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## Article

# Prospering through prospera: A dynamic model of CCT impacts on educational attainment and achievement in Mexico

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# Supplement to “Prospering through Prospera: A Dynamic Model of CCT Impacts on Educational Attainment and Achievement in Mexico”

Jere R. Behrman   Susan W. Parker   Petra E. Todd   Weilong Zhang

## A Data sources

This appendix contains some additional information about the sample sizes and about the data elements in the different surveys that we use. We also describe how we obtain the GIS location data used in estimating the school-choice model.

*The student survey:* Students answer questions related to their school and home life. They are asked about their own effort on school work in terms of how much attention they pay in class, whether they participate in class and how many hours they study each day. There are also questions about the home environment, for example, how many siblings they have.

*The parent survey:* For the parent survey, there are questions about the socioeconomic status and some questions about early childhood (such as whether the child attended preschool and whether parents read to the child when they were young). We use information on parents’ education, work status, on the household size, housing characteristics and on household assets.

*The geographic location data.* : In the *ENLACE* data, each school has a unique identifier. Several years of data also contain geographic data for each school, including the state, municipality and locality where the school is located. Mexico has 31 states and a federal district, and within these districts there are 2,448 municipalities. In the *ENLACE* test score data, there are schools recorded in all states, close to 2,000 municipalities and over 20,000 localities. (Escuelasmex (2018)) Given that the school IDs are constant over time, it is possible to use the years that contain geographic data, and create a database containing the vast majority of the schools and their respective locations. This database was merged with census data which allows us to link with information on the locality in which the school resides with longitude and latitude coordinates. We used R software to obtain

a measure of the distances between primary schools and between primary and secondary schools to determine the choice sets available to families given their location.

## A.1 Sample restrictions

Our initial sample consists of individuals who completed surveys in 2008, totaling 218,685 individuals. We then followed these steps:

1. We excluded individuals with abnormal test scores (scores below 100) and those whose ages fell outside the range of 7 to 17 or were missing. This resulted in a sample size of 215,709.
2. We removed individuals for whom *Prospera* status information was unavailable, leaving us with a sample of 192,372.
3. We excluded individuals whose lower-secondary school types were not categorized as general, telesecondary, or technical types, resulting in a sample size of 191,768.
4. Individuals who attended primary and secondary schools in different states were also removed from the sample, resulting in 189,604 individuals.
5. We eliminated students with missing grade information or test scores for more than one period. However, students missing test scores for only one period were retained, resulting in a remaining sample size of 187,425.
6. Observations lacking primary-school names or distance information were dropped, resulting in a remaining sample size of 186,692.
7. Individuals missing any of the key variables (age, gender, retention, urban status, cheating factor, region, internet access, computer access, first language, presence of father at home, presence of mother at home, and number of household members) were excluded. Some variables, such as parental education, household income, and parental working status, were allowed to have missing values. The final sample consisted of 177,103 individuals.

Our final sample consists of 177,103 unique individuals, and 997,019 individual-period observations, as presented in Table 1. To establish our baseline sample for estimation, we further excluded individuals whose propensity score fell within the bottom 1% ( $pscore < 0.0353$ , as described in the text). This resulted in a reduced sample size of 135,433 that was used in estimating our model. (We removed 458 *Prospera* students and 41,212 non-*Prospera* students based on this criterion.)

Table A1: Variables used from Census

Variable	Note	Name in database
Age	Age of subject	MX2010A_AGE
Enroll	School enrollment dummy (1 = yes, 2 = no)	MX2010A_SCHOOL
Inc	Income of individual for the last month	MX2010A_INCOME
HInc	Household's income from work	MX2010A_INCHOME
Wkhs	Number of hours worked in the last week	MX2010A_HRSWORK
Edu	Educational attainment (in years)	MX2010A_EDATTAIN
Gender	Gender; Male = 1, Female = 2	MX2010A_SEX
Empl	Employment status	MX2010A_EMPSTAT
Pps	Position at work	MX2010A_CLASSWK
Edu_Mom	Mother's Educational attainment (in years)	MX2010A_EDATTAIN_MOM
Edu_Dad	Father's Educational attainment (in years)	MX2010A_EDATTAIN_POP
Electricity	Access to electricity	MX2010A_ELECTRIC
PipWater	Access to piped water	MX2010A_PIPEDWTR
Internet	Access to the internet	MX2010A_INTERNET
Comp	Access to computer	MX2010A_COMPUTR
State	State code	GEO1_MX2010
Mun	Municipality code	GEO2_MX2010
Urban	Urban-rural status; 1 = rural, 2 = urban	URBAN

## A.2 Local wage imputation method

Our administrative test-score database does not contain wage information for students. We impute the potential wages that students could earn using data from the 2010 Mexican Census obtained through the IPUMS site (Ruggles et al. (2024)):

[https://international.ipums.org/international-action/sample\\_details/country/mx#tab\\_mx2010a](https://international.ipums.org/international-action/sample_details/country/mx#tab_mx2010a).

The census contains the age and gender, working status, school-enrollment status, and the wages earned for children across Mexico. It also includes other information such as the parents' schooling, family income and descriptive statistics about the home. Lastly, there is information on the municipality in which each household lives. The full list of variables that we use appears in Table A1. We exclude individuals whose age is  $<12$  or  $>20$  years old, as well as children/youth for whom the school-attendance status is undefined. We further exclude students who have already finished upper-secondary school (educational attainment levels  $\geq 13$ ).

