Online Appendix for

Do Larger School Grants Improve Educational Attainment?

Evidence from Urban Mexico

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A1. Analysis Sample

Table A1.1 shows the analysis sub-sample of localities and students, starting from the universe of 551 Urban Localities with more than 15,000 inhabitants as defined in the 2005 census (row 1). Of these, a total of 105 localities had no new Oportunidades enrollees in 2008 and 2009 and were dropped from the sample (row 2). The number of students presented in row 2 includes all new Oportunidades beneficiaries in middle and high school in 2008 and 2009. Restricting the sample to 7^{th} grade students in row 3 results in the loss of an additional 30 localities. Finally, in Row (4) we drop four localities where parallel experiments implemented by Oportunidades were ongoing, namely Reynosa, Puebla, Juarez, and Ecatepec. The final analysis sample is thus composed of 412 localities and 19,418 new beneficiaries of Oportunidades who enrolled in the program in 2008 and 2009.

Table A1.2 presents the number of schools in treatment and control localities for the 2008 and 2009 enrollment cohorts. All schools are derived from ENLACE registries. Schools with Oportunidades beneficiaries corresponds to the number of schools identified for the sub-sample of new-beneficiary students enrolling in Oportunidades in 2008 or 2009, as identified in the Oportunidades beneficiary roster.

Table A1.1 Analysis Subsample

Step	Localities			Students		
	Total	Treatment	Control	Total	Treatment	Control
(1)	551	263	288	-	-	-
(2)	446	253	193	70,012	44,284	25,728
(3)	416	250	166	23,740	15,166	8,574
(4)	**412**	**246**	**166**	**19,418**	**10,844**	**8,574**

Note: Break down of sample sizes. First row is the universe of urban localities in 2005 and last row is final analysis sample. Data Source: Oportunidades beneficiary roster

Table A1.2 Number of Schools with Oportunidades Beneficiaries in Treatment and Control Localities, by Cohort.

	All Schools		Schools with Oportunidades Beneficiaries in analysis Sample	
	Treatment	Control	Treatment	Control
2008 Cohort	3,567	3,425	1,193	222
2009 Cohort	3,821	3,765	313	1,735

Note: The left panel includes the universe of schools with 7th grade according to ENLACE registries. The right panel consists of the schools were the new Oportunidades beneficiaries were enrolled at the beginning of the academic year, according to Oportunidades beneficiary roster.

A2. Selection of Treatment (Urban Model) and Control Localities

This section presents locality level characteristics of treatment and control localities. The selection of localities for the Urban Model followed the program's standard process of geographical targeting which focused active enrollment in a different subset of localities every year but followed the same household eligibility rules across all localities (see Davila 2016 for details of the active enrollment process). The program estimated coverage gaps as the difference between estimated eligible population and the number of enrolled beneficiaries in each locality. Active enrollment efforts were concentrated in localities with a positive estimated coverage gap.[1] In remaining localities, enrollment continued through "passive" demand and identification of eligible households. In all cases, household level eligibility criteria for enrolling in Oportunidades remained the same nationwide.

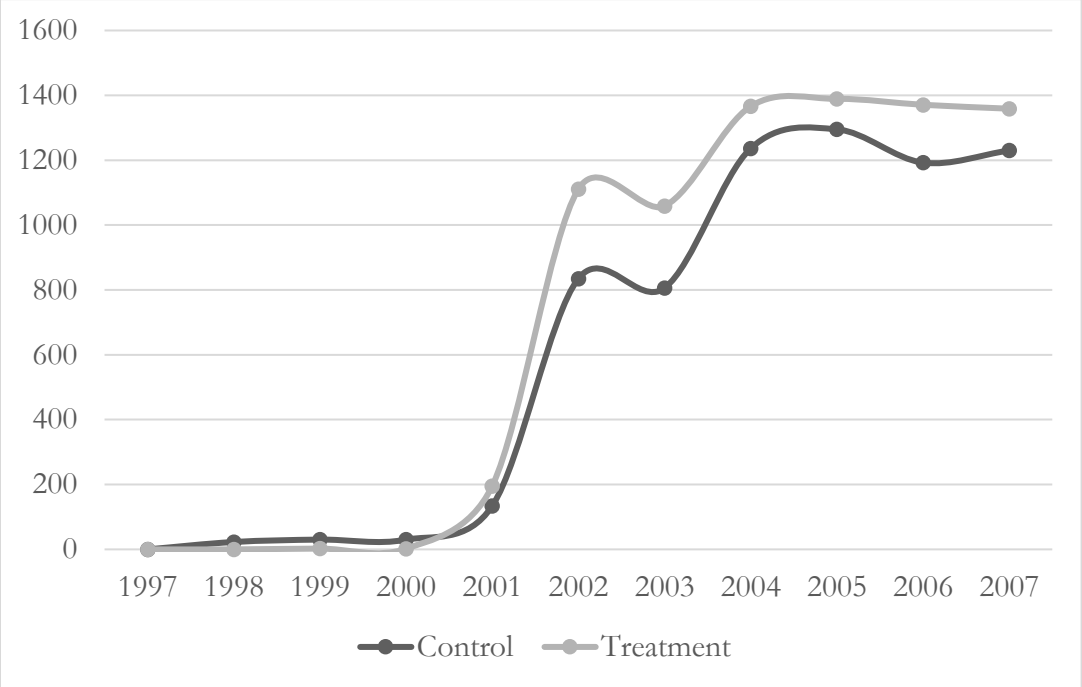
Figure A2.1 presents the yearly average number of households enrolled in Oportunidades in urban areas, divided by Urban Model treatment and control localities. We observe that enrollment follows a similar pattern, albeit with a one year "lag" in control localities through 2005. After 2006 the number of beneficiary families stabilizes in both sets of localities, with an average of 1200 to 1400 beneficiaries per locality. Table A2.1 shows baseline locality characteristics. There are no statistically significant differences for the full set of localities considered by the program at the time of selection (All Localities). When restricting the sample to localities in the analysis sub-sample, two differences are statistically significant at the 10% level, and one difference at the 5% level (dirt floors). Overall, treatment localities appear to have slightly higher rates of poverty as measured by the characteristics considered by the program at the time of selection, which is consistent with the program's use of estimated eligibility rates to calculate coverage gaps. As an additional exercise, in Table A2.2 we run a regression of the locality treatment status on its

[1] In 2009 the program consulted with local health services regarding capacity to provide services to newly enrolled beneficiaries, and localities with insufficient capacity were dropped from the set of localities with active enrolment. In order to validate the targeting strategy, households poverty estimates computed by Oportunidades were compared to the Ministry of Social Development (SEDESOL) census block level poverty estimates as well as social indicators (educational lag and social security participation) and other dimensions of well-being (percentage of homes with certain characteristics and access to public services, and average occupants per room).

characteristics. A majority of the estimated coefficients are close to zero, and none of them are significant at the 5% level. These results suggest that locality characteristics were not systematically correlated with selection into treatment. The absence of a strong correlation may be the result of the selection rule, which used estimated coverage gaps based on an imputed measure of eligible population, rather than actual population counts.

Finally, Table A2.3 presents the intra-cluster correlations for our education outcomes. Given that treatment assignment was conducted by Oportunidades at the locality level, we cluster all regression analysis at the locality level (Abadie et al, 2017).

Figure A2.1: Average Oportunidades Enrollment in Urban Localities by Year (1997-2007)



Note: Oportunidades start to expand to urban localities on 2000, before that the program was only in rural areas. Data Source: Oportunidades administrative records on targeting of the urban model.

Table A2. 1: Locality Characteristics

VARIABLES	Estimation Sample (N=412)			All Localities (N=551)		
	Treatment	Control	Difference	Treatment	Control	Difference
% of population no access to health services	0.489	0.474	0.015 (0.025)	0.489	0.478	0.011 (0.023)
% of hh that have dirt floor	0.068	0.051	0.017** (0.008)	0.065	0.052	0.013 (0.008)
Average number of rooms	0.012	0.011	0.0001 (0)	0.011	0.011	0.0001 (0)
% of hh that do not have toilet	0.057	0.062	-0.004 (0.005)	0.058	0.063	-0.005 (0.004)
% hh that do not have piped water from the public network	0.080	0.056	0.024* (0.014)	0.079	0.058	0.021 (0.014)
% of hh that do not have drainage	0.051	0.040	0.011 (0.008)	0.049	0.037	0.012 (0.008)
% of hh that do not have electricity	0.040	0.043	-0.003 (0.004)	0.041	0.045	-0.005 (0.004)
% of hh that do not have a washing machine	0.369	0.316	0.052* (0.027)	0.366	0.334	0.032 (0.027)
% of hh that do not have refrigerator	0.188	0.166	0.022 (0.015)	0.187	0.179	0.009 (0.015)

Note: Standard errors (in parenthesis) clustered at the state level. * significant at 10%, ** significant at 5%, *** significant at 1%. Data Source: Oportunidades administrative records on targeting of the urban model.

Table A2.2. Correlation between locality level characteristics and selection for treatment

Dependent variable: Treatment locality = 1

VARIABLES	(1) Estimation Sample	(2) All Localities
% of population no access to health services	-0.003	-0.002
	(0.003)	(0.002)
% of hh that have dirt floor	0.007	0.004
	(0.006)	(0.008)
Average number of rooms	-0.400*	-0.334
	(0.232)	(0.246)
% of hh that do not have toilet	-0.010	-0.010
	(0.009)	(0.011)
% hh that do not have piped water from the public network	0.003	0.003
	(0.003)	(0.002)
% of hh that do not have drainage	0.008	0.010
	(0.005)	(0.006)
% of hh that do not have electricity	-0.010	-0.010
	(0.015)	(0.016)
% of hh that do not have a washing machine	0.008	0.007
	(0.005)	(0.006)
% of hh that do not have refrigerator	-0.000	-0.004
	(0.006)	(0.006)
Observations	412	550
R-squared	0.068	0.050

Notes: Standard errors clustered at the state level in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Data Source: Oportunidades administrative records on targeting of the urban model.

Table A2.3: Intra Cluster (Locality) Correlations for Primary Outcomes

Outcome Variable	Intra-Cluster Correlation
Official Dropout	0.01698
Roster dropout	0.04975
Graduation grant	0.04613
Graduation test	0.04004
Average years of education	0.05095

Note: N=19,418. ICC is estimated with *loneway* command in Stata 15, that uses the ANOVA estimator. Data Source: Author's calculations. Education outcomes proxies are constructed with Oportunidades Beneficiary Roster and ENLACE data. Baseline characteristics are from the ENCASEH.

A3. Pre-Intervention Trends

Table A3.1 presents descriptive statistics of the change in outcomes and characteristics of new Oportunidades beneficiaries in the pre-treatment period (2007-2008) in treatment and control localities. We observe that pre-treatment differences are balanced in all outcomes for men, and for three of the four outcomes for women. Similarly, most of the beneficiary characteristics are balanced. We only observe statistically significant differences on age for male and father's education for female.

The Urban Model was implemented starting as of the fifth bimester (beginning of the academic year) of 2009. Given that we have bimonthly data on the Oportunidades roster, in Table A3.2, we perform a pre-trends test with all the data available from the fifth bimester of 2007 to the first bimester of 2009. We run a model with the complete set of interaction between bimester dummies and treatment. For all outcomes we can reject the null hypothesis that the dummies coefficients are different between treatment and comparison groups, providing a test of "pre-trends" at the bimester level.

