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Does the Impact of *Oportunidades* Program Increases in Highly Competitive Regions?

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Abstract

Evidence on *Oportunidades*, a successful anti-poverty program in Mexico, has suggested that changes to the current grant structure may induce considerable improvements to its effectiveness. Moreover, there are proposals addressing the importance of regional, observable and unobservable characteristics, regarding its implementation. It is employed competitiveness level outcomes to investigate if this social policy has heterogeneous performance in different regions of intervention. For this purpose, a Difference-in-Difference model is applied to estimate short and mid-term impacts on enrolment rates. Results indicate that the general competitiveness effect is positive but not robust, given the considerable level of aggregation of the data used, whereas if it is distinguised *Oportunidades* treatment by selected competitiveness outcomes, states with highly efficient government institutions, middle competitive economic sectors and middle inclusive, educated and healthy individuals, present a larger program impact on enrolment rates. It is confirmed the significant improvements to program effectiveness and the impact of the competitiveness variables when it is considered only a sample of older children.

Keywords: Social policy effectiveness, competitiveness outcomes, school enrolment rates, regional effects, difference-in-difference (DID) model.
JEL Classification: C33, D61, I38, R59.

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Resumen

La evidencia sobre Oportunidades, un exitoso programa de combate a la pobreza en México, sugiere que cambios sobre la estructura actual del otorgamiento de becas podrían incrementar la efectividad del mismo. Inclusive, existen propuestas acerca de la importancia de características observables e inobservables relacionadas con su implementación. En este trabajo, se emplean variables que miden el nivel de competitividad para investigar si esta política social presenta un desempeño heterogéneo en diferentes regiones de intervención. Con este fin, se utiliza un modelo de Diferencias-en-Diferencias (DID, por sus siglas en inglés) para estimar impactos de corto y mediano plazo sobre las tasas de inscripción escolar, y los resultados indican que el efecto del nivel general de competitividad es positivo pero no robusto, debido al nivel considerable de agregación de los datos utilizados; en cambio, si diferenciamos el tratamiento de Oportunidades, a través de indicadores seleccionados de competitividad, estados con instituciones de gobierno altamente eficientes, sectores económicos de mediana competitividad y sociedades con nivel medio de participación, educación y salud, se observa que presentan un mayor impacto sobre las tasas de inscripción, como consecuencia del programa. Así mismo, se confirma una mejora significativa en la efectividad del programa y el impacto de las variables de competitividad, cuando se considera una muestra de beneficiarios de mayor rango de edad.

Palabras Clave: efectividad de política social, indicadores de competitividad, tasas de inscripción escolar, efectos regionales, modelo de diferencias-en-diferencias (DID).
Clasificación JEL: C33, D61, I38, R59.

Introduction

The Human Development Program *Oportunidades*[1] is one of the largest anti-poverty programs in Mexico. It was started by the Government in 1998 (at this stage called *Progresa*[2]) in the rural Mexico and was expanded in 2002 to cover the urban areas. This Conditional Cash Transfer (CCT) tries to ameliorate the long-run effects of poverty providing grants to children and youth Mexicans, with the main objective to increase investments in human capital.

[1] In what follows, *Oportunidades* is the program that in general will be refered to and *Progresa* denotes only rural-areas component.
[2] It comes from the Spanish acronym on "Program on Health, Education and Nutrition".

Several works have confirmed the significant effects of *Oportunidades* over outcomes such as household investment decisions (Gertler, Martinez and Rubio-Codina, 2006) school participation (Behrman, Gallardo-García, Parker, Todd and Vélez-Grajales, 2010; Parker, Todd and Wolpin, 2006; Attanasio, Meghir and Santiago, 2009) migration (Azuara, 2009), consumption (Angelucci and De Giorgi, 2009; Angelucci and Attanasio, 2009). Nevertheless, some authors as Attanasio and Rubio-Codina (2009) have suggested that this program has marginal impacts on attendance to primary school in rural Mexico, given the considerable child participation in lower stages of education even in the absence of this intervention. Thus, is argued that a re-allocation of the resources should have to be applied to impulse its effectiveness in further levels of education (e.g. secondary school). Furthermore, Attanasio, Meghir and Szekely (2003) evaluated if potential results of *Progresa* in some Mexican states can be extrapolated to other regions, thereby providing evidence about the importance of considering different contexts in the implementation of government interventions.

Bearing the above information, the main goal of this paper is analyse if differentiating the treatment of *Oportunidades* by regional levels of competitiveness, improves the impact of the program on enrolment rates of its beneficiaries in urban areas. It is argued that a more competitive environment that guaranties, among others, the sufficient conditions of infrastructure such as high quality schools and health clinics, skilled human capital, a well-developed and structured labour market, and an efficient government provides outstanding conditions for the program to work efficiently. In order to investigate the specific mechanism of influence, it is selected three sub-indices from a Mexican competitiveness index into the following three groups: individuals, enterprises and government institutions. The proposal is that the impact of *Oportunidades* may differ across regions depending on the general level of competitiveness, the education of the population -representing a measure of how competitive individuals are- the economic sectors competitiveness -for the enterprises' competitiveness- and the government efficiency.

The literature about competitiveness is restricted to the analysis about its determinants, as in the contributions of Dzeng and Wang (2008) and Marginean (2006); and the effects of different outcomes on it, as in Aldy and Pizer (2009) and Anger *et al*. (2007). However, to my knowledge, there is no evidence about the competitiveness impact on social policies performance. Similarly, evidence on the effects of individuals' level of education is related to human capital spillovers on co-workers earnings and productivity, as it is pointed out in Battu, Belfield and Sloane (2003) and Navon (2009), and Ramos, Suriñach and Artis (2009). The famous studies of Hall and Jones

(1999) consider the effects of institutions and Acemoglu, Robinson and Johnson (2001) refers to the impact on economic performance. To the best of my knowledge, the paper of Attanasio *et al.* (2003) and schooling supply-side studies of Coady and Parker (2002) and Berhman, Parker and Todd (2005) are the only ones addressing a similar topic. Thus, there is no social policy-oriented research about the impact of competitiveness outcomes. Consequently, the present paper is the first in evaluating a social program in this context.

The rest of the paper is developed as follows. In the next section it is provided a brief description of the program under study and the dataset used in the estimation. After that, it is explained the main findings about *Oportunidades* impact and the contribution to the literature. In section 3, it is introduced the model to be applied and the parameters of interest, followed by section 4 where it is presented the results of the estimation. Finally, it is provided a conclusions section that summarises the most important results and make recommendations for further research on the topic.

1. *Oportunidades* Background and Dataset

In general, the aim of the program is to benefit poor households conditional on investment in three fundamental factors: education, health and nutrition. Specifically, the transference works as a grant conditional on behaviour such as children and adolescents attending school, infants receiving micronutrient supplements, mothers attending sessions on nutrition and health practices, and all family members having regular health and nutrition checkups (Behrman, 2007). Like traditional CCT, the cash is directly transferred to mothers in the household, considering that women might be more worried about children's well being.

Originally, *Progresa* provided grants to children between the third and ninth grades of school (the second half of primary school and complete years of lower-secondary school[3]). When the latter expanded its influence to urban locations (called then *Oportunidades*) the support started to include from the tenth to twelfth levels of education (upper-secondary school). Finally, it is valuable to mention that the amounts transferred to beneficiaries increase with the grades reached and that are higher for girls since the seventh grade, whom traditionally have lower levels of school enrolment at this stage.

[3] In the present work primary, lower-secondary and upper-secondary school levels correspond to *primaria*, *secundaria* and *preparatoria* in the Mexican school system, respectively.