We estimate a wage regression for the working children/youth sample. The dependent variable is hourly wage, which is calculated by monthly income (Inc) divided by 4 and divided by hours worked in the last week (Wkhs).<sup>53</sup> To account for selection into working in estimating the wage offer

<sup>53</sup>We trimmed the hourly wage distribution at the 99th quantile.

parameters, a Heckman (1979) selection model is estimated. The wage regression and labor-force-participation equations include age, a school-attendance indicator, educational attainment, parents' education, missing indicators for parents' education, urban-rural dummies, north-south dummies, and municipality dummies. In addition, variables representing family socioeconomic levels, such as family income (household income) and home infrastructure (home electricity access, home piped-water access, home internet access, home computer access) are used as exclusion restrictions that affect selection into working but not the wage offers directly.

Using the estimated coefficients from the probit estimation of the labor force participation equation, we form control functions for each student (the inverse Mills ratio  $\lambda$ ). The second-stage regression has hourly wages as the dependent variable, and regressions are done separately for girls and boys. The hourly wage specification includes municipality fixed effects, which allow for substantial regional variation. The results are reported in Table A2. We use the regression estimates to impute hourly wage offers to the children/youth in our analysis sample, based on their observed characteristics.

Table A2: Wage regression with Heckman-selection correction

Coefficient	Boys		Girls	
	Estimate	S.E.	Estimate	S.E.
Age	0.682***	(0.173)	0.593**	(0.239)
Enroll	5.109***	(1.346)	5.301***	(1.885)
Edu_mom_missing	-1.483	(1.517)	3.561	(2.438)
Edu_dad_missing	0.08	(1.317)	-0.051	(2.097)
Edu	0.394**	(0.175)	-0.459*	(0.279)
Edu_mom	-0.535***	(0.163)	0.389	(0.265)
Edu_dad	-0.190	(0.179)	-0.039	(0.291)
Urban	-0.096	(1.719)	5.753**	(2.442)
$\lambda$	0.023	(0.017)	-0.015	(0.029)
Age*Enroll	-0.252***	(0.081)	-0.292***	(0.111)
Age*Edu_mom_missing	0.08	(0.085)	-0.216	(0.135)
Age*Edu_dad_missing	0.006	(0.074)	0.001	(0.117)
Age*Edu	-0.014	(0.010)	0.042***	(0.015)
Age*Edu_mom	0.034***	(0.009)	-0.019	(0.015)
Age*Edu_dad	0.013	(0.010)	0.006	(0.016)
Age*Urban	0.038	(0.102)	-0.306**	(0.141)
Urban*Enroll	-2.634***	(0.786)	-3.666***	(1.104)
Urban*Edu_mom_missing	0.84	(0.943)	-2.197	(1.459)
Urban*Edu_dad_missing	0.081	(0.827)	0.105	(1.280)
Urban*Edu	-0.019	(0.110)	0.072	(0.169)
Urban*Edu_mom	0.229**	(0.097)	-0.203	(0.154)
Urban*Edu_dad	0.137	(0.106)	-0.021	(0.168)
North*Age	-0.585***	(0.156)	-0.302	(0.231)
North*Enroll	-4.866***	(1.170)	0.438	(1.743)
North*Edu_mom_missing	-0.161	(1.621)	-2.976	(2.625)
North*Edu_dad_missing	-0.092	(1.461)	-4.095*	(2.409)
North*Edu	-0.080	(0.187)	-0.301	(0.301)
North*Edu_mom	0.177	(0.159)	-0.504*	(0.259)
North*Edu_dad	0.113	(0.162)	-0.037	(0.260)
North*Urban	0.144	(0.124)	-0.341	(0.213)
Age*Enroll*Urban	0.128***	(0.047)	0.190***	(0.064)
Age*Edu_mom_missing*Urban	-0.012	(0.053)	0.162**	(0.081)
Age*Edu_dad_missing*Urban	-0.006	(0.047)	0.012	(0.072)
Age*Edu*Urban	0.0001	(0.006)	-0.007	(0.009)
Age*Edu_mom*Urban	-0.013**	(0.005)	0.013	(0.009)
Age*Edu_dad*Urban	-0.008	(0.006)	0.001	(0.009)
Age*Enroll*North	0.278***	(0.068)	-0.029	(0.099)
Age*Edu_mom_missing*North	0.021	(0.090)	0.159	(0.144)
Age*Edu_dad_missing*North	-0.002	(0.081)	0.21	(0.133)
Age*Edu*North	0.006	(0.010)	0.012	(0.016)
Age*Edu_mom*North	-0.007	(0.009)	0.028*	(0.014)
Age*Edu_dad*North	-0.007	(0.009)	0.001	(0.014)
Observation	174,905		76,978	
$R^2$	0.216		0.251	

Sample: Mexico 2010 Census. we exclude individuals whose age is  $< 20$  or  $> 12$ , and whose school attendance status is undefined. We further exclude students who have already finished high school (educational attainment levels  $\geq 13$ ). We defined a dummy variable  $Edu\_mom\_missing = 1$  if  $Edu\_mom$  is missing or unknown, a dummy variable  $Edu\_dad\_missing = 1$  if  $Edu\_dad$  is missing or unknown. And the variable North is also a binary variable whether the municipality is in the North or South region of Mexico (1 = North, 0 = South). The dependent variable is hourly wage, which is defined as the monthly income (Inc) divided by 4 times hours worked in the last week. The hourly wage is trimmed at the upper 99th quantile.  $\lambda$  is the inverse Mills ratio calculated from the first-stage probit regression. \*  $p < 0.1$ ; \*\*  $p < 0.05$ ; \*\*\*  $p < 0.01$

### A.3 *Prospera*-beneficiary propensity-score model

We estimate a probit model for the probability that a child/youth comes from a *Prospera*-beneficiary family. The precise eligibility criteria are not made public and they vary somewhat by geographic region. Eligibility is not income-based but is rather based on housing characteristics and demographics that are highly correlated with poverty. From the program administrators, we ascertained that the following characteristics are often used in determining eligibility: measures of overcrowding in the household, a demographic dependency index, sex of the household head, whether the household has access to social security (IMSS), number of children age 0-11 years, education of the household head, whether the house has a bathroom with water, type of floor in the home, whether the home has a gas stove, whether the house has a refrigerator, whether the house has a washing machine, whether the family has a vehicle and an indicator of rural/urban/semi-urban status. To estimate a probit model for the probability of being a *Prospera* beneficiary, we use variables from the context surveys that are equal to or are close proxies for the above known eligibility determinants. The percentage correctly classified under the model is 90%.