Table A3.1 Pre-intervention cohort trends (2008-2007)

VARIABLES	Female			Male		
	Δ Treatment (N=1,339)	Δ Control (N=4,973)	Diff in Diff	Δ Treatment (N=1,288)	Δ Control (N=5,014)	Diff in Diff
Official dropout	-0.025	-0.022	-0.003	-0.028	-0.022	-0.006
	(0.011)	(0.015)	(0.019)	(0.014)	(0.021)	(0.025)
Roster dropout	0.01	-0.051	0.061	-0.014	-0.012	-0.001
	(0.033)	(0.019)	(0.038)	(0.028)	(0.023)	(0.036)
Graduation grant	0.007	0.048	-0.041	0.021	0.003	0.018
	(0.03)	(0.019)	(0.035)	(0.025)	(0.023)	(0.034)
Graduation test	-0.046	0.047	-0.092**	-0.008	-0.013	0.004
	(0.032)	(0.022)	(0.035)	(0.032)	(0.024)	(0.041)
Age at enrollment	-0.024	-0.115	0.091	0.024	-0.145	0.169**
	(0.057)	(0.034)	(0.066)	(0.056)	(0.036)	(0.067)
Father's Education (years)	-0.361	0.223	-0.584**	-0.002	0.114	-0.116
	(0.245)	(0.118)	(0.272)	(0.196)	(0.117)	(0.228)
Mother's Education (years)	0.226	0.469	-0.243	0.276	0.414	-0.138
	(0.252)	(0.183)	(0.312)	(0.205)	(0.179)	(0.272)
Wealth Index	0.15	-0.03	0.18	0.267	-0.032	0.299*
	(0.12)	(0.141)	(0.186)	(0.135)	(0.097)	(0.166)

Note: * significant at 10%, ** significant at 5%, *** significant at 1%. Standard errors (in parenthesis) clustered-robust at the locality level. First two columns on right and left panels denote the difference in means in time. The third column is the difference-in-difference estimator, that is the mean difference of the first two columns. Data Source: Education outcomes proxies are constructed with Oportunidades Beneficiary Roster and ENLACE data. Baseline characteristics are from the ENCASEH.

Table A3.2: Pre-trends analysis by bimester

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Female				Male			
	Official Dropout	Roster dropout	Graduation grant	Graduation test	Official dropout	Roster dropout	Graduation grant	Graduation test
Treatment*20075	0.027	0.110	0.026	-0.074	0.004	-0.008	0.012	0.007
	(0.034)	(0.123)	(0.104)	(0.126)	(0.044)	(0.107)	(0.094)	(0.135)
Treatment*20076	0.034	-0.033	0.073	-0.036	-0.012	-0.110	0.034	0.071
	(0.041)	(0.135)	(0.110)	(0.159)	(0.055)	(0.137)	(0.123)	(0.163)
Treatment*20081	0.070	0.053	0.105	-0.114	0.078	-0.060	0.041	0.013
	(0.070)	(0.158)	(0.141)	(0.198)	(0.078)	(0.139)	(0.124)	(0.163)
Treatment*20082	0.097	0.032	0.138	-0.130	-0.132	0.106	-0.065	0.072
	(0.072)	(0.207)	(0.185)	(0.207)	(0.101)	(0.166)	(0.168)	(0.225)
Treatment*20083	-0.068	0.163	0.035	-0.009	0.090	0.063	-0.088	0.294
	(0.082)	(0.208)	(0.199)	(0.217)	(0.134)	(0.269)	(0.249)	(0.235)
Treatment*20085	0.013	0.156	-0.007	-0.128	0.016	-0.058	0.041	0.007
	(0.028)	(0.119)	(0.101)	(0.136)	(0.042)	(0.108)	(0.098)	(0.129)
Treatment*20091	-0.023	0.130	-0.001	-0.238	-0.002	-0.053	-0.024	-0.101
	(0.047)	(0.158)	(0.129)	(0.156)	(0.070)	(0.113)	(0.111)	(0.149)
Control mean	0.041	0.679	0.262	0.341	0.061	0.727	0.214	0.277
Observations	7,164	7,164	7,164	6,029	7,139	7,139	7,139	6,201
F-test	0.886	1.443	0.506	0.776	0.664	0.789	0.334	0.673
F-p-value	0.518	0.187	0.83	0.608	0.702	0.597	0.938	0.695
R-squared	0.011	0.035	0.032	0.050	0.010	0.031	0.024	0.035

Note: * significant at 10%, ** significant at 5%, *** significant at 1%. Standard errors (in parenthesis) clustered-robust at the locality level. All regressions include bimester and locality fixed effects. Interaction term (treatment *enrollment cohort) equals 1 for individuals in treatment communities and enrolled during the particular year-bimester. Data Source: Education outcomes proxies are constructed with Oportunidades Beneficiary Roster and ENLACE data. Baseline characteristics are from the ENCASEH.

A4. Merging of Data Sets with Personal Identifier (CURP)

Table A4.1 compares demographic and wealth indicators between students with and without an available CURP in the Oportunidades Roster. There are no significant differences in the likelihood of treatment by CURP identifier status. However, we observe significant differences in some demographic and wealth indicators. Beneficiaries with CURP have more educated parents, larger households, more rooms, and more access to domestic gas.

Tables A4.2 and A4.3 estimate our main effects separately for the sub-samples with and without CURP. While estimates for the sample without CURP are not significant in some cases due to a reduction in statistical power, the direction and magnitude of the estimated coefficient are similar to the main results.

Table A4.1 Balance CURP – No CURP samples on beneficiaries and HH characteristics

VARIABLES	CURP	No CURP	Difference
Treatment	0.560	0.552	0.007 (0.03)
Age	12.425	12.454	-0.029 (0.025)
Father's Education (years)	0.502	0.458	0.043*** (0.01)
Mother's Education (years)	3.635	3.226	0.408*** (0.085)
Household size	5.820	5.544	0.276*** (0.097)
Own home	5.371	5.350	0.021 (0.043)
Number of rooms	0.398	0.359	0.039*** (0.013)
Sanitary service	1.560	1.567	-0.007 (0.021)
Water	0.171	0.178	-0.007 (0.008)
Electricity	0.292	0.286	0.006 (0.01)
Domestic gas	0.986	0.977	0.009** (0.004)
Refrigerator	0.276	0.273	0.003 (0.013)
Washing Machine	0.545	0.526	0.018 (0.012)
VCR	0.072	0.073	0 (0.006)
Telephone	0.194	0.188	0.006 (0.01)
Vehicle	0.101	0.091	0.01 (0.007)

Note: %. Standard errors (in parenthesis) clustered-robust at the locality level.* significant at 10%, ** significant at 5%, *** significant at 1%.

Table A4.2: CURP Sample

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Female				Male			
	Official Dropout	Roster dropout	Graduation grant	Graduation test	Official dropout	Roster dropout	Graduation grant	Graduation test
Treatment locality*2009 cohort	-0.030**	-0.190***	0.154***	0.129***	-0.052***	-0.147***	0.120***	0.104***
	(0.013)	(0.034)	(0.033)	(0.034)	(0.014)	(0.034)	(0.031)	(0.036)
Treatment locality	-0.009	0.045	0.000	0.021	0.006	0.015	0.008	0.015
	(0.011)	(0.029)	(0.028)	(0.030)	(0.012)	(0.029)	(0.027)	(0.029)
2009 cohort	0.020**	0.035*	-0.135***	-0.130***	0.023***	-0.005	-0.110***	-0.095***
	(0.009)	(0.020)	(0.018)	(0.018)	(0.008)	(0.018)	(0.015)	(0.023)
Control mean	0.042	0.654	0.265	0.333	0.061	0.721	0.195	0.252
Observations	8,217	8,217	8,217	8,217	8,274	8,274	8,274	8,274
R-squared	0.014	0.072	0.055	0.075	0.018	0.073	0.046	0.056

Note: * significant at 10%, ** significant at 5%, *** significant at 1%. Standard errors (in parenthesis) clustered-robust at the locality level. Data Source: Education outcomes proxies are constructed with Oportunidades Beneficiary Roster and ENLACE data. Baseline characteristics are from the ENCASEH.

Table A4.3: No CURP Sample

VARIABLES	(1)	(2)	(3)	(5)	(6)	(7)
	Female			Male		
	Official Dropout	Roster dropout	Graduation grant	Official dropout	Roster dropout	Graduation grant
Treatment locality*2009 cohort	-0.038	-0.117	0.141**	-0.028	-0.113**	0.080
	(0.039)	(0.080)	(0.064)	(0.036)	(0.056)	(0.050)
Treatment locality	-0.011	0.022	-0.030	-0.008	0.066	-0.009
	(0.015)	(0.054)	(0.054)	(0.026)	(0.044)	(0.040)
2009 cohort	0.051	0.008	-0.105***	0.022	0.006	-0.097***
	(0.033)	(0.064)	(0.037)	(0.022)	(0.037)	(0.031)
Control mean	0.038	0.723	0.213	0.052	0.732	0.18
Observations	1,585	1,585	1,585	1,342	1,342	1,342
R-squared	0.030	0.072	0.060	0.025	0.069	0.041

Note: * significant at 10%, ** significant at 5%, *** significant at 1%. Standard errors (in parenthesis) clustered-robust at the locality level. The Graduation test outcome is also available for students with CURP. Data Source: Education outcomes proxies are constructed with Oportunidades Beneficiary Roster and ENLACE data. Baseline characteristics are from the ENCASEH.

Section A5. Results from Cox proportional hazard models

As a complement to the difference in difference model, we estimate Cox proportional hazard models (Cox, 1972). These analyses employ the panel structure of our data with bi-monthly observations t for each student i in locality j. We estimate cohort-specific models and show that the likelihood of dropout and on-time graduation for students in the 2008 cohort is balanced over time and across treatment and control localities. We then proceed to estimate the cross-sectional hazard model for the 2009 cohort and identify the likelihood of dropout or graduation in treatment localities compared to control localities.

The hazard models required two possible outcomes for each observation, in our case: the student is enrolled in school (right-censored) or not (failed) and the student has graduated from high school (failed) or not (right censored). The proportional hazard model assumes that the fraction of students that dropped out (graduated) after bimonthly cycle t, relative to those that are still enrolled (did not graduate) in that cycle is:

$$h(t) = h_0(t)\exp\left(\mu D_j + X_i'\beta\right)$$

Where $h_0(t)$ is the baseline hazard of dropping out (graduating) from school after bimester *t*. We assume that the effect of the unobserved covariates are constant over time, and that the hazard ratio for two observations is independent of time *t*. D_j is a locality level treatment dummy equal to 1 in treatment localities and 0 otherwise, and μ is the treatment parameter of interest. $X_i'$is the vector of individual covariates described above. As with the main difference-in-difference analysis, we estimate separate models for males and females and cluster standard errors at the locality level.

Results of the Nelson-Aalen estimates of the cumulative hazard function are presented graphically in Figures A5.1 to A5.4. Function estimates for the 2008 pre-intervention cohort are presented on the left side of the panel. We observe that the probability of dropout and on-time graduation for the 2008 cohort are overlapping in treatment and control localities. On the right-hand panel for the 2009 intervention cohort,

we observe that students with larger grants in treatment localities have a significantly lower probability of dropout and a higher probability of on-time graduation over time, compared to those enrolled under the traditional grant scheme in control localities. The figures also highlight the high dropout rates that occur in the transition between middle school and high school and the effectiveness of the larger grants in preventing dropouts at that critical juncture.

The hazard ratios for the 2009 cohort are presented in Table A5.1. As expected from the graphical analysis, the (exponential) coefficient for the treatment variable is significantly different from one for all outcomes. For female students, the estimated hazard ratios are 0.9 and 0.49 for official and roster dropout, and 2.1 and 1.7 for the graduation grant and test graduation outcomes, respectively. That is, females from treatment localities are 10 percent or 50.8 percent less likely to drop out of school based on official or roster dropout, and between 113 and 70 percent more likely to graduate from high school on time, based on our two proxy measures. The estimated hazard ratios for males are all statistically significant at the 1 percent level, with ratios of 0.81 and 0.44 for dropout proxies, and 2.29 and 1.71 for graduation outcome proxies. In other words, males from Urban Model localities are 19 percent less likely to drop out of middle school based on the official dropout outcome, and 56 percent less likely to leave the program through the first year of high school based on the roster dropout outcome. Males are 129 to 71 percent more likely to graduate high school based on the graduation grant and graduation test proxies, respectively. For the graduation proxy outcomes, results of the hazard models are consistent with the difference-in-difference estimates, albeit of a larger magnitude.

