Development and Cultural Change,* forthcoming.

Attanasio, O., Meghir, C. and A. Santiago (2005) : "Education Choices in Mexico: Using a Structural Model and a Randomized Experiment to evaluate PROGRESA", IFS Mimeo.

Attanasio, O. and M. Rubio-Codina (2008): "Revaluatig Conditional Cash Transfers: Is the Oportunidades Primary School Stipend Necessary?", IFS Mimeo

Behrman, J.Gallardo-García J., Parker, S.W. , Todd, P.E. and V. Vélez-Grajales (2005): "How Conditional Cash Transfers Impact Schoolling and Working Behaviors of children and Youth in Urban Mexico" Mimeo.

Barrera-Osorio F. , Bertrand M., Linden L.L. and F. Perez-Calle, (2008). "Conditional Cash Transfers in Education Design Features, Peer and Sibling Effects Evidence from a Randomized Experiment in Colombia," NBER Working Papers 13890, National Bureau of Economic Research

Kremer, Michael, Miguel, T. and R. Thorton (2004): "Incentives to Learn", National Bureau of Economic Research Working Paper No 10971.