Table A3 shows the estimated coefficients from the model. The child being female makes it more likely that the family participates in *Prospera*. Also, having more siblings or a larger household increases the probability of being a beneficiary. Having higher income (>1500 pesos) makes it less likely to be a beneficiary. Higher education categories for the mother or father make it less likely that a family participates (the omitted category is less than primary education). If the mom works, the family is less likely to participate; but if the dad works more than 8 hours per day, the family is more likely to participate. A higher ratio of number of persons to number of rooms in the home increases the probability of being a participant. Car ownership, having drainage connected to a public system, having a refrigerator, owning a clothes washer, having garbage-collection service, having internet, having a tv, and having sanitary facilities in the home makes all make it less likely that the family participates in *Prospera*. Owning the home, having a dirt floor, having electricity (which is nearly universal), cooking and sleeping in the same room, and speaking an indigenous language, *ceteris paribus*, increases the participation probability. We allowed for item non-response by including indicator variables in the probit regression, but we excluded any observations for which both mother's and father's education information was missing. Thus, individuals were required to have parental survey information, in which the parental-education information was gathered.

Table A3: *Prospera*-participant propensity-score model (probit)

Coefficient	Estimate	Std. Error
intercept	0.642	0.037
female	-0.016	0.008
one sibling	0.086	0.021
2-3 siblings	0.324	0.020
4-5 siblings	0.515	0.021
6+ siblings	0.675	0.023
num siblings missing	0.503	0.034
father only present	0.029	0.024
mother only present	0.010	0.011
number total at home	0.013	0.002
num home missing.	0.108	0.036
family monthly income between 1500 and 29999	-0.165	0.009
family monthly income between 3000 and 7499	-0.385	0.011
family monthly income between 7500 and 14999	-0.517	0.021
family monthly income between 15000 and 30000	-0.470	0.037
family monthly income >30000	-0.103	0.037
famincmiss	-0.115	0.023
mom completed primary	-0.065	0.010
mom completed secondary	-0.072	0.011
mom bachalaureate or tech	-0.405	0.015
mom BA or more	-0.635	0.031
dad completed primary	-0.139	0.010
dad completed secondary	-0.282	0.011
dad bachalaureate or tech	-0.547	0.015
dad BA or more	-0.698	0.023
mom ed miss	-0.125	0.047
dad ed miss	-0.286	0.027
mom works 4+ hours daily	-0.258	0.009
mom works <4 hours or retired/looking for work	-0.199	0.017
dad works <8 hours daily	0.112	0.012
dad does not work or is retired	-0.005	0.013
mom work info missing	-0.178	0.036
dad work info missing	0.023	0.021
ratio of number in home/number of rooms	0.027	0.003
missing ratio	0.053	0.040
whether own home	0.177	0.010
missing home own info	0.173	0.030
whether have a car or truck	-0.264	0.009
cartruckmiss	-0.030	0.027
house has dirt floor	0.112	0.010
dirtfloormiss	-0.071	0.024
house drainage connected to public	-0.519	0.009
drainagemiss	-0.229	0.026
sanitary fac in home	-0.127	0.013
sanitarymiss	-0.113	0.028
electric power in the home	0.102	0.022
electric power miss	0.032	0.031
house has a refridgerator	-0.232	0.011
refridgerator miss	-0.142	0.027
cook and sleep in the same room	0.102	0.012
cooksleppmiss	0.086	0.035
house has a clothes washer	-0.147	0.010
clotheswashmiss	-0.037	0.029
speak indigenous language	0.343	0.014
indiglangmiss	0.045	0.028
covered by IMSS social security	-0.138	0.009
IMSS info missing	0.069	0.011
household has a stove	-0.283	0.015
stove info missing	-0.163	0.024
household has internet	-0.272	0.016
internet missing	0.055	0.026
household has tv	-0.042	0.020
tv missing	-0.208	0.029
household has garbage collection	-0.111	0.009
garbage collection missing	-0.028	0.028