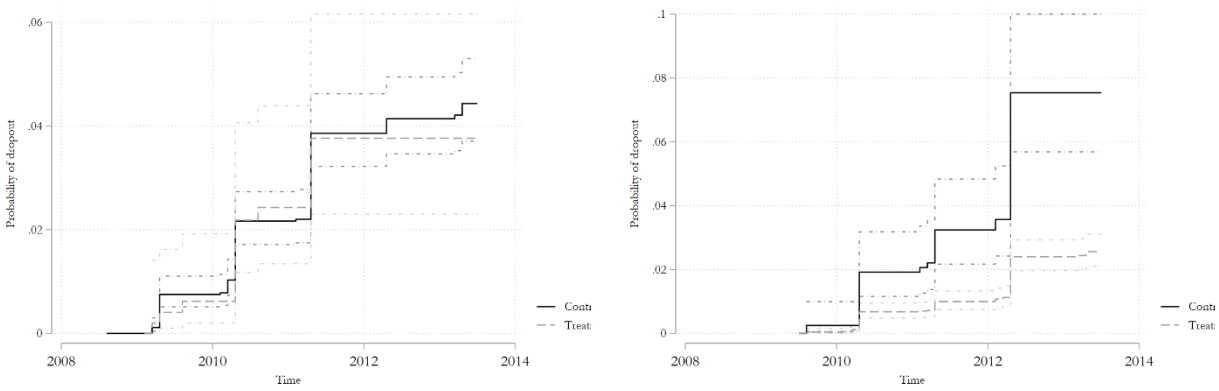
Table A5.1: Cox Model Treatment Estimates

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Women				Men			
	Official dropout	Roster dropout	Graduation grant	Graduation test	Official dropout	Roster dropout	Graduation grant	Graduation test
	Hazard post							
Hazard Ratio 20095 (treatment)	0.900**	0.492***	2.130***	1.706***	0.813***	0.441***	2.297***	1.710***
	(0.045)	(0.077)	(0.341)	(0.146)	(0.044)	(0.062)	(0.313)	(0.216)
Observations	93,027	93,027	242,970	34,207	86,170	86,170	238,769	34,224

Figure A5.1: Nelson- Aalen estimate of the cumulative hazard function for school dropout proxies - Females

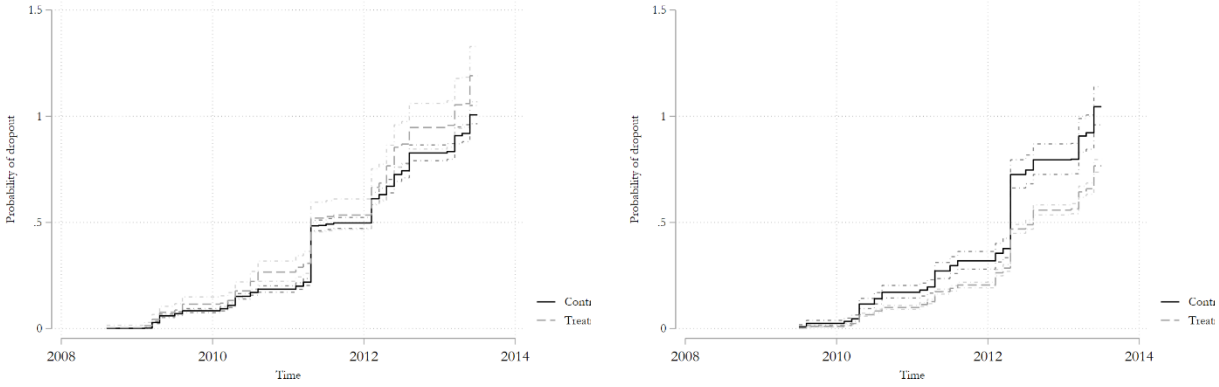
Official dropout

2008 Cohort (pre-intervention) **2009 Cohort (intervention)**



Roster dropout

2008 Cohort (pre- intervention) **2009 Cohort (intervention)**

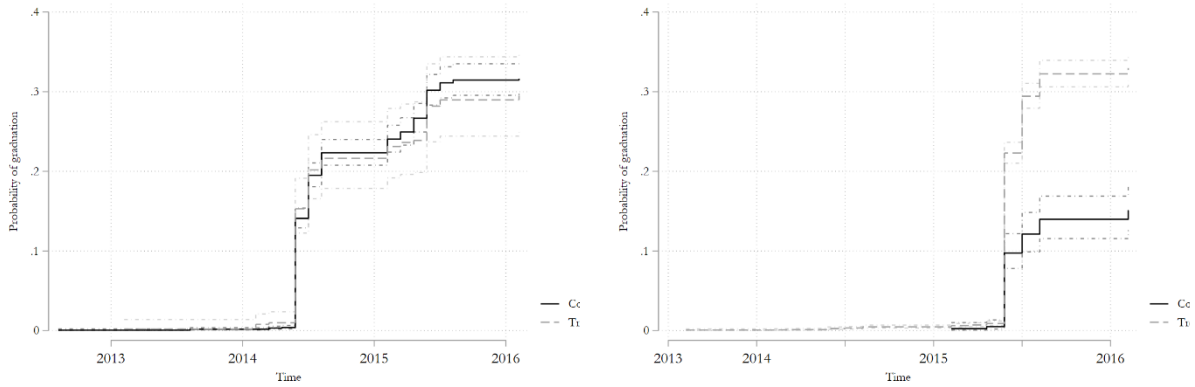


Notes: Dropout probabilities represented in solid lines for treatment (red) and control (blue) localities. 95% confidence intervals are presented with dashed lines. Official dropout=1 when a student leaves the Oportunidades program due to non-compliance with the school enrollment condition based on official program registries and is reported for middle school only (7^{th}-9^{th} grade). Roster dropout =1 when a student leaves the program for any reason and is reported for middle school and 10^{th} grade.

Figure A5.2: Nelson- Aalen estimates of the cumulative hazard function for high school graduation proxies - Females

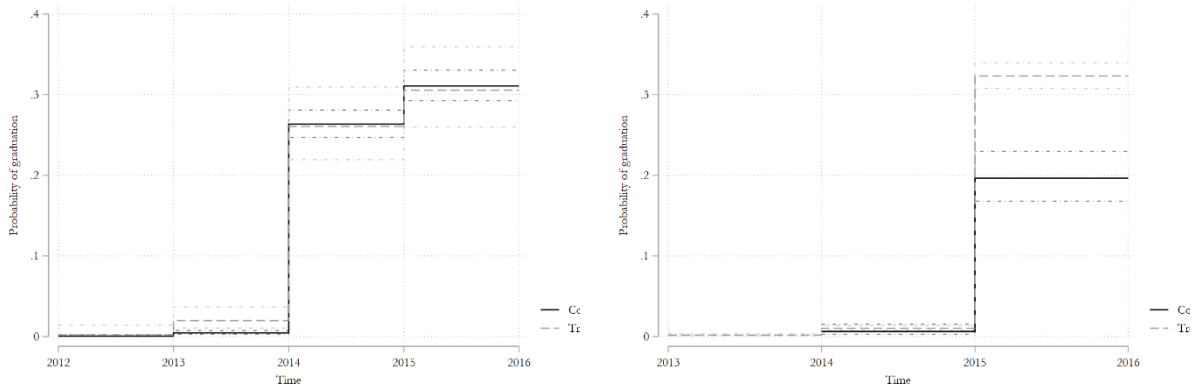
Graduation Grant

2008 Cohort (pre- intervention) **2009 Cohort (intervention)**



Graduation test

2008 Cohort (pre- intervention) **2009 Cohort (intervention)**

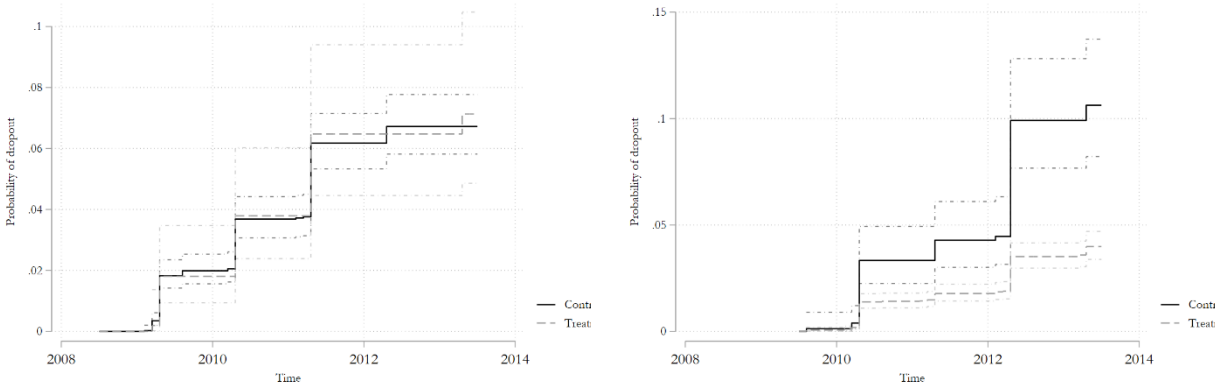


Notes: Graduation probabilities represented in solid lines for treatment (red) and control (blue) localities. 95% confidence intervals are presented with dashed lines. Graduation grant =1 when the "Jovenes con Oportunidades" grant is claimed upon providing proof of graduation. Graduation test =1 if the student took the ENLACE test, a mandatory exam administered at the end of the school year in 12th grade.

Figure A5.3: Nelson- Aalen estimate of the cumulative hazard function for school dropout proxies - Males

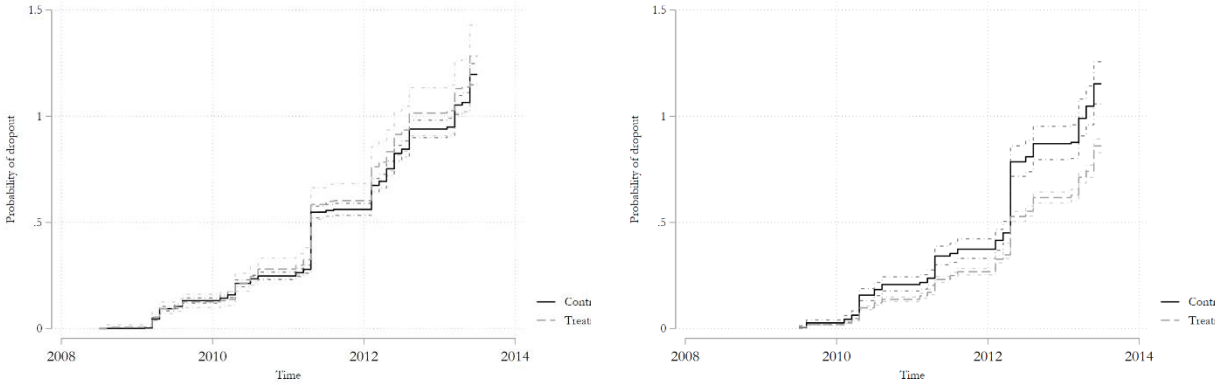
Official dropout

2008 Cohort (pre- intervention) **2009 Cohort (intervention)**



Roster dropout

2008 Cohort (pre- intervention) **2009 Cohort (post- intervention)**

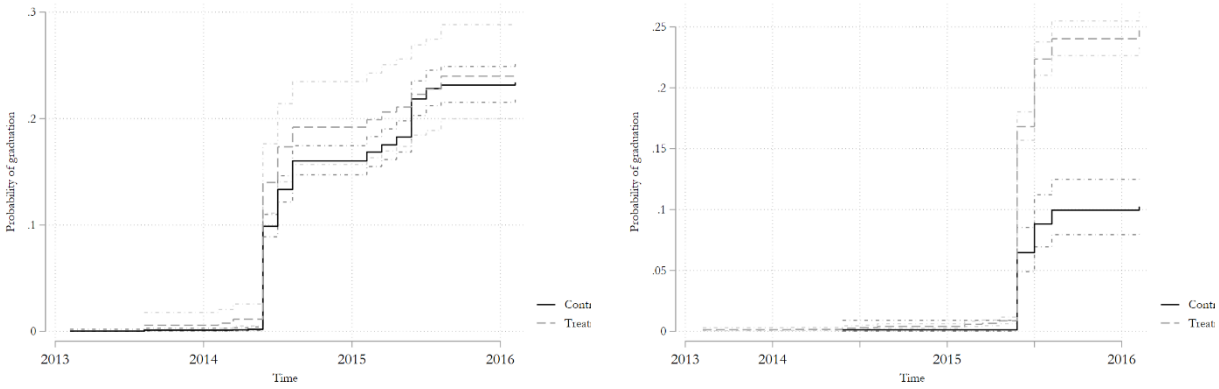


Notes: Dropout probabilities represented in solid lines for treatment (red) and control (blue) localities. 95% confidence intervals are presented with dashed lines. Official dropout=1 when a student leaves the Oportunidades program due to non-compliance with the school enrollment condition based on official program registries and is reported for middle school only (7^{th}-9^{th} grade). Roster dropout =1 when a student leaves the program for any reason and is reported for middle school and 10^{th} grade.