The source of the data are the Urban Household Evaluations ("ENCELURB", for the abbreviation in Spanish) of 2002 (Baseline survey) 2003 (First follow-up survey) and 2004 (Second follow-up survey). The ENCELURB was launched by the Ministry of Social Development in coordination with the National Institute of Public Health and the advice of international researchers for the technical and methodological aspects.

The ENCELURB differs from its rural counterpart due to financial constraints, and as a result, a non-randomized, observational and quasi-experimental design was launched. This survey used information from the National Income and Expenditure of Households Survey 2000 (ENIGH, from its Spanish original name) and the 2000 Population Census, allowing the Program executors targeting the families directly on the poorest city block and then classifying them as eligible (poor) and non-eligible (non poor). The next step was installing near sign-up offices in the selected intervention areas (starting in 2002) for potential beneficiaries that consider themselves as eligible,[4] whereas the households in the non-intervention zones where considered to start in 2004. On the other hand, the rural evaluation was a controlled randomized experiment design where households were informed directly about their status of eligibility. Therefore, a considerable number of urban eligible families[5] did not request their incorporation into the program, while the mechanism in the rural areas achieved high rates of participation.

The ENCELURB collected information of 76,002 individuals in 2002. From this sample it was selected a total of 29,363 children between 6 and 20 years, from which 19,360 live in intervention areas and 10,003 in control ones. After that, the attention is focused on eligible people in both areas accounting for 20,602 poor children. Finally, after cleansing the data of inconsistent ages and years of schooling the sample was 16,642 persons, divided by 10,181 and 6,461 children of intervention and control areas, respectively.

Most of the sample corresponds to children between the first and twelfth grades of school. Although children 6-7 years of age (first and second grades of school) are not directly supported by the program, but they are included on the sample because they may be incentivised to enrol at school and as a result, become beneficiaries in the third grade.

Table 1 has some main baseline data characteristics (year 2002) of the final sample. It is evident that children living in intervention areas are relatively

[4] Households noticed the existence of the program through a promotion campaign in the media.
[5] Around 40% according to Behrman *et al*. (2010).

older, but for the rest of the variables the group of comparison has higher enrolment rates and more educated parents. It is included the head of the family's education as an alternative indicator for parents' level of schooling, given data availability and that on average, it is a good approximation for mother and father's grades of schooling. Table 1 also shows that the mean differences between all the variables are significant at the 1% level.

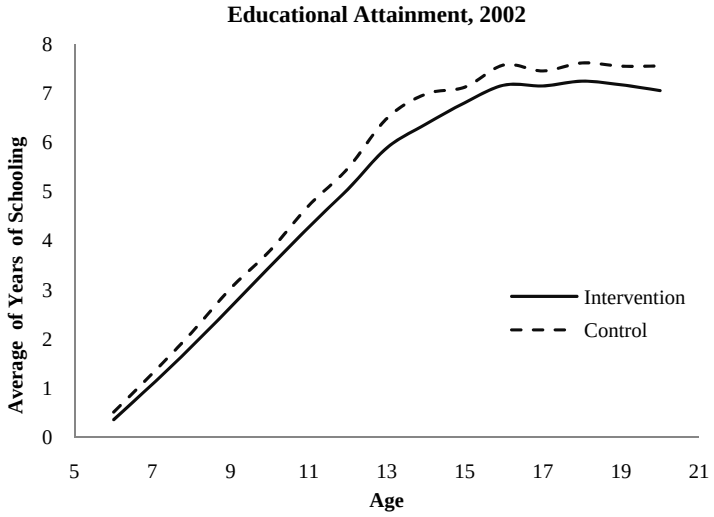
Table 1
Baseline characteristics for intervention and control areas

Variable	Area				Mean-Comparision Difference
	Intervention		Control		
	Mean	Std. Dev.	Mean	Std. Dev.	
Age	11.40	3.77	11.17	3.77	0.23***
Years of schooling	4.25	2.90	4.40	2.86	-0.15***
Enrolment	0.83	0.37	0.86	0.34	-0.03***
Mother's years of schooling	5.22	2.71	5.54	2.78	-0.32***
Father's years of schooling	5.51	2.96	6.01	2.93	-0.50***
Head of family's years of schooling	5.36	2.93	5.75	2.94	-0.39***

Note: Both groups correspond to the intervention and control areas specifically selected by policy executors, according to their targeting method.
***Significant at the 1% level.
Source: Own calculations with data from the ENCELURB, www.oportunidades.gob.mx.

Figure 1 also shows that the intervention and control areas have important pre-program differences in years of schooling. For both groups the years of education increase almost linearly with age until children reach 15 years old (lower-secondary school level), and then, the lines become flatter and remain constant on 8 years of schooling. It is noticeable that on average, intervention and control groups follow the same tendency. Consistent to Behrman *et al*. (2010) educational attainment has the same pattern by sex, where girls years of schooling are always higher in the control group than in the intervention one, whereas for boys is the same case until 15 years old and after that the levels are roughly the same in both groups.

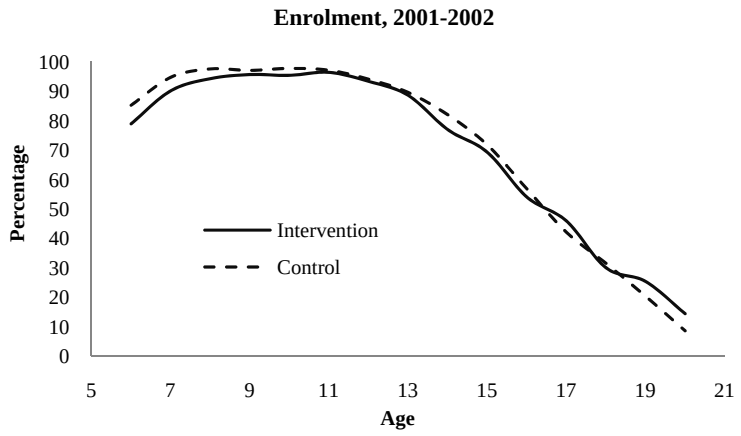
Figure 1



Source: Own elaboration with data from the ENCELURB, www.oportunidades.gob.mx.

With respect to the enrolment rates, Figure 2 depicts its evolution for the groups of interest. The enrolment rates are higher for the control group up to 16 years old, then the levels are roughly the same for the next two years, and at the end, the intervention group shows higher attendance rates for the last years. Moreover, the percentage of child/youth enrolled in the 2001-2002 period is more than 90 percent during primary school (until 12 years old) and after that, falls dramatically, achieving around 14 and nearly 9 percentage points for the intervention and control groups, respectively. In this regard, it is not surprising that the policymakers started the program providing grants for primary and lower-secondary school levels, in order to help its beneficiaries in the transition between these two levels.

Figure 2



Source: Own elaboration with data from the ENCELURB, www.oportunidades.gob.mx.

In the next sub-section it is described the source of the data that is used to measure regional competitiveness

1.2. The Competitiveness Index

The State Competitiveness Index 2006 (SCI2006) was launched by the Mexican Institute for Competitiveness (IMCO from its initials in Spanish) providing information about the economy, institutions, politics, social aspects and other topics as means to support policy-making and investment decisions.[6] Table 2 shows the SCI2006 ranking for 17 states; states where the ENCELURB provides information are shown in bold format. Unfortunately, data about the states with highest levels of competitiveness and the state with the lowest one (Oaxaca) are missing, which in case of availability would help out.

This index could be appropriate for these purposes because its data corresponds to the year 2003, which is in fact the first year of *Oportunidades* (school year 2002-2003) implementation in urban areas, thereby providing an indicator of the current conditions on the sampled states.