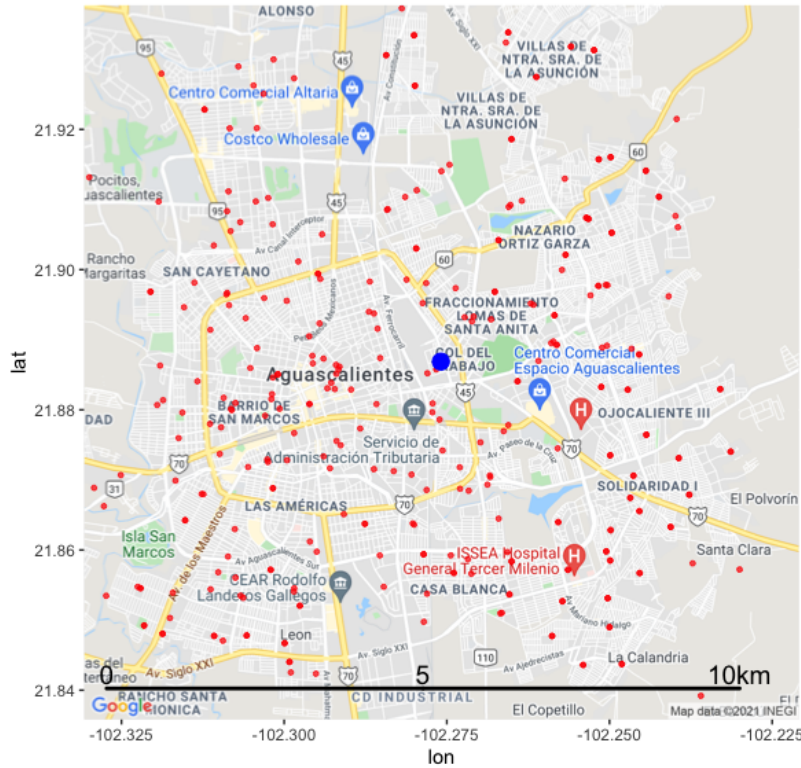
The model also includes state fixed effects. The omitted category for dad working is works 8+ hours per day. The omitted category for mom working is engaged in housework. The percent correctly classified under the model is 89%.



## B Additional descriptive statistics

In Mexico, multiple school sessions are often held in the same building, such as a morning and afternoon session. The different sessions may have different principals and teachers, so in the dataset they are considered to be different schools. Figure B1 shows one illustrative example of local primary-school sessions in Aguascalientes, a city in central Mexico. It has 316 school sessions distributed in 250 unique coordinates within 10 kilometers.

Figure B1: Local primary school sessions around Aguascalientes



Aguascalientes is a city with about 1.4 million inhabitants in 2020 in central Mexico. It contains 316 school sessions with 250 unique coordinates, indicating multiple school sessions share the same physical teaching place.

Table B1 illustrates the distribution of children across various grades and types of schools, categorized by age. As observed in Table B1, there is a notable variation in the types of schools attended and enrollment decisions for children of the same age.

Table B1: Distribution across grades and types of schools by age

Age	Grade 4			Grade 5			Grade 6			Grade 7			Grade 8			Grade 9			Obs.
	Gen	Ind		Gen	Ind		Gen	Ind		Gen	Tele	Tech	Gen	Tele	Tech	Gen	Tele	Tech	
9	0.97	0.03	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	35,346
10	0.76	0.03	0.21	0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	157,928
11	0.09	0.01	0.68	0.02	0.19	0.01	-	-	-	-	-	-	-	-	-	-	-	-	172,691
12	0.02	-	0.09	0.01	0.66	0.02	0.10	0.03	0.06	-	-	-	-	-	-	-	-	0.01	176,552
13	-	-	0.03	-	0.09	0.01	0.31	0.13	0.21	0.09	0.03	0.06	-	-	-	-	-	0.05	175,975
14	-	-	-	-	0.03	-	0.03	0.03	0.02	0.30	0.12	0.19	0.09	0.03	0.05	0.10	0.10	0.17	176,234
15	-	-	-	-	-	-	0.01	0.01	0.01	0.04	0.03	0.03	0.34	0.14	0.22	0.17	0.17	0.17	141,657
16	-	-	-	-	-	-	-	0.01	-	0.05	0.07	0.03	0.17	0.15	0.11	0.41	0.41	0.41	19,026
17	-	-	-	-	-	-	-	-	-	0.01	0.02	0.01	0.13	0.21	0.09	0.54	0.54	0.54	3,962

*Note:* The table presents data on school enrollment, school types and grade distributions across different ages. The final column shows the number of observations for each age group. Excluding the last column, the sum of each row's values equals 1.

## C Model estimates (key parameters)

### C.1 Value-added models

Tables C1 and C2 show a subset of the parameter estimates for the value-added production functions for the mathematics and Spanish test-score outcomes. The tables show the coefficients associated with the lagged scores, the *Prospera* participation indicator and gender. The specifications also include other covariates, such as parents' education and numbers of siblings, to capture heterogeneous family inputs into the achievement-production process. Also, they include indicators for rural/urban residence and for region of residence to capture regional differences in school quality/infrastructure. The full set of estimated parameters is in SA E. Each model includes lagged scores in both subjects, assuming that knowledge of Spanish might facilitate mathematics learning and vice versa.<sup>54</sup> For example, children who are more proficient in one subject might be able to focus their efforts more on studying the other subject. The lagged parameters are highly statistically significant in all grades and in both subjects. As expected, the lagged own-subject coefficient estimates are larger than the other-subject coefficient estimates. Boys have significantly higher scores than girls in mathematics and lower scores in Spanish. The gender gaps in mathematics are larger in secondary school than in primary school.<sup>55</sup>

Tables C1 and C2 report the one-year effect of being a *Prospera* beneficiary, allowing the effects to vary by propensity-score quartile. Given that only a small portion of *Prospera* beneficiaries are in the low propensity-score quartiles (4% in quartile 1 and 13% in quartile 2), it is not surprising to see systematically larger standard errors for the estimates associated with these two quartiles, leading to their coefficient estimates being insignificant. We observe more-significant effects of *Prospera* participation in the top two quartiles, especially the one with the highest propensity score (quartile 4) that includes 53% of *Prospera* beneficiaries from the most-disadvantaged backgrounds in terms of SES. In particular, *Prospera* has statistically significant impacts on mathematics for children/youth in quartile 4 in lower-secondary school (grades 7, 8, 9), with a range from 0.07-0.19 standard deviations. In Spanish, the effect sizes are smaller and less often statistically significantly different from zero. The significant effect sizes range from 0.06-0.16 standard deviations. For both

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<sup>54</sup>Aucejo and James (2021) estimate production functions for mathematics and verbal test scores using UK data. They find cross-effects for verbal skills for learning mathematics but not vice versa. We find cross-effects for both subjects.