Figure A5.4: Nelson- Aalen estimates of the cumulative hazard function for high school graduation proxies – Males

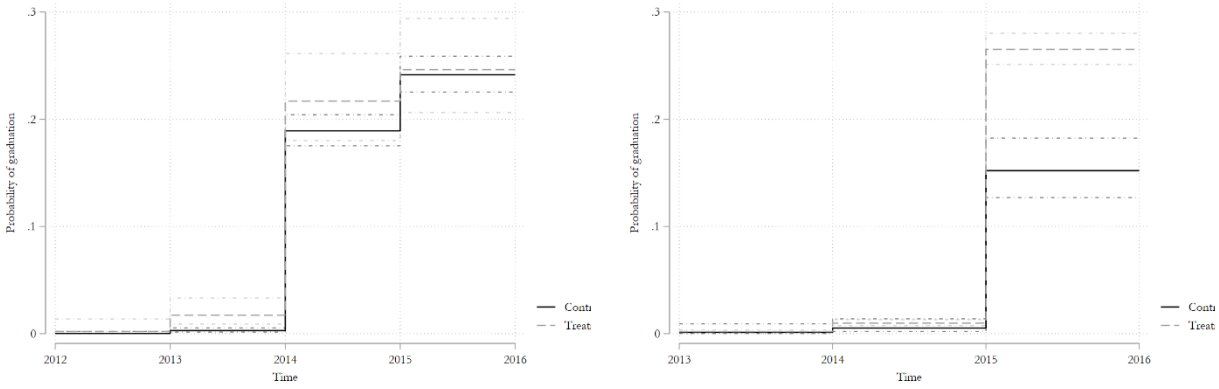
Graduation Grant

2008 Cohort (pre- intervention) **2009 Cohort (intervention)**



Graduation Test

2008 Cohort (pre- intervention) **2009 Cohort (intervention)**



Notes: Graduation probabilities represented in solid lines for treatment (red) and control (blue) localities. 95% confidence intervals are presented with dashed lines. Graduation grant =1 when the "Jovenes con Oportunidades" grant is claimed upon providing proof of graduation. Graduation test =1 if the student took the ENLACE test, a mandatory exam administered at the end of the school year in 12th grade.

Section A6. Heterogeneity Analysis by Baseline Academic Ability (ENCEL test score) and Wealth Index (ENCASEH)

This section uses baseline ENLACE test scores and the wealth index computed with ENCASEH data to explore whether there are heterogeneous impacts of the Urban Model across students of diverse academic ability and wealth. Results are presented (by gender) in Figures A6.1-A6.2 for academic ability, and Figures A6.3 – A6.4 for wealth.

Our measure of ability is the ENLACE test score in 7th grade. We construct percentile dummies of the internally standardized ENLACE scores and include an interaction of the treatment variable, the time dummy and a dummy equal to one if the ENLACE percentile was equal to X (where $X = 99, 98 \ldots 1$) and to zero otherwise. Results are presented graphically on the right-hand-side panel of Figures A6.1 and A6.2. The vertical axis represents the coefficient estimates of the triple interaction effect and on the horizontal axis are the ENLACE percentiles. The left-hand-side panel of the same figure illustrates the probability of graduating from high school as a function of the same ENLACE percentiles. Results are presented for ENLACE language scores, ENLACE math scores, and for ENLACE total scores. We estimate effects for males and females separately. Two patterns arise from the analysis. First, the triple interaction effect is never significantly different from zero in any segment of the ENLACE distribution. In other words, the effect of the Urban Model on high school graduation appears to have been the same across different ability levels as measured by ENLACE. On the other hand, the 7th grade ENLACE score is positively associated to the likelihood of high school graduation, which validates the assumption of using this variable as a proxy for academic ability.

As a measure of wealth, we estimate a wealth index using principal components analysis of thirteen household characteristics. The variables include the size of the household, tenancy of dwelling, number of rooms, access to public services, and assets ownership. We used the first component where all the weights

were positive except for the domestic gas that was negative and very close to zero. With the index, we construct percentile dummies dividing the distribution into ten groups. Again, following the same procedure of the heterogeneity analysis by baseline academic ability, we estimate the difference-in-difference models, including a triple interaction with the wealth percentile dummies. Results are presented for all educational outcomes for females and males separately. On the left panel of Figures A6.3 and A6.4, we don't see any systematic correlation between educational outcomes and baseline wealth. On the right panel of the figures, as with academic ability, there is no evidence of heterogeneity in urban model effects by baseline wealth.

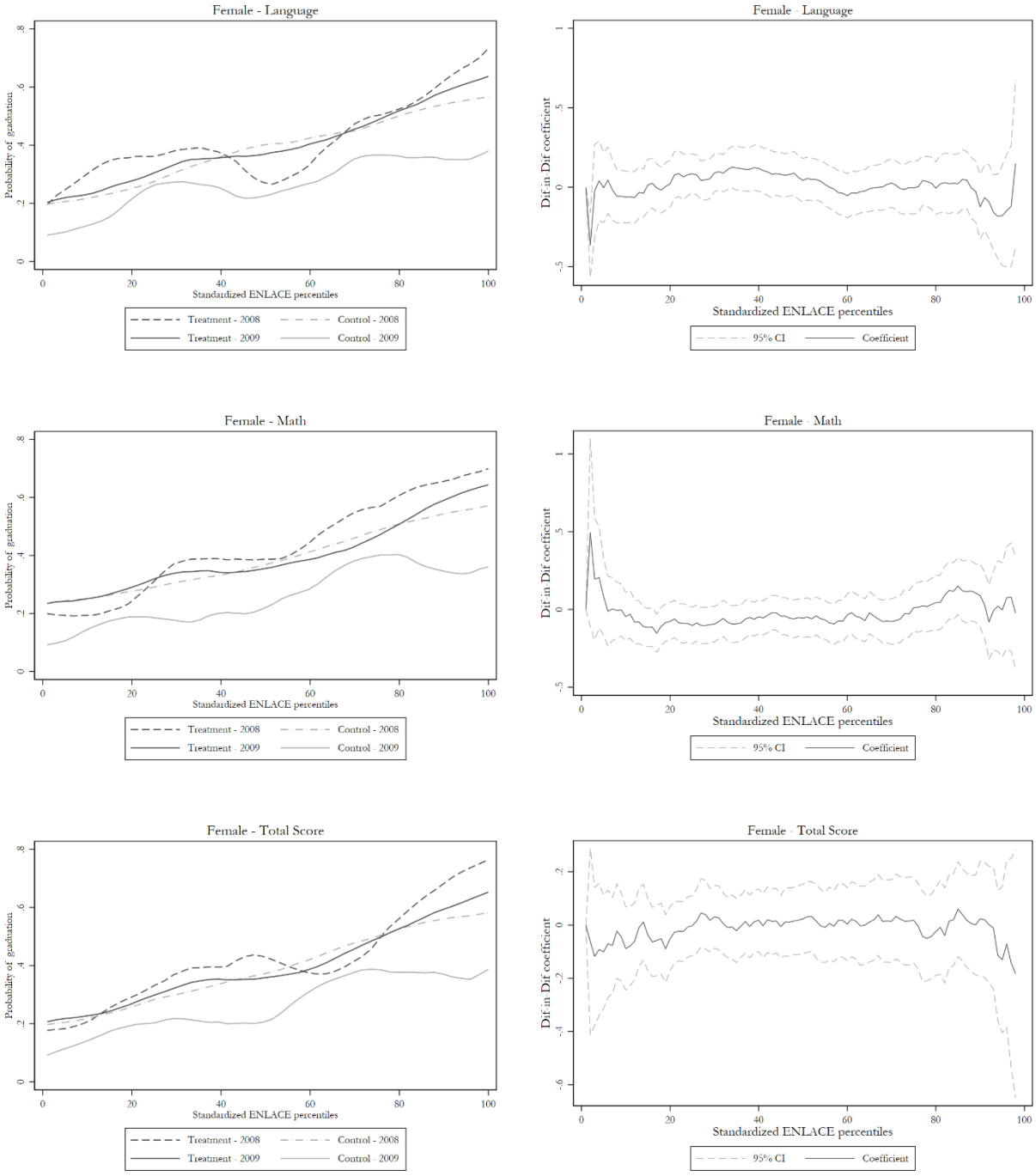
We find a positive association between a student's 7th grade ENLACE score and the likelihood of graduation, suggesting that this variable is a valid proxy of academic ability. However, there is no evidence of differential effects of larger grants based on academic ability, suggesting that larger grants improved educational achievement across the full range of student abilities.

Table A6.1 presents correlation coefficients between baseline wealth and years of education. The correlations are not different from zero for all groups with the exception of females in treatment localities, where we observe a positive correlation, significant at the 10 percent level. A positive relationship between wealth and education would tend to downward bias our estimated effects since new beneficiaries in control localities had higher baseline wealth compared to treatments. Furthermore, as with academic ability, we find no evidence of heterogeneous effects of larger grants conditional on baseline wealth. Together these results help us rule out the imbalance in baseline wealth as a likely alternative explanation for the effects of larger grants.