[6] See IMCO (2006) for further details.

Table 2
State Competitiveness Index 2006*

Position	State name	Position	State name
1	Distrito Federal	17	Durango
2	Nuevo Leon	18	Yucatan
3	Aguascalientes	**19**	**Campeche**
4	Baja California	**20**	**Sinaloa**
5	Coahuila	21	Nayarit
6	Chihuahua	**22**	**Edo Mexico**
7	Baja California Sur	**23**	**San Luis Potosi**
8	Quintana Roo	**24**	**Puebla**
9	**Tamaulipas**	**25**	**Tlaxcala**
10	Queretaro	**26**	**Michoacan**
11	**Colima**	**27**	**Veracruz**
12	**Sonora**	**28**	**Guerrero**
13	**Guanajuato**	**29**	**Hidalgo**
14	**Morelos**	**30**	**Tabasco**
15	Jalisco	**31**	**Chiapas**
16	Zacatecas	32	Oaxaca

* The index uses data from 2003.
Source: IMCO (2006).

SCI2006 was constructed with several indicators classified into 10 categories[7] (see Table 3). From these sub-indices, it is hypothesised that the following factors would affect positively the performance of *Oportunidades*: inclusive, educated and healthy society (individuals) efficient and efficacious government (government) and competitive economic sectors (enterprises). It is calculated the impact of the latter indices, in order to find a deeper understanding of the mechanism through which different levels of competitiveness affect *Oportunidades* impact.

[7] For more details about the construction of the SCI2006, please refer to www.imco.org.mx.

Table 3
SCI2006 Sub-Indices

Sub-Index
Trustworthy and objective law system
Sustainable Environmental Management
Inclusive, educated and healthy society
Stable and dynamic economy
Stable and functional political system
Efficient market of factors
World class sectors
Efficient and efficacious government
Exploitation of international relations
Competitive economic sectors

Source: IMCO (2006).

The next chapter presents the main evidence about *Oportunidades* impact on schooling outcomes and some other relevant studies related with the approach proposed in this study.

2. Empirical Evidence on *Oportunidades* Evaluation

After the 1995's crisis the Mexican Government policy design was concentrated to counteract the possible effects over vulnerable groups. Regarding this issue, *Oportunidades* emerged as a mechanism to break the cycle of intergenerational poverty. In this matter, it is expected that this effort to alleviate the effects of poverty should have to be accompanied by a high quality evaluation to assess its effectiveness. In this section, it is reviewed relevant empirical evidence regarding this policy and discuss issues that have arisen in spite of increase *Oportunidades* performance.

Behrman *et al*. (2010) evaluates the short term impact of the *Oportunidades* on schooling and work behaviours of children, finding significant positive impacts on educational attainment, school enrolment, proportions working, and amount of time children spend doing homework. They find larger effects for the 15-18 and 19-20 age group, whereas smaller impacts were found for younger children. Furthermore, it is noteworthy that this article reports greater effects for children 6-7, a group of age that is not directly supported by *Oportunidades*; in comparison to the closest older group.

Parker *et al.* (2006) explored the use of dynamic panel data schooling models as a means to evaluate the short-term and longer-run effects of *Oportunidades* on schooling outcomes. They implemented "kinship-based" estimators exploiting within-family variation in the timing of the program

with respect to children's ages. Their hypothesis was that older siblings' school performance would have an effect over younger siblings' outcomes. After their estimations those researchers found that the program has significant effects on school attendance for older girls and boys. With respect to the simulation of the long-term program effects they estimate that a child participating in the program from age 6-17 would complete about 0.5 additional years of schooling. Bearing these findings, achieving more years of education increases the probability to be employed in a higher-quality job and earn greater wages. However, it cannot be concluded anything about an enhancement in the skills of participant child/youth, which in fact can lead to higher returns to education when these individuals enter to the labour force.

In line with the last argument, Behrman, Parker and Todd (2005) took the advantage of a follow-up evaluation survey (5 years after the first survey) carried out in rural areas and assessed the effect of *Progresa* on several outcomes in the long-run. As a part of this second survey round, achievement tests in the areas of reading, math and written language skills were applied to a sub-sample of adolescents 15 to 21 years of age in 2003. Although, this paper showed significant effects for greater program exposure, it also indicated that there are insignificant results on test scores, possibly explained by the low quality of schools in rural areas. It could be interesting to investigate this issue in urban areas given the higher levels of investment on school infrastructure and teaching quality (relative to rural ones).

School attendance rates are nearly one hundred percent on the first years of education at the baseline year (see Figure 2) which explains the marginal effects in these levels and have lead to proposals about changes in the grant structure of *Oportunidades*. For example, De Janvry and Sadoulet (2005) have proposed re-direct all resources associated to the primary school transfer to children in the transition from primary to secondary school. Furthermore, Attanasio *et al.* (2008) simulated the possibility of abolishing or decreasing the primary school grant in order to increase the transfers for the levels of lower-secondary and upper-secondary school, finding important improvements to the overall program performance.

Nevertheless, it should have been considered the opportunity cost of decreasing or eliminating the primary cash transfer. In this matter, Attanasio and Rubio-Codina (2009) isolated the impact of the primary school stipend to check for possible externalities over households' outcomes like child health, household consumption and secondary school enrolment, finding that the program impacts are not substantially different between eligible households in treatment areas and non-eligible ones.

The above papers suggested changes in the grant structure, considering the level of education of the beneficiaries. Nonetheless, there are additional aspects to take into account when is attempted to introduce a program in a given geographical area. Attanasio *et al.* (2003) assessed the importance of considering individuals' differences in observable and unobservable characteristics, as well as institutional differences between regions; when policy makers are trying to replicate a successful program experience in a new place. For example, they stressed the importance of taking into account if a region has more educated people, differences in infrastructure and laws about child labour, which are relevant factors for this approach. To address the mentioned topic, these researchers splited the Mexican states included in *Progresa*'s evaluation into two groups, with the objective of study if achievements in slightly more dynamic states can be extrapolated to other regions. After their simulations, they estimate a lower impact on the poorest states, meaning that it is important to implement additional policy interventions in order to improve its effectiveness in less developed areas.

In the following subsection it is discussed the mechanism through which competitiveness outcomes do influence the differential exposure of *Oportunidades'* treatment.

2.1 The Influence of Competitiveness: Main Assumptions

As it was previously mentioned, *Oportunidades* has been extensively analyzed in previous studies, revealing that the program is an effective mechanism to accumulate human capital on poor individuals. Almost all Latin American countries and others in the developing world (e.g. African and Asian nations and Turkey) have similar interventions. It is worth noting that CCT have spread to developed areas as the program Opportunity NYC in New York City, which is inspired in *Oportunidades*. Early findings showed that Opportunity NYC has significant short-term impacts on poverty reduction, children's educational outcomes, family member's health care and parents' work and training (Riccio, 2010). Even tough there is no evidence about the effects of competitiveness on CCT effectiveness, the latter result is particularly relevant because indicates that this type of programs have success on regions with outstanding competitiveness conditions. As a matter of fact, New York City is ranked 1st all over the world in the "2009-2010 Global Urban Competitiveness Report."

For this analysis, it is hypothesised that parents and/or children might be more responsive to the program rewards, because they may perceive that the current and future benefits from participating are higher in a more competitive environment. For example, in highly competitive regions the stock of health infrastructure and human resources might have better quality

and, as a result, the families are more incentivised to participate because the health assistance is also enhanced. Moreover, the expected returns to schooling are higher in the presence of school quality inputs. Behrman *et al.* (2005) found that the impact of *Oportunidades* on enrolment rates increases with schooling quality in rural areas, measured by pupil-teacher ratios and the type of secondary school attended. In this study, it is also suggested that a more dynamic, productive and well structured labour market, accompanied by highly competitive enterprises, are competitiveness characteristics that positively complement the latter mechanism of program impact enhancement.