<sup>55</sup>Bharadwaj et al. (2016) also find that Chilean boys perform better than girls in mathematics and that the gaps widen between fourth and eighth grades. Aucejo and James (2021) find a large female advantage in verbal skills in the UK.

Table C1: Mathematics value-added model estimates

	<i>General</i>		<i>Indigenous</i>			<i>General</i>		<i>Telesecondary</i>				<i>Technical</i>	
	G5	G6	G5	G6	G7	G8	G9	G7	G8	G9	G7	G8	G9
<i>Math score</i>													
Lag math	0.54 (0.00)	0.53 (0.00)	0.40 (0.02)	0.43 (0.02)	0.43 (0.01)	0.46 (0.01)	0.47 (0.01)	0.32 (0.01)	0.41 (0.01)	0.41 (0.01)	0.39 (0.01)	0.46 (0.01)	0.46 (0.01)
Lag Spanish	0.16 (0.00)	0.13 (0.00)	0.14 (0.03)	0.16 (0.02)	0.26 (0.01)	0.18 (0.01)	0.27 (0.01)	0.25 (0.01)	0.17 (0.01)	0.24 (0.01)	0.27 (0.01)	0.16 (0.01)	0.26 (0.01)
<i>Prospera effect by propensity-score quartile and gender</i>													
P*Q1 (4%)													
Female	-3.30 (3.70)	5.50 (3.71)	5.00 (47.25)	10.01 (54.46)	3.20 (4.97)	-1.20 (4.53)	8.30 (5.38)	9.00 (12.63)	-2.01 (12.90)	6.79 (12.39)	7.30 (7.20)	4.60 (5.99)	1.70 (7.41)
Male	5.20 (3.48)	0.30 (3.52)	-1.00 (44.38)	10.00 (29.42)	3.30 (4.89)	-2.70 (4.45)	3.31 (5.74)	9.00 (13.86)	-4.30 (12.15)	8.10 (14.87)	5.70 (7.04)	1.70 (6.57)	11.80 (8.09)
P*Q2 (13%)													
Female	4.40 (2.07)	7.30 (2.05)	10.30 (18.41)	7.00 (15.58)	7.90 (3.24)	0.90 (2.88)	7.80 (3.43)	0.00 (6.84)	0.51 (5.45)	1.50 (6.16)	12.10 (4.42)	5.30 (3.34)	10.50 (4.37)
Male	-0.90 (1.99)	4.60 (2.04)	-3.00 (18.85)	11.30 (15.71)	6.90 (3.24)	3.10 (2.89)	2.30 (3.57)	-1.00 (6.50)	-1.00 (5.55)	9.50 (6.42)	4.50 (4.26)	2.10 (3.84)	6.60 (4.75)
P*Q3 (30%)													
Female	-0.10 (1.41)	6.10 (1.42)	-6.90 (9.03)	5.40 (8.29)	6.70 (2.56)	2.80 (2.23)	6.40 (2.54)	3.70 (4.05)	-0.90 (3.29)	7.80 (3.85)	8.80 (3.31)	5.10 (2.76)	13.30 (3.35)
Male	-0.90 (1.38)	7.20 (1.43)	-7.60 (9.71)	-0.50 (8.99)	5.30 (2.46)	-2.20 (2.37)	5.20 (2.78)	3.90 (3.97)	-0.70 (3.57)	8.80 (4.02)	8.20 (3.22)	6.10 (2.80)	5.21 (3.46)
P*Q4 (53%)													
Female	1.70 (1.30)	3.50 (1.33)	-3.20 (6.55)	-0.70 (5.91)	15.21 (2.61)	9.90 (2.22)	11.20 (2.57)	13.00 (3.54)	7.10 (2.97)	15.40 (3.46)	17.40 (2.73)	13.50 (2.43)	19.00 (2.97)
Male	0.10 (1.28)	4.60 (1.35)	-7.90 (6.51)	-1.70 (5.88)	16.70 (2.52)	6.10 (2.33)	8.90 (2.70)	15.10 (3.51)	8.20 (3.08)	16.00 (3.61)	13.00 (2.79)	13.30 (2.48)	17.11 (3.04)

*Note:* Standard errors are shown in parentheses. The first column gives the percentages of *Prospera* beneficiaries in each quartile. The model includes additional control variables for parents' schooling attainment, parents' working status, number of household members, child age and its square, gender, language spoken at home, internet access, computer access, number of years child attended preschool, urban-rural dummy, regional dummies (north, north-center, center, south) and unobserved types. The full set of estimated parameters can be found in SA E.

mathematics and Spanish, the largest impacts tend to be observed in the 7th grade.