FigureA6.1: Heterogeneous effects of the Urban Model on Graduation Test by Baseline Academic Ability - Female

Panel A: Probability of on-time graduation (graduation test) by percentile on ENLACE test in first year of middle school

Panel B: Treatment effects by percentile on ENLACE test in first year of middle school

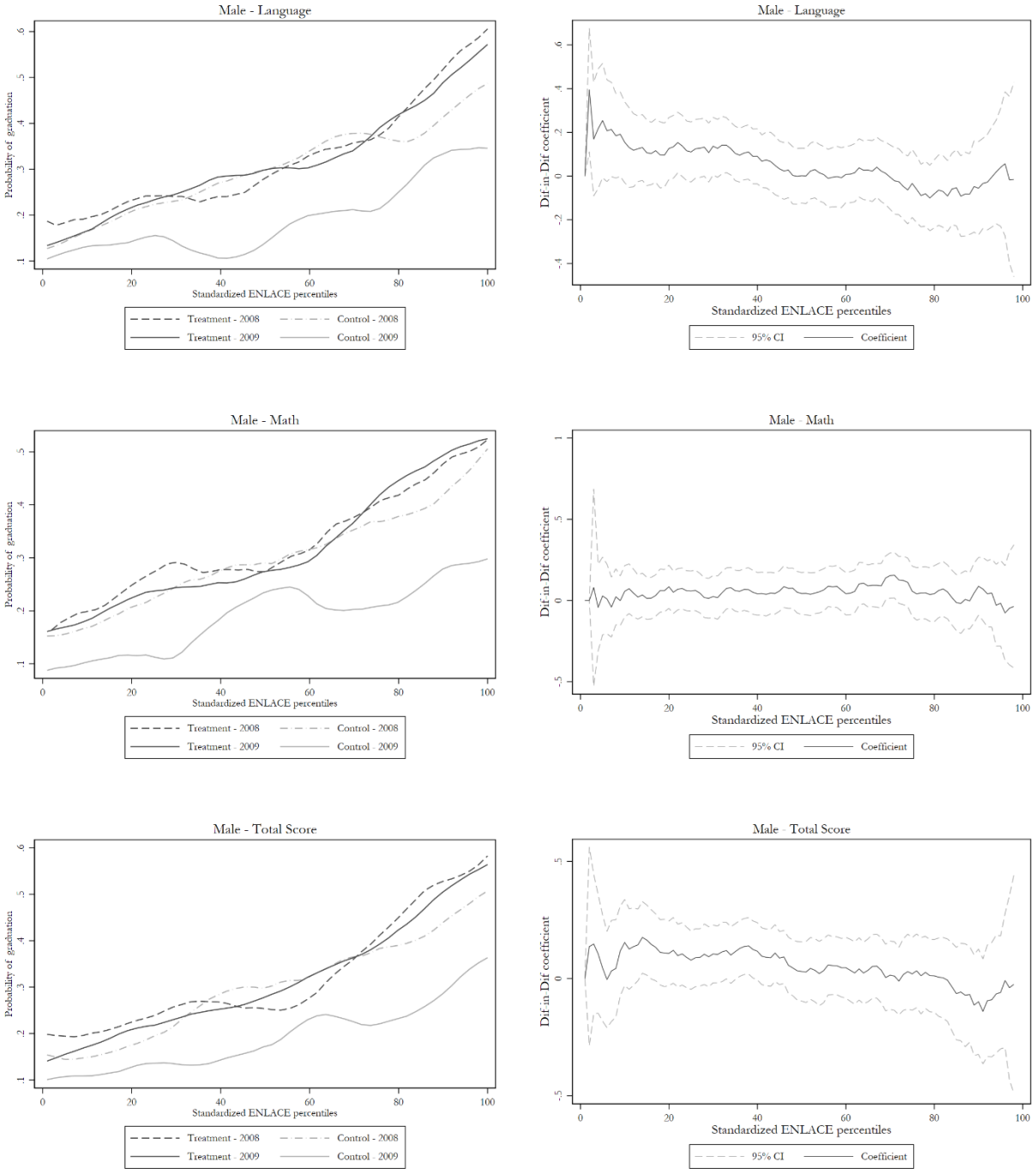


Note: Graduation test constitutes a proxy for [2016] 2009 cohort high school graduation. It is a dummy variable indicating those who took the ENLACE test, a mandatory exam administered at the end of student's last year of high school. The triple interaction term includes the treatment locality dummy, the enrollment cohort dummy, and a dummy for the ENLACE percentile. Data Source: Education outcomes proxies are constructed with Oportunidades Beneficiary Roster and ENLACE data. Baseline characteristics are from the ENCASEH.

Figure A6.2. Heterogeneous effects of the Urban Model on Graduation Test by Baseline Academic Ability - Male

Panel A: Probability of on-time graduation (graduation test) by percentile on ENLACE test in first year of middle school

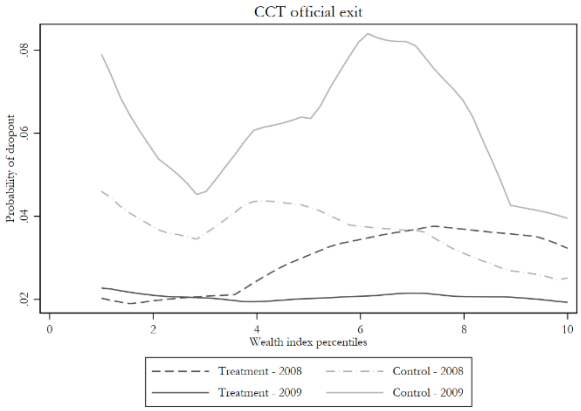
Panel B: Treatment effects by percentile on ENLACE test in first year of middle school

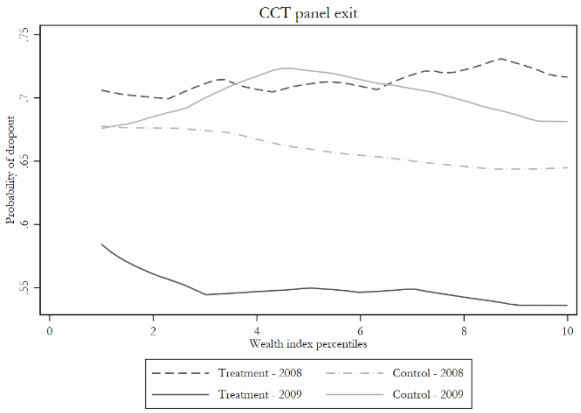


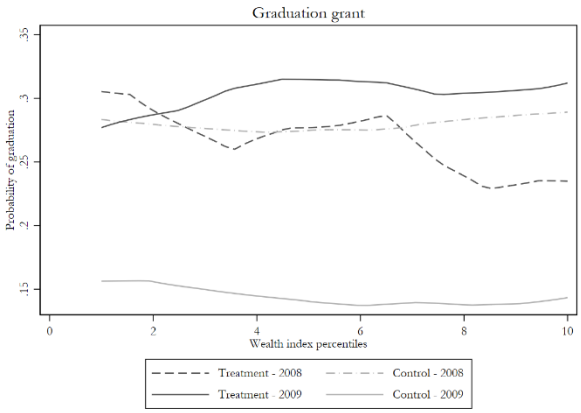
Note: Graduation test constitutes a proxy for [2016] 2009 cohort high school graduation. It is a dummy variable indicating those who took the ENLACE test, a mandatory exam administered at the end of student's last year of high school. The triple interaction term includes the treatment locality dummy, the enrollment cohort dummy, and a dummy for the ENLACE percentile. Data Source: Education outcomes proxies are constructed with Oportunidades Beneficiary Roster and ENLACE data. Baseline characteristics are from the ENCASEH.

FigureA6.3: Heterogeneous effects of the Urban Model on Education Outcomes by Baseline Wealth Index - Female

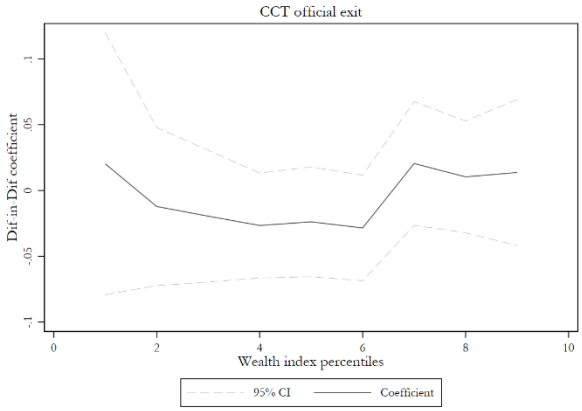
Panel A: Outcome variable by percentile on baseline wealth index

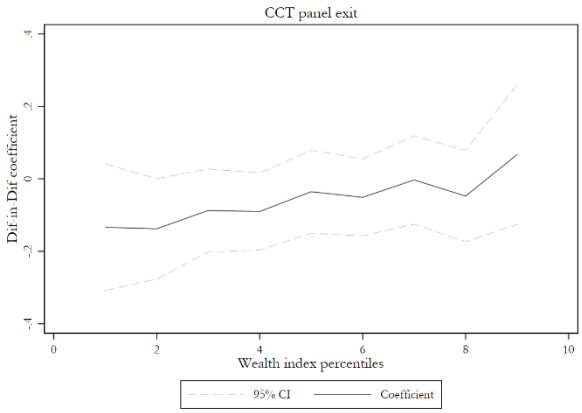


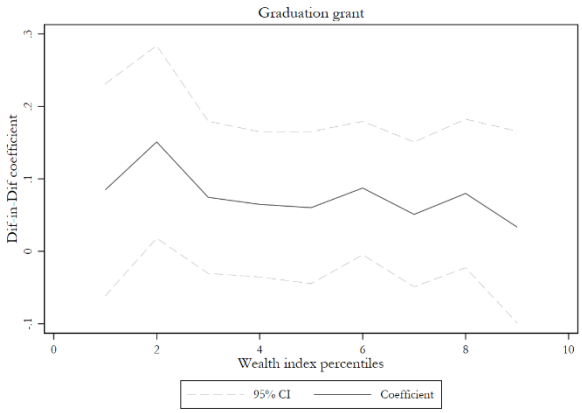


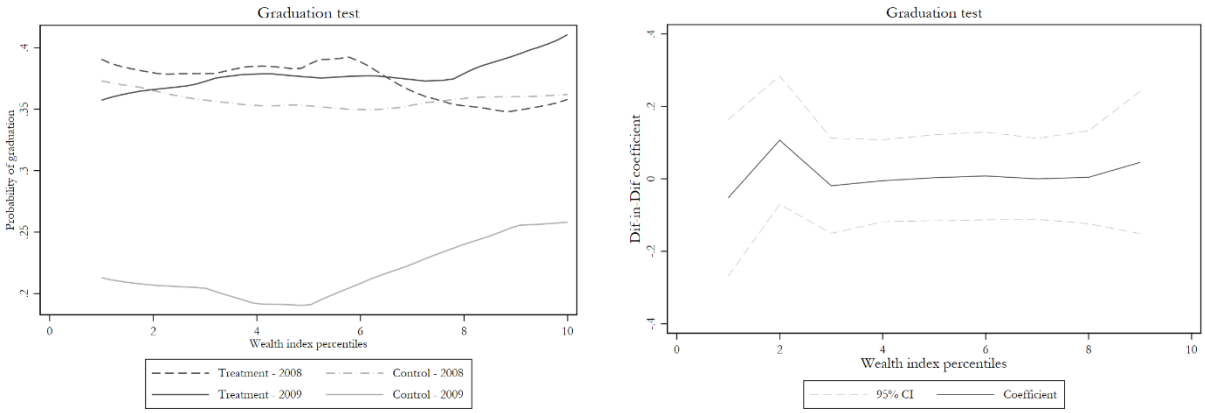


Panel B: Urban model heterogeneous effects by percentile on baseline wealth index