It is also proposed that the impact of *Oportunidades* is higher in states with more educated people and a dynamic economy. For instance, Attanasio *et al.* (2003) confirmed that this is true in the rural areas where enrolment rates, wages and household income are relatively higher. Furthermore, it is argued that a more participative government with a trustworthy and objective law system do influence households to take the advantage of a government intervention such as *Oportunidades*, due to minimized transaction costs. Additionally, a tight collaboration between all government levels (national, state and local) is beneficial for this social program, because additional policies are necessary to satisfy the increased demand, like the provision of more teachers, nurses and physicians.

In general, the mentioned aspects are incorporated in a competitive environment which offers integral acceptable conditions, maximizing individuals' socioeconomic potential, while constantly fostering their well-being, allowing them to face economic fluctuations (IMCO, 2006) thereby increasing the probability of anti-poverty programs success.

The next section presents the basic framework and the methodology to estimate a difference in difference model.

3. Econometric Approach

The general methodological approach compares the outcomes of individuals supported by *Oportunidades* (treatment group) with a group of people which meet the program's eligibility criteria but do not participate on it (control group). Specifically, it is considered the following groups:

- Treatment group. - Individuals living in intervention areas that meet the eligibility criteria choose to participate and were accepted on it.

• Control group. - 1) Individuals that live in intervention areas, meet the eligibility criteria but did not choose to participate on it; 2) Individuals that live in non- intervention areas but are eligible given their characteristics.

As it was mentioned in the program description, persons living in intervention areas were selected to start in 2002, whereas the ones living in non-intervention areas will be incorporated in the year 2004. On the other hand, enrolment rates and ages of treatment and control groups are on average the same but differ only on the years of schooling and parents' education (see Table 4). Thus, that the control group is on average a suitable comparison group.[8]

Table 4
Baseline characteristics for treatment and control groups

Variable	Group				Mean-Comparision Difference
	Treatment		Control		
	Mean	Std. Dev.	Mean	Std. Dev.	
Age	11.30	3.68	11.32	3.82	-0.02
Years of schooling	4.14	2.83	4.41	2.91	-0.27***
Enrolment	0.84	0.36	0.84	0.36	0.00
Mother's years of schooling	5.22	2.73	5.36	2.72	-0.14**
Father's years of schooling	5.43	2.96	5.89	2.94	-0.46***
Head of family's years of schooling	5.31	2.89	5.64	2.97	-0.33***

*** Significant at the 1% level.
** Significant at the 5% level.
Source: Own calculations with data from the ENCELURB, www.oportunidades.gob.mx.

The parameter of interest is the Average Treatment Effect on the Treated (ATT) "…that is the effect of the program on those who receive it, in that they are not only eligible and live in treatment areas, but actually participate into the program" (Attanasio *et al*. 2008). In this sense, it is found that the ATT appropriate because it includes eligible non-participant households in the control group that live in intervention areas, thereby allowing to differentiate them form the ones that decided to participate.

[8] A more sophisticated method, propensity score matching estimation will be used to verify the results.

Attanasio *et al*. (2008) suggested that more sophisticated results could be found with the Average Intention to Treat (AIT) "...which measures the average impact of the program on eligible individuals, regardless of whether they participate in the program." Nonetheless, the rate of participation in intervention areas is relatively low (slightly more than 50%). Angelucci and Attanasio (2009) carry out with the identification of AIT and ATT to explore the determinants of program participation to study the effect of *Oportunidades* on food and non-food consumption. Their estimations showed that the ATT effects were positive and significant for the period analyzed, whereas the AIT provided smaller coefficients but not statistically significant. Regarding the latter evidence, the study will focus on the ATT as a way to identify the impact of *Oportunidades* on enrolment.

Compared with the application of Attanasio *et al.* (2003) the proposed estimation differs in the main objective because the intention is not to extrapolate or "scale up" regional effects, and also, in the data structure, given that they had access to a randomized evaluation sample for the rural *Progresa*. However, as a part of their analysis, those researchers implemented a difference-in-difference model to estimate separately the effect on enrolment rates of their two groups of interest, which is comparable with the approach that is carried out.

In the next sub-section, it is formally introduced a conventional difference-in-difference model.

3.1 A Difference-in-Difference (DID) Model

Following a standard DID approach, let Y_{it} be the outcome for an individual i at time t=0, 1. Define $D_{it} = 1$ if i is treated and $D_{it} = 0$ if is not exposed to the program (control group). Let also X_i be a set of covariates. The ATT is then:

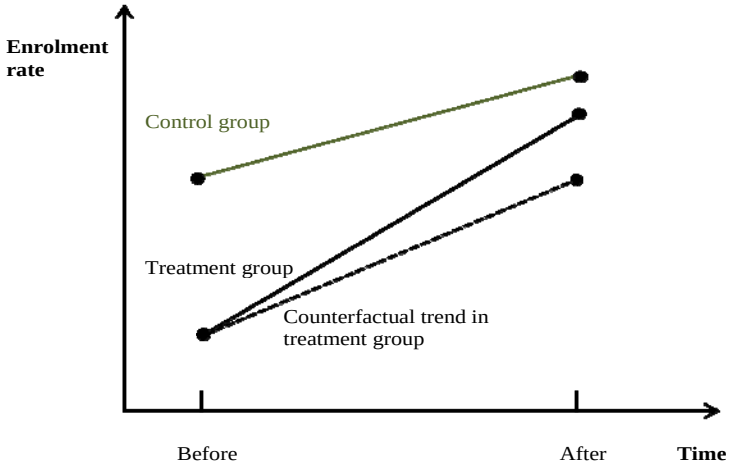
$$ATT = E(Y_{i1}(1) - Y_{i1}(0)|X_i, D_{i1} = 1) \quad (1)$$

It is observed that $E(Y_{i1}(1)|X_i, D_{i1} = 1)$, but the counterfactual outcome $E(Y_{i1}(0)|X_i, D_{i1} = 1)$ is missing. In order to tackle with this methodological issue, DID models assume that in the absence of treatment, average outcomes for treated and control groups would follow parallel paths (see Figure 3) over time (Abadie, 2005).

Getting in the context of this application, it is important to evaluate if it is valid to assume that schooling outcomes of individuals, living in a region with a given level of competitiveness, would follow the same trends without being treated. This assumption is satisfied, because individual schooling

decisions take place in similar competitiveness environments. For example, it is plausible that they have access to similar quality of schooling and health centres, as well as to comparable government support and laws.

Figure 3



Source: Own elaboration.

Therefore, the parameter of interest can be approximated with the next expression:

$$ATT = [E(Y_{i1}(1)|X_i, D_{i1} = 1) - E(Y_{i1}(0)|X_i, D_{i1} = 0)] - [E(Y_{i0}(1)|X_i, D_{i1} = 1) - E(Y_{i0}(0)|X_i, D_{i1} = 0)] \quad (2)$$

The basic panel data equation to be estimated is the following:

$$Y_{i1} - Y_{i0} = \alpha + \beta X_i + \tau D_{i1} + \varepsilon^* \quad (3)$$

where α is the effect of time on all units, τ is the ATT and $\varepsilon^* = \varepsilon_{i1} - \varepsilon_{i0}$. Nevertheless, Meyer (1995) explains that the effect of the treatment may differ across regions (interaction of setting and treatment). In this regard, it is argued that there are heterogeneous effects due to different competitiveness outcomes between the regions in which the program is being applied. Thus, the type of equation to be estimated becomes:

$$Y_{i1} - Y_{i0} = \alpha + \beta X_i + \tau D_{i1} + \delta X_i * D_{i1} + \varepsilon^* \quad (4)$$

where δ is the coefficient of interest denoting the impact of the interaction term. With the above formula, it is attempted to differentiate the effect that has the treatment on states with higher levels of competitiveness as a general approach, and highly inclusive, educated and healthy society, competitive economic sectors and efficient government institutions, as particular outcomes.