Table C2: Spanish value-added model estimates

	<i>General</i>		<i>Indigenous</i>			<i>General</i>		<i>Telesecondary</i>			<i>Technical</i>		
	G5	G6	G5	G6	G7	G8	G9	G7	G8	G9	G7	G8	G9
<i>Spanish score</i>													
Lag math	0.22	0.20	0.24	0.18	0.13	0.23	0.19	0.08	0.17	0.15	0.12	0.22	0.18
	(0.00)	(0.00)	(0.02)	(0.02)	(0.01)	(0.00)	(0.00)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Lag Spanish	0.42	0.39	0.28	0.34	0.52	0.47	0.48	0.43	0.40	0.40	0.53	0.47	0.48
	(0.00)	(0.00)	(0.02)	(0.02)	(0.01)	(0.01)	(0.00)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
<i>Prospera effect by propensity-score quartile and gender</i>													
P*Q1 (4%)													
Female	-1.30	-0.60	6.00	4.00	2.80	-7.10	2.90	10.80	-2.10	5.00	4.01	-1.00	-4.70
	(3.33)	(3.10)	(32.30)	(68.93)	(4.75)	(4.32)	(4.43)	(9.85)	(9.48)	(11.13)	(5.99)	(5.60)	(6.38)
Male	6.20	-1.10	0.00	3.00	1.30	-8.80	-3.50	13.50	-6.20	-6.00	-1.80	3.60	-7.50
	(3.26)	(2.95)	(28.50)	(30.14)	(4.85)	(3.90)	(4.44)	(10.67)	(9.27)	(10.12)	(6.38)	(5.49)	(5.80)
P*Q2 (13%)													
Female	2.00	-2.40	0.59	-6.60	4.40	0.60	1.00	3.00	2.00	-5.00	5.10	4.50	-4.60
	(1.90)	(1.69)	(14.62)	(12.96)	(3.12)	(2.71)	(2.76)	(5.28)	(4.44)	(5.00)	(3.65)	(3.13)	(3.52)
Male	-2.60	-6.00	1.00	-7.70	4.30	-6.00	-5.00	1.30	0.10	-0.10	2.80	-6.50	-0.70
	(1.89)	(1.67)	(15.84)	(14.89)	(3.14)	(2.70)	(2.92)	(5.05)	(4.28)	(4.76)	(3.79)	(3.23)	(3.57)
P*Q3 (30%)													
Female	-3.40	-2.10	-1.90	-5.80	4.31	-0.60	-2.50	1.20	-4.00	-3.30	4.40	1.30	-2.90
	(1.34)	(1.20)	(8.16)	(7.14)	(2.52)	(2.13)	(2.21)	(3.23)	(2.70)	(3.08)	(2.93)	(2.61)	(2.73)
Male	-2.50	-3.29	0.00	-6.30	3.20	-5.40	-7.10	1.60	-3.30	-2.40	3.90	4.70	-4.60
	(1.32)	(1.17)	(8.44)	(7.28)	(2.53)	(2.17)	(2.27)	(3.21)	(2.72)	(3.05)	(2.88)	(2.45)	(2.68)
P*Q4 (53%)													
Female	-1.00	-6.70	0.00	-1.99	8.30	1.30	-5.50	4.70	-2.99	0.90	10.50	1.00	-0.70
	(1.25)	(1.10)	(6.00)	(5.00)	(2.61)	(2.27)	(2.27)	(2.86)	(2.44)	(2.74)	(2.54)	(2.40)	(2.42)
Male	0.60	-2.70	0.00	-2.00	15.80	0.10	-2.00	15.20	0.80	7.30	10.90	6.11	3.50
	(1.24)	(1.09)	(5.97)	(4.84)	(2.55)	(2.31)	(2.38)	(2.83)	(2.42)	(2.74)	(2.55)	(2.34)	(2.41)

Note: See note to Table C1.

## C.2 School-choice/dropout model

Table C3 reports estimated coefficients from the school-choice/dropout model after grade 6, where the omitted category is dropping-out and working.<sup>56</sup> The specification also includes other covariates as described in the table footnote. Family background and demographic variables capture heterogeneities in preferences for schooling and school types. Regional indicators capture regional differences in school quality and infrastructure that may affect school choices. As seen in the table, children with higher sixth-grade test scores are more likely to attend general or technical schools rather than telesecondary schools and are less likely to drop-out. Being in a higher propensity-score quartile increases the likelihood of attending a telesecondary school.

In grades 7 and 8, students decide only whether to drop out and Table C4 shows how being a *Prospera* beneficiary affects this decision. The estimates show a statistically significant negative effect on dropout for male and female youth from lower SES households (i.e. those with propensity scores in higher quartiles), with larger impacts for seventh than for eighth grade.

## C.3 Grade-retention model

Table C5 shows estimated coefficients for the probability of being retained (second and fifth columns) and also for the value-added model specifications that were estimated for retained children (taking the grade for the second time). The achievement test scores are not used in retention decisions, but one would expect them to be correlated with school performance. As seen in the second and fifth columns, students with higher test scores are less likely to be retained, in both primary and lower-secondary schools. Also, the retention probability does not appear to depend on *Prospera*-participation status or to vary by quartile. Gender is a significant determinant of retention with boys more likely to be retained than girls, a pattern widely found in developing countries (e.g., Grant and Behrman (2010)).

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<sup>56</sup>In estimation, the choice set for individuals varies depending on the set of schools available to them.

Table C3: Estimated parameters for the lower-secondary school-choice/dropout model (after grade 6)

	General	Tele	Technical
mathematics (6th grade)	0.0018 (0.0001)	0.0004 (0.0001)	0.002 (0.0001)
Spanish (6th grade)	0.0027 (0.0001)	0.0016 (0.0001)	0.0029 (0.0001)
<i>Prospera effect by propensity-score quartile and gender</i>			
P*Q1 (4%)			
Female	0.61 (0.19)	1.46 (0.21)	0.78 (0.19)
Male	0.19 (0.16)	0.66 (0.18)	0.24 (0.16)
P*Q2 (13%)			
Female	0.38 (0.10)	1.06 (0.10)	0.60 (0.10)
Male	0.29 (0.09)	0.98 (0.09)	0.54 (0.09)
P*Q3 (30%)			
Female	0.28 (0.07)	1.12 (0.06)	0.37 (0.07)
Male	0.35 (0.07)	1.05 (0.06)	0.45 (0.07)
P*Q4 (53%)			
Female	0.16 (0.06)	1.11 (0.05)	0.35 (0.06)
Male	0.41 (0.06)	1.23 (0.05)	0.63 (0.06)

Note: See note to Table C1.