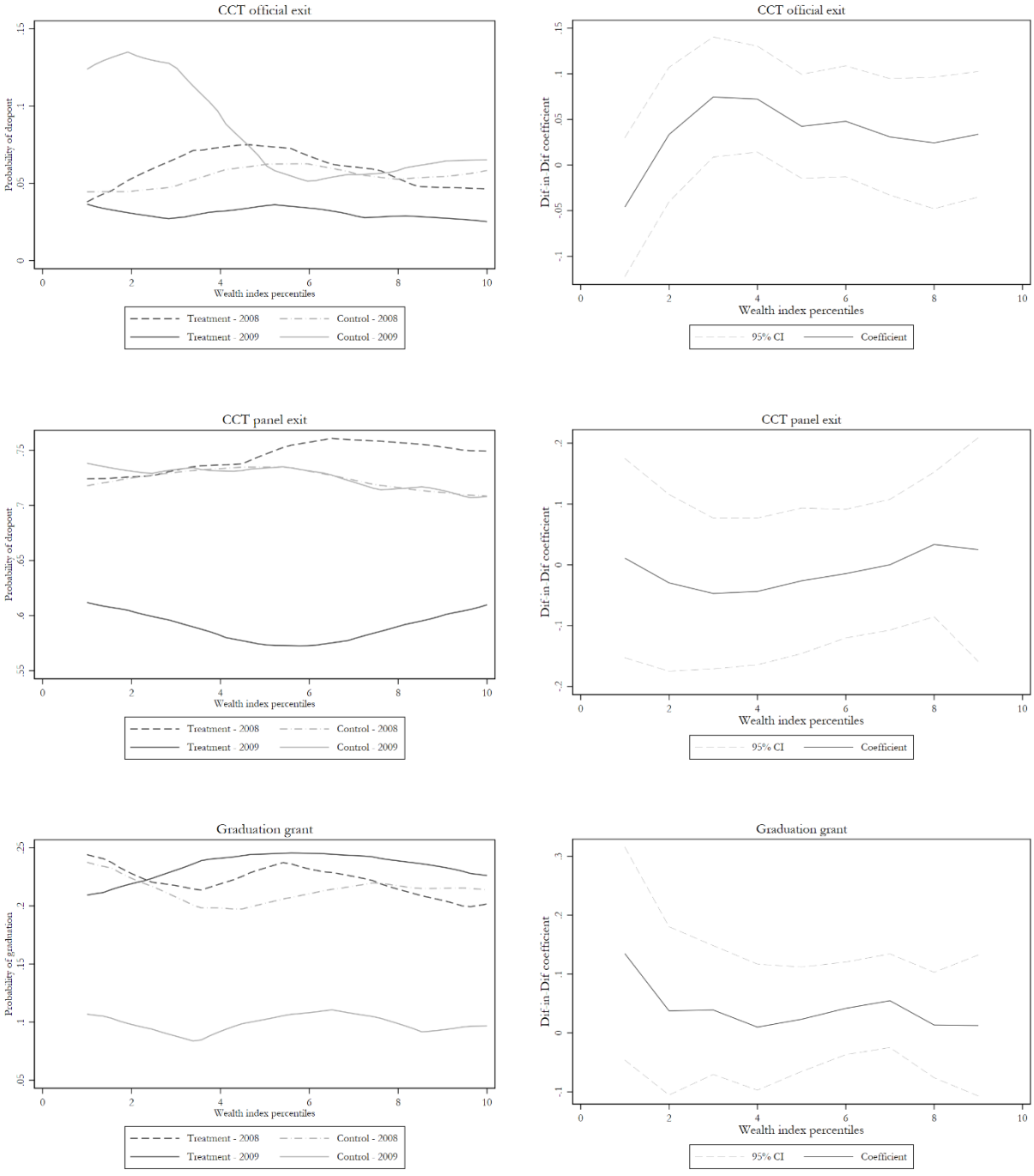


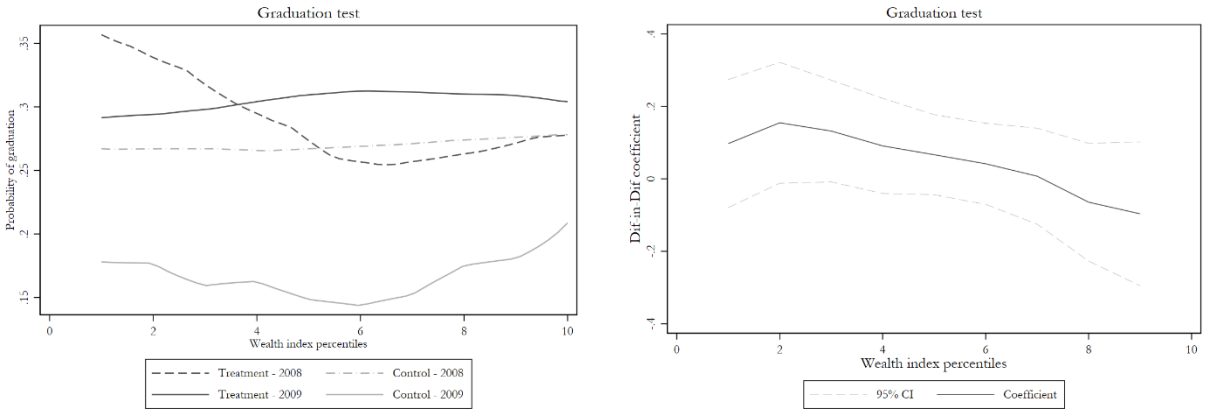
Note: The triple interaction term includes the treatment locality dummy, the enrollment cohort dummy, and a dummy for the wealth percentile. Data Source: Education outcomes proxies are constructed with Oportunidades Beneficiary Roster and ENLACE data. Baseline characteristics are from the ENCASEH.

Figure A6.4: Heterogeneous effects of the Urban Model on Education Outcomes by Baseline Wealth Index - Male

Panel A: Outcome variable by percentile on baseline wealth index

Panel B: Urban model heterogeneous effects by percentile on baseline wealth index





Note: The triple interaction term includes the treatment locality dummy, the enrollment cohort dummy, and a dummy for the wealth percentile. Data Source: Education outcomes proxies are constructed with Oportunidades Beneficiary Roster and ENLACE data. Baseline characteristics are from the ENCASEH.

Table A6.1: Regression Coefficients of wealth on Education Years

	Females		Males	
	T	C	T	C
2008 Cohort	-0.022	-0.005	0.056	-0.007
	(0.069)	(0.022)	(0.062)	(0.027)
2009 Cohort	0.049*	0.017	0.016	0.085
	(0.028)	(0.057)	(0.023)	(0.062)

Note: * significant at 10%, ** significant at 5%, *** significant at 1%. Standard errors (in parenthesis) clustered-robust at the locality level. Years of education are imputed using the Roster Dropout, Graduation Grant and Graduation Test outcomes, which in turn are constructed from Oportunidades Beneficiary Roster and ENLACE data. Each coefficient is estimated using a separate regression of baseline wealth index on years of education for each cohort, locality type and gender.

Section A7. Falsification and Robustness Checks

This section presents several falsification and robustness exercises. The findings strongly support our main results. For all robustness checks, we used the difference-in-differences specification described in the paper, including all control variables, sex, age, parents' education and household characteristics, except where specified. Standard errors are robust and clustered at the locality level.

Table A7.1 shows the primary model's results controlling for the wealth index instead of the components of the wealth index. Results are robust to this specification. The magnitudes of the effect have no significant changes.

Table A7.2 shows the results of a falsification test using a "false treatment" assigned to the 2008 pre-intervention cohort in treatment localities and taking the 2007 cohort as a baseline group. In all cases but one, the "false treatment" variable is not significantly different from zero, and for the case of graduation tests in the female sub-sample, the estimated coefficient runs in the direction opposite to the effects detected in the main analysis. Table A7.3 shows robustness checks for the exclusion of different groups of control variables. Results are all highly robust to the inclusion/exclusion of controls. In table A7.4, we restricted the analysis to localities present in the sample for both cohorts (2008 and 2009). This sample consists of 226 localities that had new beneficiaries in 7th grade in 2008 and 2009 (117 in the control group and 109 in the treatment group).

Tables A7.5 to A7.7 present three alternative analysis strategies that control for the selection of Urban Model localities. Table A7.5 presents the results of an Inverse Probability Weighting (IPW) model where the propensity score was estimated using locality characteristics. Specifically, the selection criteria of the urban model (coverage gap), the 2005 population and the number of beneficiaries from 2000 (when the program started to include urban localities) until 2008 (one year before the treatment starts).

The weights were constructed in the following way:

$$ATE\ weight = \begin{cases} \frac{1}{p(x)}\ if\ treated \\ \frac{1}{1-p(x)}\ if\ control \end{cases}$$

Table A7.6 estimates treatment effects using the 100 treated and comparison localities with the estimated coverage gaps closest to zero (the selection threshold). Furthermore, in Table A7.7, we implemented a one to one match with the nearest neighbor by locality population. For this match, we took each treated locality and matched it with the nearest control locality in terms of 2005 population without replacement. The match resulted in 166 pairs (80 treated localities were off the common support) for which we estimate the dif in dif main model.

Finally, in Table A7.8 we attempted to estimate effects using the entire student population (Oportunidades and non-Oportunidades) in urban areas. For this analysis, we estimate a proxy of being enrolled in 8th grade and a proxy of graduation. To calculate the proxies, we use 7th-grade ENLACE data as a baseline and its merge by CURP with the ENLACE test for 8th-grade and for last year of high school (12^{th} grade) as our outcome variables. We estimated the dif in dif main model and found no effects on enrollment in 8th grade or 12^{th} grade. The estimated coefficients for both outcomes are small and very close to zero. Moreover, when we restricted the sample to only public schools, where most of the Oportunidades beneficiaries are enrolled, the coefficients and standard errors are similar. New Oportunidades beneficiaries represented approximately 1% of the entire student population, so effects are likely to be diluted when analyzing the entire student population in treatment and control localities that we were able to merge using CURPs. On the other hand, the absence of a treatment effect on a majority (99%) untreated population is akin to an additional falsification test.

Table A7.1. Controlling by the wealth index

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Women				Men			
	Official dropout	Roster dropout	Graduation grant	Graduation test	Official dropout	Roster dropout	Graduation grant	Graduation test
Panel A. Dif-in-Dif Model								
Treatment locality*Enrollment cohort	-0.031***	-0.179***	0.156***	0.129***	-0.049***	-0.143***	0.115***	0.104***
	(0.010)	(0.031)	(0.032)	(0.034)	(0.013)	(0.030)	(0.028)	(0.036)
Treatment locality	-0.009	0.043*	-0.009	0.021	0.003	0.022	0.005	0.015
	(0.008)	(0.026)	(0.027)	(0.030)	(0.011)	(0.027)	(0.024)	(0.029)
Enrollment cohort	0.025***	0.028	-0.128***	-0.130***	0.024***	-0.004	-0.107***	-0.095***
	(0.007)	(0.020)	(0.018)	(0.018)	(0.008)	(0.016)	(0.014)	(0.023)
Price elasticity of demand for education	-2.80	-1.00	2.26	1.43	-2.77	-0.66	1.99	1.38
Control mean	0.041	0.666	0.256	0.333	0.059	0.722	0.193	0.252
Observations	9,802	9,802	9,802	8,217	9,616	9,616	9,616	8,274
Pre-trends p-value	0.542	0.243	0.752	0.128	0.006	0.673	0.990	0.620
R-squared	0.014	0.071	0.054	0.075	0.018	0.068	0.044	0.056

Note: * significant at 10%, ** significant at 5%, *** significant at 1%. Standard errors (in parenthesis) clustered-robust at the locality level. All regressions include sex, age, parents' education and wealth index. Enrollment cohort equals 1 for the 2009 cohort and 0 for the 2008 cohort, treatment equals 1 for to-be-treated localities and 0 otherwise. Interaction term (treatment locality*enrollment cohort) equals 1 for individuals enrolled in 2009 in to be-treated localities. Columns (4) and (8) present results only for the students with CURP.

Table A7.2. Falsification Test (2008-2007 pre-treatment period), by gender

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Female				Male			
	Official dropout	Roster dropout	Graduation grant	Graduation test	Official dropout	Roster dropout	Graduation grant	Graduation test
Panel A. Dif-in-Dif Model								
Treatment locality*2009 cohort	-0.008	0.045	-0.031	-0.075**	-0.012	-0.021	0.034	0.018
	(0.018)	(0.034)	(0.033)	(0.036)	(0.022)	(0.034)	(0.032)	(0.038)
Treatment locality	0.001	0.010	0.014	0.095***	0.013	0.045	-0.030	-0.003
	(0.017)	(0.031)	(0.026)	(0.031)	(0.021)	(0.033)	(0.029)	(0.034)
2009 cohort	-0.021	-0.045***	0.039**	0.030	-0.020	-0.010	-0.000	-0.016
	(0.016)	(0.015)	(0.017)	(0.021)	(0.021)	(0.021)	(0.021)	(0.022)
Panel B. Hazard Model								
Hazard Ratio 20085 (treatment)	1.188***	0.899	0.967	1.068	1.122*	1.142	1.072	1.088
	(0.076)	(0.226)	(0.114)	(0.098)	(0.071)	(0.231)	(0.135)	(0.124)
Control mean	0.043	0.673	0.267	0.345	0.062	0.725	0.213	0.276
Observations	6,312	6,312	6,312	5,330	6,302	6,302	6,302	5,507
R-squared	0.016	0.062	0.056	0.089	0.019	0.050	0.038	0.046

Note: * significant at 10%, ** significant at 5%, *** significant at 1%. Standard errors (in parenthesis) clustered-robust at the locality level. All regressions include sex, age, parents' education and household characteristics. Enrollment cohort equals 1 for the 2008 cohort and 0 for the 2007 cohort, treatment equals 1 for to-be-treated localities and 0 otherwise. Interaction term (treatment locality*enrollment cohort) equals 1 for individuals enrolled in 2008 in to be-treated localities. Columns (4) and (8) present results only for the students with CURP.