It is argued that if individuals in a given region are more educated; there are important economic incentives to poor people to pursue higher levels of education in order to compete in the labour market. As a consequence, in those states is more reasonable to think that individuals would take the advantage of being granted by the program and will attend school. Furthermore, it is believed that states with more competitive economic sectors (or enterprises) would require high skilled individuals in order to maintain their productivity level; as a consequence, the labour force has to meet these requirements in order to acquire a job. Finally, it is considered that if the government institutions works efficiently, the infrastructure and the environment would be more adequate to have a higher program performance.

Following Attanasio *et al.* (2003) it is supposed that in each period children (or their parents) take the decision of whether attend school or work, considering all present and future benefits and costs that can affect their expected utilities. Moreover, studying and working are the only two options that a child can undertake. Given the relative higher levels of education in urban areas, it is assumed that children can study up to age 20. If they choose to work, they will receive a local wage according to their education and age.

Regarding the "Basic Model" of Parker *et al.* (2006) it is assumed that child's schooling decisions depend on family-specific "unobservable" variables (time invariant). For instance, the variables that determine the decision of whether or not send children to school are child's age and sex, the lagged attendance and the head of family's education. The latter variables are not specifically variables of interest, but controls to isolate the effect of the competitiveness variables.

In the next section it is reported the results of the DID model previously described.

4. Results

In this segment, it is presented the estimations of the ATT effect of *Oportunidades* on enrolment rates. It is attempted to differentiate the effect

of the treatment by levels of general competitiveness and selected competitiveness outcomes. It is used a difference-in-difference (DID) model to calculate the first (short-term impact) and second[9] (mid-term impact) years impacts of *Oportunidades* implementation. Like in Behrman *et al*. (2010) it is computed the bootstrap standard errors to have an accurate estimation of the DID model.

First at all, it is estimated a general model specification for the whole sample (children 6-20 years of age). After that, it is adjusted the sample design to estimate the effect on enrolment rates for older children (children 10-20 years of age) to examine if the impact is higher.

4.1 Competitiveness Level

Table 1 reports the estimated program impacts on schooling enrolment. Columns 1 and 2 show a simple Cross Section Model for the first year of program implementation (2003) and OLS estimation for the whole panel data period (2002-2004) respectively. Finally, columns 3-7 cover the first year calculations using the Difference-in-Difference (DID) model.[10]

Column 3 reveals that *Oportunidades* roughly increases enrolment rates by 3.1 percentage points. For the same range of age, the baseline result is equivalent to the simple DID result in Behrman *et al*. (2010) for boys, but is less than the 3.6% estimated for girls. Similarly, this result is slightly smaller than the 3.5% of the basic model in Parker *et al*. (2006) but they considered children between 6-17 years and included ineligible households in their sample.

On the other hand, the control variables are strongly correlated with the schooling outcome obtained in this study. For instance, *ceteris paribus*, if children's age increases, it is more likely that he/she may drop out from school. Also, if the child/youth is a boy, the chances that he enrols to school decrease. If the child has attended school in the previous year, there is a higher probability that he/she enrols in the present period. All those variables are statistically significant in all the DID models.

According to the first result on column 4 if the beneficiary of *Oportunidades* lives in a highly competitive state, the enrolment increases by 2.7 percentage points. Even though the latter result is marginally significant, after adding the rest of the covariates, this coefficient loses its prediction power.

[9] The tables of second year estimations are available on request.
[10] The tables for the mid-term program impacts are available on request.

Table 1
Estimated program effect on enrolment
Child/Youth 6-20 years
Competitiveness Index

Variable	Estimator						
	Cross-Section Post Program	OLS	1 Year DID				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Treated	0.019***	0.024***	0.031***	0.031***	0.027***	0.027***	0.028***
	(0.006)	(0.004)	(0.009)	(0.009)	(0.007)	(0.008)	(0.008)
Highly Competitive States Dummy	-0.018	-0.024***	…	-0.033***	-0.049***	-0.049***	-0.034***
	(0.011)	(0.007)		(0.010)	(0.009)	(0.008)	(0.010)
Middle Competitive States Dummy	-0.028***	-0.02***	…	-0.005	-0.028***	-0.028***	-0.034***
	(0.007)	(0.004)		(0.006)	(0.005)	(0.005)	(0.005)
Treatment on Highly Competitive States	-0.017	-0.011	…	0.027*	0.015	0.015	0.002
	(0.017)	(0.01)		(0.015)	(0.013)	(0.013)	(0.014)
Treatment on Middle Competitive States	0.000	0.000	…	0.008	0.013	0.013	0.012
	(0.013)	(0.008)		(0.012)	(0.010)	(0.010)	(0.012)
Age	-0.035***	-0.039***	…	…	-0.050***	-0.050***	-0.046***
	(0.001)	(0.001)			(0.001)	(0.001)	(0.001)
Sex	-0.003	-0.007***	…	…	…	-0.007**	-0.010**
	(0.005)	(0.003)				(0.004)	(0.004)
Head of Family's Education	0.005***	0.006***	…	…	…	…	0.010***
	(0.001)	(0.001)					(0.001)
Lagged Attendance	0.445***	0.390***	…	…	…	…	…
	(0.013)	(0.015)					
Constant	0.880***	0.963***	…	…	…	…	…
	(0.022)	(0.019)					
Number of Observations	10,279	19,770	29,226	29,226	29,226	29,226	23,115
R^2	0.4596	0.5213	0.0010	0.0014	0.2464	0.2465	0.2365

Note: The dummy and treatment variables are correlated by construction, however, to show the general effect of living in each region and being treated separately.
Bootstrap Standard Errors in Parentheses, 500 replications.
*** Significant at the 1% level.
** Significant at the 5% level.
* Significant at the 10% level.
Source: Own elaboration with data from the ENCELURB, www.oportunidades.gob.mx.

Similarly, the treatment on middle competitive states shows the predicted sign and a lower magnitude than the high one but is not statistically significant. Despite that, it is interesting to notice that there is a negative and significant effect of living in a state with high or middle competitiveness level (highly and middle competitive state dummies) perhaps capturing the influence of the control group which is not being directly incentivised by the program to attend school. Furthermore, the selected-poor individuals in the ENCELURB have similar observable characteristics; so that it is pointed out that the effect of the competitiveness outcomes is reflected in the presence of the program, because households might take the advantage of it, perhaps considering (among others) that the expected returns to school are higher in a more competitive environment.

The mid-term program impacts increase in magnitude.[11] For instance, after 2 years of implementation *Oportunidades* raises enrolment by 3.5 percentage points. It is interesting to notice that Behrman *et al*. (2010) did not find a significant effect for the second year impact on enrolment rates. Regarding the treatment on highly competitive states, it is found a positive and higher coefficient than in the first year (3.4%) being only marginally significant in the very first estimations. Nonetheless, the result becomes insignificant after including control variables.