Table C4: Estimated parameters for the probability of dropping-out after grades 7 and 8

	Grade 7	Grade 8
Lag mathematics	-0.0015 (0.0001)	-0.0007 (0.0001)
Lag Spanish	-0.0029 (0.0001)	-0.0032 (0.0001)
<i>Prospera effect by propensity-score quartile and gender</i>		
P*Q1 (4%)		
Female	-0.16 (0.15)	-0.14 (0.13)
Male	-0.47 (0.16)	-0.09 (0.11)
P*Q2 (13%)		
Female	-0.47 (0.10)	-0.34 (0.07)
Male	-0.38 (0.08)	-0.20 (0.07)
P*Q3 (30%)		
Female	-0.32 (0.06)	-0.14 (0.05)
Male	-0.42 (0.06)	-0.32 (0.05)
P*Q4 (53%)		
Female	-0.23 (0.05)	-0.18 (0.05)
Male	-0.58 (0.05)	-0.37 (0.04)

*Note:* See note to Table C1



Table C5: Estimated model parameters for retained students

	Primary			Secondary		
	Prob Ret.	VA Math	VA Spanish	Prob Ret.	VA Math	VA Spanish
Lag mathematics	-0.0039 (0.0001)	0.37 (0.03)	0.16 (0.02)	-0.0012 (0.0001)	0.38 (0.05)	0.16 (0.05)
Lag Spanish	0.0002 (0.0001)	0.13 (0.03)	0.25 (0.03)	-0.0107 (0.0002)	0.12 (0.05)	0.31 (0.05)
<i>Prospera effect by propensity-score quartile and gender</i>						
P*Q1 (4%)						
	-0.05 (0.30)	30.59 (42.02)	6.13 (31.21)	-0.26 (0.46)	16.33 (44.06)	29.94 (112.18)
	-0.22 (0.21)	-10.57 (21.29)	4.72 (17.86)	-0.01 (0.27)	-27.62 (51.30)	-11.72 (40.62)
P*Q2 (13%)						
	-0.04 (0.16)	14.07 (18.28)	-4.78 (14.90)	-0.52 (0.36)	-16.33 (70.21)	-57.39 (52.04)
	-0.11 (0.12)	-1.65 (10.13)	-2.85 (9.73)	-0.11 (0.18)	10.90 (20.68)	-22.15 (20.88)
P*Q3 (30%)						
	-0.14 (0.11)	-7.17 (11.36)	-10.50 (9.36)	-0.08 (0.22)	20.50 (27.76)	-2.89 (24.39)
	-0.10 (0.08)	-3.06 (7.58)	-2.59 (6.40)	-0.44 (0.14)	5.83 (18.50)	-0.96 (17.22)
P*Q4 (53%)						
	-0.14 (0.08)	-1.55 (8.14)	-2.83 (7.05)	-0.65 (0.22)	58.52 (24.08)	6.46 (25.54)
	-0.08 (0.07)	-2.05 (6.37)	-1.11 (5.64)	-0.56 (0.14)	0.03 (17.55)	-1.02 (16.56)

*Note:* VA = value added. The probability of retention is estimated by a probit model. The notes from Table C1 also apply here.

## D The selection of non-linear terms in the school-choice model

As described in section 3.5, our school-choice model can be viewed as an approximation to the difference in value functions from a dynamic schooling model (see, e.g. Heckman et al. (2016)). Such an approximation can be obtained, for example, from a discrete-choice dynamic-programming model with i.i.d. type 1 extreme-value preference shocks that are additive to utility. We are modeling the decision to attend school or dropout and what type of school to attend, from grades 4 to grade 9. The last-period decision depends on the last-period test score achievements, as well as the expected value after leaving school, which is the continuation value. We now describe how we used the Bayesian Information Criterion (BIC) to determine the interaction terms used in specifying this approximation, given by equation 3 in the text.

We start with a general specification of the value function of individual  $i$  choosing option  $j$  at age  $a$  that allows for all possible quadratic terms and interactions among variables  $\{Z_{ia}, S_{ija}, w_{ia}\}$

$$\begin{aligned} V_{ija}^* = & \mu_{0jl}^g + A_{ia-1}\phi_{Aj}^g + P_i\phi_{pj}^g + Z_{ia}^D\phi_{Zj}^{1g} + w_{ia}\phi_{wj}^{1g} + S_{ija}\phi_{Sj}^{1g} \\ & + (Z_{ia}^D)^2\phi_{Zj}^{2g} + w_{ia}^2\phi_{wj}^{2g} + S_{ija}^2\phi_{Sj}^{2g} \\ & + \phi_{ZSj}^{3g}Int(Z_{ia}, S_{ija}) + \phi_{ZWj}^{3g}Int(Z_{ia}, w_{ia}) + \phi_{SWj}^{3g}Int(S_{ija}, w_{ia}) + \epsilon_{ija} \end{aligned}$$

The second line includes all potential quadratic terms, while the third line includes all potential interaction terms between the elements of  $Z_{ia}, w_{ia}, S_{ija}$ . First, we note that the quadratic terms for family characteristics  $Z_{ia}^D$  are not included, as  $Z_{ia}^D$  are categorical variables. Hence, any high-order non-linearity from  $Z_{ia}^D$  has already been accounted for by the distinct coefficients corresponding to each categorical level. However, quadratic terms  $(w_{ia})^2\phi_{wj}^{2g}$  and  $(S_{ija})^2\phi_{Sj}^{2g}$  are included.