Table A7.3: Exclusion of control variables

PANEL A: Female – Dropout proxys

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Official dropout				Roster dropout			
	Panel A. Dif-in-Dif Model							
Treatment locality*2009 cohort	-0.034***	-0.032***	-0.031***	-0.031***	-0.199***	-0.183***	-0.178***	-0.179***
	(0.010)	(0.010)	(0.010)	(0.010)	(0.034)	(0.032)	(0.032)	(0.031)
Treatment locality	-0.007	-0.008	-0.009	-0.009	0.054*	0.042	0.038	0.043*
	(0.008)	(0.008)	(0.008)	(0.008)	(0.028)	(0.026)	(0.025)	(0.026)
2009 cohort	0.025***	0.024***	0.024***	0.025***	0.038*	0.029	0.029	0.028
	(0.007)	(0.007)	(0.007)	(0.007)	(0.021)	(0.021)	(0.020)	(0.020)
	Panel B. Hazard Model							
Hazard Ratio 20095 (treatment)	0.704***	0.890**	0.901**	0.900**	0.330***	0.464***	0.483***	0.492***
	(0.049)	(0.043)	(0.042)	(0.045)	(0.057)	(0.070)	(0.074)	(0.077)
Age	NO	YES	YES	YES	NO	YES	YES	YES
Parents' Education	NO	NO	YES	YES	NO	NO	YES	YES
Household Characteristics	NO	NO	NO	YES	NO	NO	NO	YES
Control mean	0.0411	0.0411	0.0411	0.0411	0.666	0.666	0.666	0.666
Observations	9,802	9,802	9,802	9,802	9,802	9,802	9,802	9,802
R-squared	0.005	0.010	0.011	0.014	0.016	0.053	0.066	0.071

Note: * significant at 10%, ** significant at 5%, *** significant at 1%. Standard errors (in parenthesis) clustered-robust at the locality level. Official dropout=1 when a student leaves the Oportunidades program due to non-compliance with the school enrollment condition based on official program registries and is reported for middle school only (7th-9th grade). Roster dropout =1 when a student leaves the program for any reason and is reported for middle school and 10th grade.

PANEL B: Female – Graduation proxys

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Graduation grant				Graduation test			
	Panel A. Dif-in-Dif Model							
Treatment locality*2009 cohort	0.172***	0.160***	0.156***	0.156***	0.141***	0.128***	0.123***	0.129***
	(0.035)	(0.033)	(0.032)	(0.032)	(0.035)	(0.033)	(0.033)	(0.034)
Treatment locality	-0.015	-0.006	-0.003	-0.009	0.014	0.026	0.030	0.021
	(0.030)	(0.027)	(0.027)	(0.027)	(0.032)	(0.030)	(0.030)	(0.030)
2009 cohort	- 0.136***	- 0.130***	- 0.130***	- 0.128***	- 0.137***	- 0.130***	- 0.131***	- 0.130***
	(0.020)	(0.020)	(0.020)	(0.018)	(0.018)	(0.018)	(0.018)	(0.018)
	Panel B. Hazard Model							
Hazard Ratio 20095 (treatment)	2.193***	2.173***	2.166***	2.130***	1.708***	1.699***	1.702***	1.706***
	(0.362)	(0.362)	(0.356)	(0.341)	(0.149)	(0.143)	(0.144)	(0.146)
Age	NO	YES	YES	YES	NO	YES	YES	YES
Parents' Education	NO	NO	YES	YES	NO	NO	YES	YES
Household Characteristics	NO	NO	NO	YES	NO	NO	NO	YES
Control mean	0.256	0.256	0.256	0.256	0.333	0.333	0.333	0.333
Observations	9,802	9,802	9,802	9,802	8,217	8,217	8,217	8,217
R-squared	0.009	0.035	0.048	0.054	0.008	0.050	0.070	0.075

Note: * significant at 10%, ** significant at 5%, *** significant at 1%. Standard errors (in parenthesis) clustered-robust at the locality level. Graduation grant =1 when the "Jovenes con Oportunidades" grant is claimed upon providing proof of graduation. Graduation test =1 if the student took the ENLACE test, a mandatory exam administered at the end of the school year in 12th grade.

PANEL C: Male – Dropout proxys

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Official dropout				Roster dropout			
	Panel A. Dif-in-Dif Model							
Treatment locality*2009 cohort	-0.050***	-0.046***	-0.045***	-0.049***	-0.155***	-0.133***	-0.136***	-0.143***
	(0.013)	(0.013)	(0.013)	(0.013)	(0.030)	(0.029)	(0.030)	(0.030)
Treatment locality	0.001	-0.001	-0.002	0.003	0.023	0.012	0.010	0.022
	(0.011)	(0.011)	(0.011)	(0.011)	(0.026)	(0.026)	(0.026)	(0.027)
2009 cohort	0.025***	0.024***	0.024***	0.024***	0.004	-0.005	-0.003	-0.004
	(0.008)	(0.008)	(0.008)	(0.008)	(0.016)	(0.016)	(0.016)	(0.016)
	Panel B. Hazard Model							
Hazard Ratio 20095 (treatment)	0.721***	0.850***	0.832***	0.813***	0.375***	0.447***	0.441***	0.441***
	(0.037)	(0.051)	(0.044)	(0.044)	(0.060)	(0.060)	(0.059)	(0.062)
Age	NO	YES	YES	YES	NO	YES	YES	YES
Parents' Education	NO	NO	YES	YES	NO	NO	YES	YES
Household Characteristics	NO	NO	NO	YES	NO	NO	NO	YES
Control mean	0.0594	0.0594	0.0594	0.0594	0.722	0.722	0.722	0.722
Observations	9,616	9,616	9,616	9,616	9,616	9,616	9,616	9,616
R-squared	0.006	0.012	0.014	0.018	0.019	0.053	0.064	0.068

Note: * significant at 10%, ** significant at 5%, *** significant at 1%. Standard errors (in parenthesis) clustered-robust at the locality level. Official dropout=1 when a student leaves the Oportunidades program due to non-compliance with the school enrollment condition based on official program registries and is reported for middle school only (7th-9th grade). Roster dropout =1 when a student leaves the program for any reason and is reported for middle school and 10th grade.

PANEL D: Male – Graduation proxys

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Graduation grant				Graduation test			
	Panel A. Dif-in-Dif Model							
Treatment locality*2009 cohort	0.125***	0.109***	0.109***	0.115***	0.114***	0.096***	0.098***	0.104***
	(0.028)	(0.028)	(0.028)	(0.028)	(0.036)	(0.036)	(0.036)	(0.036)
Treatment locality	0.007	0.015	0.017	0.005	0.019	0.027	0.027	0.015
	(0.025)	(0.024)	(0.024)	(0.024)	(0.030)	(0.030)	(0.030)	(0.029)
2009 cohort	- 0.114***	- 0.108***	- 0.109***	- 0.107***	- 0.101***	- 0.094***	- 0.097***	- 0.095***
	(0.014)	(0.015)	(0.015)	(0.014)	(0.023)	(0.022)	(0.022)	(0.023)
	Panel B. Hazard Model							
Hazard Ratio 20095 (treatment)	2.423***	2.333***	2.358***	2.297***	1.786***	1.721***	1.738***	1.710***
	(0.333)	(0.326)	(0.329)	(0.313)	(0.224)	(0.209)	(0.210)	(0.216)
Age	NO	YES	YES	YES	NO	YES	YES	YES
Parents' Education	NO	NO	YES	YES	NO	NO	YES	YES
Household Characteristics	NO	NO	NO	YES	NO	NO	NO	YES
Control mean	0.193	0.193	0.193	0.193	0.252	0.252	0.252	0.252
Observations	9,616	9,616	9,616	9,616	8,274	8,274	8,274	8,274
R-squared	0.007	0.030	0.040	0.044	0.006	0.038	0.049	0.056

Note: * significant at 10%, ** significant at 5%, *** significant at 1%. Standard errors (in parenthesis) clustered-robust at the locality level. Graduation grant =1 when the "Jovenes con Oportunidades" grant is claimed upon providing proof of graduation. Graduation test =1 if the student took the ENLACE test, a mandatory exam administered at the end of the school year in 12th grade.

Table A7.4: Localities in the sample both years

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Female				Male			
	Official Dropout	Roster dropout	Graduation grant	Graduation test	Official dropout	Roster dropout	Graduation grant	Graduation test
Treatment locality*2009 cohort	-0.029***	-0.166***	0.147***	0.113***	-0.047***	-0.130***	0.115***	0.105***
	(0.010)	(0.032)	(0.032)	(0.035)	(0.013)	(0.032)	(0.029)	(0.038)
Treatment locality	-0.011	0.037	-0.001	0.030	0.001	0.019	0.011	0.019
	(0.009)	(0.026)	(0.027)	(0.030)	(0.011)	(0.027)	(0.024)	(0.029)
2009 cohort	0.021***	0.024	-0.122***	-0.125***	0.022***	-0.010	-0.102***	-0.091***
	(0.007)	(0.020)	(0.018)	(0.018)	(0.008)	(0.016)	(0.014)	(0.023)
Control mean	0.042	0.669	0.251	0.327	0.061	0.727	0.187	0.247
Observations	7,043	7,043	7,043	5,888	6,942	6,942	6,942	5,987
R-squared	0.019	0.071	0.060	0.083	0.018	0.061	0.045	0.053

Note: * significant at 10%, ** significant at 5%, *** significant at 1%. Standard errors (in parenthesis) clustered-robust at the locality level. Official dropout=1 when a student leaves the Oportunidades program due to non-compliance with the school enrollment condition based on official program registries and is reported for middle school only (7th-9th grade). Roster dropout =1 when a student leaves the program for any reason and is reported for middle school and 10th grade. Graduation grant =1 when the "Jovenes con Oportunidades" grant is claimed upon providing proof of graduation. Graduation test =1 if the student took the ENLACE test, a mandatory exam administered at the end of the school year in 12th grade.

Table A7.5: IPW ATE weights correction

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Female				Male			
	Official Dropout	Roster dropout	Graduation grant	Graduation test	Official dropout	Roster dropout	Graduation grant	Graduation test
Treatment locality*2009 cohort	-0.057***	-0.161***	0.121***	0.126***	-0.034***	-0.138***	0.136***	0.143***
	(0.021)	(0.031)	(0.035)	(0.028)	(0.012)	(0.029)	(0.021)	(0.036)
Treatment locality	0.017	0.049***	-0.017	-0.004	-0.007	0.051***	-0.043**	-0.056*
	(0.015)	(0.018)	(0.020)	(0.026)	(0.010)	(0.017)	(0.021)	(0.032)
2009 cohort	0.022***	0.011	-0.111***	-0.125***	0.015	-0.012	-0.111***	-0.086***
	(0.008)	(0.026)	(0.024)	(0.021)	(0.011)	(0.018)	(0.016)	(0.030)
Control mean	0.041	0.665	0.256	0.334	0.059	0.723	0.193	0.252
Observations	9,770	9,770	9,770	8,193	9,590	9,590	9,590	8,253
R-squared	0.043	0.095	0.070	0.108	0.018	0.066	0.052	0.076

Note: * significant at 10%, ** significant at 5%, *** significant at 1%. Standard errors (in parenthesis) clustered-robust at the locality level. Official dropout=1 when a student leaves the Oportunidades program due to non-compliance with the school enrollment condition based on official program registries and is reported for middle school only (7th-9th grade). Roster dropout =1 when a student leaves the program for any reason and is reported for middle school and 10th grade. Graduation grant =1 when the "Jovenes con Oportunidades" grant is claimed upon providing proof of graduation. Graduation test =1 if the student took the ENLACE test, a mandatory exam administered at the end of the school year in 12th grade.