4.2 Inclusive, Educated and Healthy Society (IEHS)

The results in Table 2 reveal that apparently there is not an increase in the *Oportunidades* program impact if the region has a highly inclusive, educated and healthy society (IEHS). More surprisingly is the fact that when the Mexican states have just middle developed individuals in this outcome, there is an increase of 5.2 percentage points in enrolment in the first year (see column 4) and 5.8 percentage points in the second year. These results double the OLS estimations and remain significant even after including the controls.

Those findings might suggest that in states with highly educated individuals, there are fewer incentives to poor people to pursuit higher levels of education, taking into account their relative disadvantage with respect to already educated and wealthy individuals.

[11] The tables of second year estimations are available on request.

Table 2
Estimated program effect on enrolment
Child/Youth 6-20 years
Sub-Index: Inclusive, Educated and Healthy Society (IEHS)

Variable	Estimator						
	Cross-Section Post Program	OLS	1 Year DID				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Treated	0.015**	0.017***	0.031***	0.031***	0.027***	0.027***	0.028***
	(0.007)	(0.005)	(0.009)	(0.009)	(0.008)	(0.008)	(0.008)
Highly IEHS States Dummy	-0.028***	-0.025***	…	0.006	-0.025***	-0.025***	-0.028***
	(0.007)	(0.004)		(0.006)	(0.006)	(0.006)	(0.006)
Middle IEHS States Dummy	-0.019**	-0.025***	…	-0.007	-0.034***	-0.034***	-0.036***
	(0.008)	(0.005)		(0.007)	(0.006)	(0.006)	(0.007)
Treatment on Highly IEHS States	-0.001	0.000	…	-0.001	0.005	0.005	0.008
	(0.011)	(0.007)		(0.011)	(0.009)	(0.009)	(0.010)
Treatment on Middle IEHS States	0.018	0.023***	…	0.052***	0.052***	0.052***	0.043***
	(0.014)	(0.009)		(0.013)	(0.011)	(0.011)	(0.011)
Age	-0.035***	-0.039***	…	…	-0.050***	-0.050***	-0.046***
	(0.001)	(0.001)			(0.001)	(0.001)	(0.001)
Sex	-0.003	-0.007***	…	…	…	-0.007**	-0.011**
	(0.005)	(0.003)				(0.003)	(0.004)
Head of Family's Education	0.005***	0.006***	…	…	…	…	0.010***
	(0.001)	(0.001)					(0.001)
Lagged Attendance	0.446***	0.390***	…	…	…	…	…
	(0.013)	(0.014)					
Constant	0.881***	0.969***	…	…	…	…	…
	(0.023)	(0.018)					
Number of Observations	10,279	19,770	29,226	29,226	29,226	29,226	23,115
R^2	0.4592	0.5212	0.0010	0.0016	0.2458	0.2459	0.2360

Note: The dummy and treatment variables are correlated by construction, however, to show the general effect of living in each region and being treated separately.
Bootstrap Standard Errors in Parentheses, 500 replications.
*** Significant at the 1% level.
** Significant at the 5% level.
* Significant at the 10% level.
Source: Own elaboration with data from the ENCELURB, www.oportunidades.gob.mx.

4.3 Competitive Economic Sectors (CES)

Table 3 reveals a parallel result to the one earlier reviewed. If a child/youth is supported in a state with middle CES, the enrolment raises by 3.3 percentage points, two times the OLS coefficient. Similarly, there is no gain in program´s effectiveness if it is implemented in a highly CES state. Once again, if it is considered intervention and control areas as a whole, there is a negative effect on enrolment rates of living in a state with highly/middle CES, thereby reflecting the interaction with the no treated.

The second year DID estimations confirm the above result for the states with middle CES. However, the impact decreases this time to 2.6 percentages points, but is still a statistically significant coefficient. These finding may be a consequence of the high human capital requirements in states with highly CES, reducing poor people incentives, making them decide not to attend further levels of schooling, given their relatively higher investment costs and the reduced chances to succeed in the future.

4.4 Efficient and Efficacious Government (EEG)

According to the calculations presented in this study, if *Oportunidades* is launched in a Mexican state with a highly EEG, the program impact increases by 3.8 percentage points. This result remains strongly significant although it was added other covariates. In this case, the coefficient of the middle EEF is positive and lower than the high one as it would be expected, but it is not statistically significant. Nevertheless, OLS results in column 2 (see Table 4) predict a significant effect of the high and middle EEG treatment effects, being the middle coefficient lower than the high one.

Again, a mid-term exposure to the program has an important spillover effect of having more efficient government institutions. For instance, *ceteris paribus*, if a child is supported in a state with a highly EEG, the enrolment rate rises by 3.9 percentage points. This coefficient falls to 2.7 percentage points when it was added all the control variables, but remains significant though.

There are proposals about the significant gains in effectiveness when it is considered the effect only on older children. Next sub-section will present estimations for slightly older children in order to figure out if the effect of the competitiveness variables is higher for this sub-sample.

Table 3
Estimated program effect on enrolment
Child/Youth 6-20 years
Sub-Index: Competitive Economic Sectors (CES)

Variable	Estimator						
	Cross-Section Post Program	OLS	1 Year DID				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Treated	0.010	0.021***	0.031***	0.031***	0.027***	0.027***	0.028***
	(0.009)	(0.005)	(0.009)	(0.009)	(0.007)	(0.008)	(0.008)
Highly CES States Dummy	-0.025***	-0.018***	…	-0.010	-0.028***	-0.028***	-0.028***
	(0.007)	(0.005)		(0.007)	(0.006)	(0.006)	(0.006)
Middle CES States Dummy	-0.014*	-0.010**	…	-0.040***	-0.039***	-0.039***	-0.038***
	(0.008)	(0.005)		(0.007)	(0.007)	(0.007)	(0.007)
Treatment on Highly CES States	0.005	-0.004	…	0.007	0.003	0.003	0.005
	(0.012)	(0.007)		(0.011)	(0.010)	(0.010)	(0.010)
Treatment on Middle CES States	0.030**	0.017**	…	0.033***	0.033***	0.033***	0.034***
	(0.012)	(0.007)		(0.011)	(0.010)	(0.009)	(0.010)
Age	-0.035***	-0.039***	…	…	-0.050***	-0.050***	-0.046***
	(0.001)	(0.001)			(0.001)	(0.001)	(0.001)
Sex	-0.003	-0.007***	…	…	…	-0.007*	-0.010***
	(0.005)	(0.003)				(0.004)	(0.004)
Head of Family's Education	0.005***	0.006***	…	…	…	…	0.010***
	(0.001)	(0.001)					(0.001)
Lagged Attendance	0.446***	0.391***	…	…	…	…	…
	(0.012)	(0.015)					
Constant	0.877***	0.960***	…	…	…	…	…
	(0.021)	(0.020)					
Number of Observations	10,279	19,770	29,226	29,226	29,226	29,226	23,115
R^2	0.4592	0.5210	0.0010	0.0022	0.2461	0.2462	0.2352

Note: The dummy and treatment variables are correlated by construction, however, to show the general effect of living in each region and being treated separately.
Bootstrap Standard Errors in Parentheses, 500 replications.
*** Significant at the 1% level.
** Significant at the 5% level.
* Significant at the 10% level.
Source: Own elaboration with data from the ENCELURB, www.oportunidades.gob.mx.