Table A7.6: Trimming on closest 100 localities above and below eligibility threshold

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Female				Male			
	Official Dropout	Roster dropout	Graduation grant	Graduation test	Official dropout	Roster dropout	Graduation grant	Graduation test
Treatment locality*2009 cohort	-0.049**	-0.143**	0.133**	0.192**	-0.044*	-0.184***	0.119**	0.135**
	(0.022)	(0.069)	(0.066)	(0.074)	(0.023)	(0.065)	(0.058)	(0.063)
Treatment locality	0.017	0.084*	-0.041	-0.041	-0.007	0.048	-0.011	0.031
	(0.014)	(0.047)	(0.054)	(0.061)	(0.014)	(0.033)	(0.039)	(0.046)
2009 cohort	0.017	-0.042	-0.093**	-0.164***	0.036*	0.031	-0.118***	-0.164***
	(0.016)	(0.053)	(0.041)	(0.046)	(0.019)	(0.056)	(0.044)	(0.044)
Control mean	0.026	0.6	0.33	0.406	0.04	0.657	0.271	0.315
Observations	2,648	2,648	2,648	2,234	2,534	2,534	2,534	2,169
R-squared	0.016	0.084	0.064	0.087	0.027	0.073	0.051	0.069

Note: * significant at 10%, ** significant at 5%, *** significant at 1%. Standard errors (in parenthesis) clustered-robust at the locality level. Official dropout=1 when a student leaves the Oportunidades program due to non-compliance with the school enrollment condition based on official program registries and is reported for middle school only (7th-9th grade). Roster dropout =1 when a student leaves the program for any reason and is reported for middle school and 10th grade. Graduation grant =1 when the "Jovenes con Oportunidades" grant is claimed upon providing proof of graduation. Graduation test =1 if the student took the ENLACE test, a mandatory exam administered at the end of the school year in 12th grade.

Table A7.7: One-to-one match on population

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Female				Male			
	Official Dropout	Roster dropout	Graduation grant	Graduation test	Official dropout	Roster dropout	Graduation grant	Graduation test
Treatment locality*2009 cohort	-0.038**	-0.160***	0.129***	0.154***	-0.053***	-0.090**	0.119***	0.111**
	(0.017)	(0.055)	(0.047)	(0.051)	(0.019)	(0.037)	(0.036)	(0.056)
Treatment locality	-0.008	-0.038	0.083**	0.042	-0.005	-0.094***	0.053	0.041
	(0.016)	(0.051)	(0.042)	(0.049)	(0.018)	(0.036)	(0.034)	(0.052)
2009 cohort	0.024***	0.029	-0.127***	-0.129***	0.024***	-0.004	-0.107***	-0.095***
	(0.007)	(0.020)	(0.019)	(0.018)	(0.008)	(0.016)	(0.015)	(0.022)
Control mean	0.041	0.666	0.256	0.333	0.059	0.722	0.193	0.252
Observations	6,575	6,575	6,575	5,554	6,400	6,400	6,400	5,527
R-squared	0.020	0.086	0.072	0.086	0.022	0.089	0.058	0.060

Note: * significant at 10%, ** significant at 5%, *** significant at 1%. Standard errors (in parenthesis) clustered-robust at the locality level. Official dropout=1 when a student leaves the Oportunidades program due to non-compliance with the school enrollment condition based on official program registries and is reported for middle school only (7th-9th grade). Roster dropout =1 when a student leaves the program for any reason and is reported for middle school and 10th grade. Graduation grant =1 when the "Jovenes con Oportunidades" grant is claimed upon providing proof of graduation. Graduation test =1 if the student took the ENLACE test, a mandatory exam administered at the end of the school year in 12th grade.

Table A7.8: Locality level estimates using ENLACE

Panel A. All Schools

VARIABLES	Female		Male	
	8th grade test	Graduation test	8th grade test	Graduation test
Treatment locality*2009 cohort	-0.013	-0.004	-0.014*	-0.002
	(0.009)	(0.008)	(0.008)	(0.009)
Treatment locality	0.004	-0.030***	0.002	-0.051***
	(0.007)	(0.006)	(0.006)	(0.007)
2009 cohort	0.004	0.023*	0.007	0.026**
	(0.010)	(0.014)	(0.010)	(0.013)
Observations	932,324	932,324	936,053	936,053
R-squared	0.001	0.014	0.001	0.018

Panel B. Restricting Sample to Public Schools

VARIABLES	Female		Male	
	8th grade test	Graduation test	8th grade test	Graduation test
Treatment locality*2009 cohort	-0.011	-0.000	-0.013	0.001
	(0.009)	(0.008)	(0.009)	(0.008)
Treatment locality	0.002	-0.034***	-0.001	-0.054***
	(0.007)	(0.006)	(0.007)	(0.007)
2009 cohort	0.005	0.022	0.007	0.025**
	(0.010)	(0.014)	(0.010)	(0.013)
Observations	820,879	820,879	828,694	828,694
R-squared	0.001	0.005	0.001	0.007

Note: * significant at 10%, ** significant at 5%, *** significant at 1%. Standard errors (in parenthesis) clustered-robust at the locality level. Sample includes all students in treatment and control localities matched by CURP (approximately 1% are new Oportunidades Beneficiaries). Data Source: ENCEL.

A8. Conceptual Framework

In this section, we propose a simple model of the relationship between grant amounts and schooling. A household maximizes the net present value of its only-child consumption stream (c_t) by deciding whether to send her/him to school ($s_t = 1$) or to work ($s_t = 0$). If the child is sent to school, her/his current human capital level h_t will increase by a school quality parameter $\alpha(h_t)$. If the child is sent to work, her/his human capital will yield wages $w(h_t)$. To send a child to school, the household must spend a fixed cost m, partially subsidized by the government through the school grant τ.

The household solves:

$$\max_{C} \sum_{t=0}^{N} \beta^t c_t$$

$$subjet\ to: c_t + s_t(m - \tau) = (1 - s_t)w(h_t)$$

$$and: h_{t+1} = h_t + \alpha(h_t)s_t$$

Letting V represent future consumption stream given h, this is equivalent to choosing s_t such that:

$$\max_{s_t \in \{0,1\}} [-m + \tau + \beta V(h_t + \alpha(h_t))\ ;\ w(h_t) + \beta V(h_t)]$$

Let φ be the household policy function:

$$\varphi(h; m, \tau, w, \alpha) = \beta v(h) - w(h) - m + \tau$$

Where $v \equiv \beta[V(h_t + \alpha(h_t) - V(h_t)]$. For any level of h, the child will be sent to school ($\varphi > 1$) if the present value of the returns to studying outweighs the costs of doing so—opportunity and direct net costs.

A permanent increase in the school grant under the Urban Model implies that:

$$\frac{\Delta\varphi}{\Delta\tau} = 1 + \beta\Delta v$$

Thus, the likelihood of going to school would increase more than proportionally to a reduction in the cost of schooling, as long as the return to studying is positive. Notice also that, as v is an increasing function of α, $\frac{\Delta\varphi}{\Delta\tau}$ is an increasing function of school quality.

A9. Cost-benefit analysis

In this section we compare the estimated income from increased educational attainment to the marginal cost of increased scholarships under the Urban Model.[2] We estimate benefits as the additional income from the average increase of 0.831 years of schooling for females and 0.736 years of schooling for males (Table 2), assuming a return to schooling of 8 percent per year (Ordaz, 2007 and Morales-Ramos, 2011) and an income of 2.12 and 2.55 minimum salaries for middle and height school graduates, respectively.[3] In 2016, the minimum daily salary was $73.04 Mexican Pesos.[4] We assume that high school graduates do not continue to higher education, and work until a retirement age of 65, so benefits are accrued over 47 years.[5] The marginal cost of the scholarship is the present value (2016) of the difference between the Urban Model scholarships and the traditional grant scheme (Table 1).[6] Using the graduation test outcome as our preferred estimates (Table 3 columns 4 and 8 for women and men, respectively), and assuming a discount rate of 12 percent, we find that the benefit to cost ratio is 2.96 for females and 3.11 for males (Table A9.1). That is, the expected benefits in terms of labor market returns to increased education are around three times the cost of increasing the middle and high school grants by 27 percent and 30 percent for females and males, respectively. These results are robust to assuming half the total number of years of employment (benefit to cost ratio of 2.77 and 2.90 for females and males, respectively), and also hold when taking the bottom 95 percent confidence interval of the additional years of schooling attributed to the Urban Model (benefit to cost ratio of 2.10 and 2.31 for females and males, respectively). Robustness tests are presented in Table A9.2.

[2] A complete cost-benefit analysis including a full accounting of the Urban Model's benefits and costs is outside the scope of this paper. On the cost side, this would include the opportunity cost of increased middle and high school student's time in school, the marginal costs to the educational system for delivering additional years of schooling, and the potential effects on primary school students from the elimination of grants at that level, amongst others. Benefits include potential delays in fertility and other non-pecuniary benefits from increased educational attainment. Given that data are not available to inform the parameters required for a full accounting, we estimate a simple benefit to cost ratio of the expected labor market returns to increased education relative to the marginal cost of the increased grants. We assume no general equilibrium effects on wages in local markets.

[3] Survey of Labor Trajectories https://www.gob.mx/cms/uploads/attachment/file/98540/Presentacion-Trayectorias_Laborales.pdf accessed November 19, 2017.

[4] Minimum general salary as reported by the National Commission for Minimum Salary: http://www.conasami.gob.mx/pdf/salario_minimo/2016/historico_2016.pdf, accessed November 19, 2017.

[5] We assume that individuals work full time (22 days per month) starting at age 18 and until retirement at 65.

[6] We estimate the net present value of the increased grants under the urban model using grants corresponding to the period 2009-2015 and includes the graduation grant.

Table A9.1: Cost Effectiveness Analysis for Urban Model Cash Grants in Middle and High school

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Present value of Urban Model incremental transfers (2016). Interest rate = 12%.	**Estimated additional Schooling Years from Urban Model**	**Value of additional year of schooling (return of 8%; minimum salary in 2016 of 73.04 pesos per day (INEGI))**	**Yearly Return to Urban Model [2*3]**	**Years of Employment (18 to 65 years old) - assumes no continued education**	**Net present value of returns to Urban Model (2016). Discount rate = 12%.**	**Benefit/Cost Ratio [6/1]**
Expected return for beneficiary women (38.9% high school graduation)	$5,927.96	0.831	$3,556.21	$2,114.45	47	$17,534.80	2.96
Expected return for beneficiary men (30.6% high school graduation)	$5,293.92	0.736	$3,497.18	$1,982.95	47	$16,444.24	3.11

Table A9.2. Cost Effectiveness Sensitivity Analysis

	Sensitivity Analysis - NPV with half of employment years (23.5)	Benefit/Cost Ratio with 23.5 years of employment	Sensitivity Analysis - NPV with lower bound of estimated additional schooling years (95% CI)	Benefit/Cost Ratio at lower bound impact of 95% confidence interval of program impacts on education
Expected return for beneficiary women (38.9% high school graduation)	$16,391.91	2.77	$12,445.22	2.10
Expected return for beneficiary men (30.6% high school graduation)	$15,372.42	2.90	$12,238.62	2.31

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