Table 4
Estimated program effect on enrolment
Child/Youth 6-20 years
Sub-Index: Efficient and Eficacious Government (EEG)

Variable	Estimator						
	Cross-Section Post Program	OLS	1 Year DID				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Treated	0.006	0.012**	0.031***	0.031***	0.027***	0.027***	0.028***
	(0.010)	(0.006)	(0.009)	(0.008)	(0.008)	(0.007)	(0.008)
Highly EEG States Dummy	-0.021**	-0.013***	…	-0.037***	-0.033***	-0.033***	-0.028***
	(0.008)	(0.005)		(0.008)	(0.007)	(0.007)	(0.007)
Middle EEG States Dummy	-0.016**	-0.014***	…	-0.001	-0.017***	-0.017***	-0.016**
	(0.008)	(0.005)		(0.007)	(0.006)	(0.006)	(0.006)
Treatment on Highly EEG States	0.035***	0.026***	…	0.038***	0.031***	0.030***	0.031***
	(0.013)	(0.008)		(0.011)	(0.010)	(0.010)	(0.011)
Treatment on Middle EEG States	0.019	0.021***	…	0.007	0.010	0.010	0.013
	(0.013)	(0.008)		(0.011)	(0.010)	(0.010)	(0.011)
Age	-0.035***	-0.039***	…	…	-0.050***	-0.050***	-0.045***
	(0.001)	(0.001)			(0.001)	(0.001)	(0.001)
Sex	-0.003	-0.007**	…	…	…	-0.007*	-0.010***
	(0.005)	(0.003)				(0.004)	(0.004)
Head of Family's Education	0.005***	0.006***	…	…	…	…	0.010***
	(0.001)	(0.001)					(0.001)
Lagged Attendance	0.446***	0.391***	…	…	…	…	…
	(0.013)	(0.016)					
Constant	0.876***	0.959***	…	…	…	…	…
	(0.021)	(0.020)					
Number of Observations	10,279	19,770	29,226	29,226	29,226	29,226	23,115
R^2	0.4584	0.5207	0.0010	0.0023	0.2454	0.2455	0.2353

Note: The dummy and treatment variables are correlated by construction, however, to show the general effect of living in each region and being treated separately.
Bootstrap Standard Errors in Parentheses, 500 replications.
*** Significant at the 1% level.
** Significant at the 5% level.
* Significant at the 10% level.
Source: Own elaboration with data from the ENCELURB, www.oportunidades.gob.mx.

4.5 The Effects on Older Children

Given the marginal effects on younger children that have been previously discussed in Behrman *et al.* (2010) de Janvry and Sadoulet (2005) and Attanasio *et al*. (2008) it is argued that the impact of *Oportunidades* and the competitiveness outcomes are higher for older beneficiaries. Regarding this modification, it is reduced the sample including child/youth between 10-20 years, which account for 10,397 individuals, see Appendix.

It is observed in Table A.1 that the ATT increases importantly, being in the order of 4.1 percentage points in the baseline estimations. With respect to the control variables, the age impact almost duplicates, meaning that if a poor boy/girl in the sample has between 10-20 years, it is more plausible that he/she would drop out from school. Moreover, head's of family education becomes a more important determinant on enrolment decisions, representing a positive effect for this outcome. Finally, the sex coefficient is on the average the same as for the whole sample (children 6-20 years) predicting a negative effect on attendance if the children is a boy.

Once again, the effect of the general competitiveness outcome is not robust for either of both years of analysis. On the other hand, it is noteworthy that the impact of living in a state with middle inclusive, educated and healthy society (IEHS) rises considerably. For instance, if a child in a beneficiary household lives in a region with middle IEHS, the enrolment rate increases by 7.9 percentage points in the first year of evaluation. Furthermore, the coefficient is higher for the second year's baseline estimation (8.5%). The latter variables remain strongly significant even after the addition of the rest of the covariates, see Table A.2.

The very first estimations for the sub-index of Competitive Economics Sectors (CES) also show an increment for the middle group. If treated children live in a state with middle CES, their school attendance raises by 6.5%. For the second year calculations, the middle CES coefficient falls to 5.5 percentage points, remaining statistically significant though, see Table A.3.

The *Oportunidades* effect on school attendance rises importantly when is launched in a state with a highly efficient and efficacious government (EEG). In Table A.4 is shown that the coefficients for this variable rose 8.2 and 8.1 percentage points in the first and second year calculations, respectively. It is worth mentioning that for that group of age (10-20 years) the effect of living in a state with middle EEG is positive and lower in magnitude than the high one (3.6%) revealing substantial gains relatively to the group of people living in regions with low EEG. The latter coefficients

decrease in magnitude after adding the control variables but are still significant though.

The results found for the selected competitiveness outcomes are remarkable. As a matter of fact, they are comparable with the ones found in Attanasio *et al*. (2003) for the rural areas, whom estimated an impact on school attendance of 7.4 percentage points for the group of more dynamic states, and 2.3 percentage points for the group of poorest states, being the difference between these two groups statistically significant.

4.6 Additional Controls

If the effect of inclusive, educated and healthy society, economic sectors competitiveness and government efficiency is valid, after including additional control variables[12] the effect should have to remain statistically significant. It is argued that the following variables have a significant effect on enrolment rates: household income, household size, number of children under 16 years of age and the dependency ratio. All the latter variables resulted significant explanatory variables of enrolment rates. However, the household income impact is infinitesimal, given that all the families in the sample were deemed classified as poor so that their incomes are very similar. On the other hand, it is found that if the household size increases by one more family member, the enrolment rate reduces by 1.8 percentage points, whereas if the additional member is under 16 years of age, there is an increment of 1.5 percentage points. Moreover, if the dependency ratio in the household increases 1 unit, the enrolment rate rises by 6.5 percentage points. What is more, main results still apply after controlling for the latter variables.

Concluding Remarks

When policy makers attempt to implement a social intervention, information regarding a given objective group is worthwhile by its own. In this regard, it was proved that the prevailing context in Mexican states with highly efficient and efficacious governments, middle competitive economic sectors and middle inclusive, educated and healthy society, allow *Oportunidades* to achieve higher impacts on enrolment rates. Furthermore, it was confirmed that these effects are significantly improved if it is considered the impact on older children.

[12] The tables of this subsection are available on request.

When institutions work efficiently the environment to implement social interventions is more favourable. Consequently, such a social policy should have to be accompanied by mechanisms of co-responsibility between policymakers and other institutions like the Ministry for Education and local government organisms. Behrman *et al*. (2005) have suggested that *Oportunidades* may have actually lowered school quality, given the increased number of students derived from the program support, and the "congestion effect" caused by it. Moreover, Attanasio *et al*. (2003) posit that additional policy interventions are necessary in relatively poorer areas in order to achieve comparative program results as in slightly more dynamic regions.

The findings reveal that children living in beneficiary households have more economic incentives to attend school if they feel relatively less disadvantaged with respect to the rest of the population. This means that beneficiaries will attend school if the expected benefits that they will obtain from participating in the program (e.g. grants, health services, higher returns to education) do compensate the expected costs of attending school (e.g. forgone income from working, schooling costs, future costs of job search).

In the same line, results predict that children may consider not enrolling at school if they judge that future costs of meeting enterprises job requirements are high enough. Hence, living in a state with middle competitive economic sectors reduces participants expected costs (increases the expected utility) of applying for a job in the future, encouraging them to carry on further years of schooling.

The competitiveness level impact resulted positive but is not robust. The latter finding would be caused by the high level of aggregation of the data. Specifically, the SCI2006 includes variables that would affect the impact of *Oportunidades*, whereas is not feasible that variables like the environmental ones can help the program performance. Furthermore, the sampled states in the ENCELURB are not ranked among the most competitive ones. Nowadays, *Oportunidades* supports children in states with the highest levels of competitiveness and, as a result, having access to this data would lead us to more robust results.

Finally, as it was previously discussed, there are important pre-program differences between treatment and control groups. In order to tackle with this methodological issue, a more suitable model may be a difference-in-difference model with matching. In this model it was weighted the control group with a propensity score, which measures the probability of participation given some baseline characteristics at the family and/or individual level.

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APPENDIX

Table A.1
Estimated program effect on enrolment
Child/Youth 10-20 years old
Competitiveness Index

Variable	Estimator					
	1 Year DID			2 Year DID		
	(1)	(2)	(3)	(4)	(5)	(6)
Treated	0.041***	0.041***	0.032***	0.048***	0.047***	0.053***
	(0.013)	(0.013)	(0.011)	(0.013)	(0.013)	(0.013)
Highly Competitive States Dummy	…	-0.053***	-0.055***	…	-0.053***	-0.058***
		(0.015)	(0.013)		(0.015)	(0.013)
Middle Competitive States Dummy	…	-0.030***	-0.064***	…	-0.029***	-0.057***
		(0.009)	(0.008)		(0.009)	(0.008)
Treatment on Highly Competitive States	…	0.018*	0.001	…	0.021	0.005
		(0.023)	(0.020)		(0.024)	(0.020)
Treatment on Middle Competitive States	…	0.005	0.021	…	0.002	0.024
		(0.018)	(0.015)		(0.020)	(0.018)
Age	…	…	-0.084***	…	…	-0.084***
			(0.001)			(0.001)
Sex	…	…	-0.011*	…	…	-0.012**
			(0.006)			(0.006)
Head of Family's Education	…	…	0.014***	…	…	0.015***
			(0.001)			(0.001)
Number of Observations	17,825	17,825	13,164	16,872	16,872	12,935
R^2	0.0070	0.0084	0.3477	0.0155	0.0169	0.3359

Note: The dummy and treatment variables are correlated by construction, however, to show the general effect of living in each region and being treated separately.
Bootstrap Standard Errors in Parentheses, 500 replications.
*** Significant at the 1% level.
** Significant at the 5% level.
* Significant at the 10% level.
Source: Own elaboration with data from the ENCELURB, www.oportunidades.gob.mx.

Table A.2
Estimated program effect on enrolment
Child/Youth 10-20 years old
Sub-Index: Inclusive, Educated and Healthy Society (IEHS)

Variable	Estimator					
	1 Year DID			2 Year DID		
	(1)	(2)	(3)	(4)	(5)	(6)
Treated	0.041***	0.041***	0.033***	0.048***	0.047***	0.053***
	(0.013)	(0.013)	(0.011)	(0.013)	(0.014)	(0.012)
Highly IEHS States Dummy	…	-0.017*	-0.060***	…	-0.022**	-0.060***
		(0.009)	(0.009)		(0.010)	(0.009)
Middle IEHS States Dummy	…	-0.036***	-0.077***	…	-0.042***	-0.076***
		(0.011)	(0.011)		(0.011)	(0.010)
Treatment on Highly IEHS States	…	-0.004	0.024*	…	0.003	0.028*
		(0.016)	(0.014)		(0.017)	(0.015)
Treatment on Middle IEHS States	…	0.079***	0.069***	…	0.085***	0.067***
		(0.020)	(0.018)		(0.020)	(0.019)
Age	…	…	-0.084***	…	…	-0.084***
			(0.001)			(0.001)
Sex	…	…	-0.011**	…	…	-0.012**
			(0.005)			(0.006)
Head of Family´s Education	…	…	0.014***	…	…	0.015***
			(0.001)			(0.001)
Number of Observations	17,825	17,825	13,164	16,872	16,872	12,935
R^2	0.0070	0.0082	0.3477	0.0155	0.0169	0.3362

Note: The dummy and treatment variables are correlated by construction, however, to show the general effect of living in each region and being treated separately.
Bootstrap Standard Errors in Parentheses, 500 replications.
*** Significant at the 1% level.
** Significant at the 5% level.
* Significant at the 10% level.
Source: Own elaboration with data from the ENCELURB, www.oportunidades.gob.mx.

Table A.3
Estimated program effect on enrolment
Child/Youth 10-20 years old
Sub-Index: Competitive Economic Sectors (CES)

Variable	Estimator					
	1 Year DID			2 Year DID		
	(1)	(2)	(3)	(4)	(5)	(6)
Treated	0.041***	0.041***	0.032***	0.048***	0.048***	0.053***
	(0.013)	(0.013)	(0.011)	(0.013)	(0.014)	(0.013)
Highly CES States Dummy	…	-0.035***	-0.053***	…	-0.033***	-0.049***
		(0.010)	(0.008)		(0.011)	(0.009)
Middle CES States Dummy	…	-0.070***	-0.063***	…	-0.062***	-0.055***
		(0.011)	(0.010)		(0.012)	(0.010)
Treatment on Highly CES States	…	0.007	0.013	…	0.005	0.011
		(0.017)	(0.015)		(0.018)	(0.016)
Treatment on Middle CES States	…	0.065***	0.055***	…	0.055***	0.041***
		(0.015)	(0.014)		(0.016)	(0.014)
Age	…	…	-0.084***	…	…	-0.084***
			(0.001)			(0.001)
Sex	…	…	-0.010*	…	…	-0.012**
			(0.006)			(0.006)
Head of Family's Education	…	…	0.014***	…	…	0.015***
			(0.001)			(0.001)
Number of Observations	17,825	17,825	13,164	16,872	16,872	12,935
R^2	0.0070	0.0097	0.3464	0.0155	0.0175	0.3348

Note: The dummy and treatment variables are correlated by construction, however, to show the general effect of living in each region and being treated separately.
Bootstrap Standard Errors in Parentheses, 500 replications.
*** Significant at the 1% level.
** Significant at the 5% level.
* Significant at the 10% level.
Source: Own elaboration with data from the ENCELURB, www.oportunidades.gob.mx.

Table A.4
Estimated program effect on enrolment
Child/Youth 10-20 years old
Sub-Index: Efficient and Eficacious Government (EEG)

Variable	Estimator					
	1 Year DID			2 Year DID		
	(1)	(2)	(3)	(4)	(5)	(6)
Treated	0.041***	0.041***	0.033***	0.048***	0.048***	0.054***
	(0.013)	(0.013)	(0.012)	(0.013)	(0.013)	(0.012)
Highly EEG States Dummy	…	-0.072***	-0.045***	…	-0.061***	-0.036***
		(0.011)	(0.010)		(0.012)	(0.011)
Middle EEG States Dummy	…	-0.018*	-0.031***	…	-0.019*	-0.031***
		(0.010)	(0.008)		(0.011)	(0.009)
Treatment on Highly EEG States	…	0.082***	0.050***	…	0.081**	0.046***
		(0.016)	(0.015)		(0.018)	(0.015)
Treatment on Middle EEG States	…	0.036**	0.038**	…	0.046	0.049***
		(0.016)	(0.015)		(0.018)	(0.015)
Age	…	…	-0.083***	…	…	-0.084***
			(0.001)			(0.001)
Sex	…	…	-0.009*	…	…	-0.011*
			(0.006)			(0.006)
Head of Family's Education	…	…	0.014***	…	…	0.015***
			(0.001)			(0.001)
Number of Observations	17,825	17,825	13,164	16,872	16,872	12,935
R^2	0.0070	0.0098	0.3443	0.0155	0.0176	0.3332

Note: The dummy and treatment variables are correlated by construction, however, to show the general effect of living in each region and being treated separately.
Bootstrap Standard Errors in Parentheses, 500 replications.
*** Significant at the 1% level.
** Significant at the 5% level.
* Significant at the 10% level.
Source: Own elaboration with data from the ENCELURB, www.oportunidades.gob.mx.