The third line shows the potential interaction terms among the state variables  $\{Z_{ia}, S_{ija}, w_{ia}\}$  that could be included in an approximation, which are more than 200. We therefore use model-selection criteria to select the the final model specification. It is not possible to consider all possible subsets of the potential variables, so we follow instead the following procedure: (i). We incorporate one interaction term at a time, ranking all interaction terms based on their contribution to the likelihood value when estimating equation 3. (ii). Then, we add the interaction terms in a sequential manner, according to the ranking of their individual likelihood contribution. The optimal cut-off of how many terms to include is then decided based on the Bayesian Information Criterion (BIC).

Following the procedure previously described and using the ordering obtained in D1 and examining the BIC criterion, we arrive at the following specification that includes the top 10 interaction

Table D1: The changes in BIC when adding interaction terms sequentially

Rank	Variable name	Likelihood	Improvement	BIC
	baseline	-67554	-	137032
1	urban:region	-67399	155	136823
2	region:distance technical	-67428	127	136801
3	region:number general	-67449	106	136727
4	region:distance general	-67457	98	136759
5	region:number technical	-67467	88	136771
6	region:distance tele	-67474	79	136733
7	region:imputed wage	-67476	78	136718
8	region:num telesecondary	-67484	70	136696
9	urban:imputed wage	-67486	69	136580
10	distance general:num general	-67486	69	136520
11	years of preschool:region	-67489	65	136798
12	dad edu degree:distance technical	-67493	61	136824
13	rank:region	-67495	59	137077
14	distance tele:distance technical	-67502	53	137003
15	dad edu degree:distance general	-67505	50	137044
16	dad edu degree:region	-67506	48	137379
17	mom edu degree:distance general	-67507	47	137468
18	dad edu degree:distance tele	-67510	44	137537
19	mom edu degree:region	-67511	43	137894
20	urban dummy:num general	-67511	43	137909

*Note:* The column titled “Likelihood” reports the log likelihood value obtained when estimating equation 3, with each interaction term included in isolation. The “Improvement” column shows the enhancement in the log-likelihood value compared to the baseline scenario, which does not incorporate any interaction terms. The interaction terms are subsequently ranked from the highest to the lowest improvement. Out of a total of 253 interaction terms, only the top 20, exhibiting the most-significant improvements, are reported in the table. The column labeled “BIC” displays the BIC values as interaction terms are sequentially added, with the lowest value being reached when having the first 10 interaction terms. Under “Variable Name” column, “baseline” refers to the baseline specification without any interaction terms. “Urban” denotes a dummy variable indicating urban or rural areas, while “region” signifies the geographical location of individuals—whether they live in the north, north-center, center, or south areas. “Number general” represents the log value of the total number of general schools, “number tele” represents the log value of the total number of telesecondary schools, and “number technical” represents the log value of the total number of technical schools. Furthermore, “distance general” indicates the distance to the nearest general school, “distance tele” indicates the distance to the nearest telesecondary school, and “distance technical” indicates the distance to the nearest technical school.

terms:

$$\begin{aligned}
V_{ija}^* = & \mu_{0jl}^g + A_{ia-1}\phi_{Aj}^g + P_i\phi_{pj}^g + Z_{ia}^D\phi_{Zj}^{1g} + w_{ia}\phi_{wj}^{1g} + S_{ija}\phi_{Sj}^{1g} + (Z_{ia}^D)^2\phi_{Zj}^{2g} + w_{ia}^2\phi_{wj}^{2g} + S_{ija}^2\phi_{Sj}^{2g} \\
& + \phi_{Ij}^{1g} \times \text{Region}_i \times \text{Urban}_i + \phi_{Ij}^{2g} \times \text{Region}_i \times S_{ija}^{distance} + \phi_{Ij}^{3g} \times \text{Region}_i \times S_{ija}^{number} \\
& + \phi_{Ij}^{4g} \times \text{Region}_i \times w_{ia} + \phi_{Ij}^{5g} \times \text{Urban}_i \times w_{ia} + \epsilon_{ija}.
\end{aligned}$$

## E Model estimates (full parameters)

This appendix shows the full set of model parameter estimates. Tables E1 and E2 show the estimated parameters of the value-added production functions for mathematics and Spanish. Table E3 reports estimated coefficients from primary and lower-secondary school choices. Table E4 shows estimated coefficients for the probability of being retained and also for the value-added model specifications that were estimated for retained children (who were taking the grade for the second time). Table E5 reports estimated coefficients from the dropout decision during lower-secondary school choices, where the omitted category is dropping out and working. Lastly, Table E6 shows the coefficients associated with the cheating equation. See further discussion in the text.

Table E1: Mathematics value-added estimates

	General		Indigenous		General			Telesecondary			Technical		
	G5	G6	G5	G6	G7	G8	G9	G7	G8	G9	G7	G8	G9
Lag Mathematics	0.54	0.53	0.40	0.43	0.43	0.46	0.47	0.32	0.41	0.41	0.40	0.46	0.46
	(0.00)	(0.00)	(0.02)	(0.02)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Lag Spanish	0.16	0.13	0.14	0.16	0.26	0.18	0.28	0.25	0.17	0.24	0.27	0.16	0.26
	(0.01)	(0.00)	(0.03)	(0.02)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Prospera by score quartile and gender													
P*Q1 (4%)													
Female	-3.30	5.50	5.00	10.01	3.20	-1.20	8.30	9.00	-2.01	6.79	7.30	4.60	1.70
	(3.70)	(3.71)	(47.25)	(54.46)	(4.97)	(4.53)	(5.39)	(12.63)	(12.90)	(12.39)	(7.20)	(5.99)	(7.41)
Male	5.20	0.30	-1.00	10.00	3.30	-2.70	3.31	9.00	-4.30	8.10	5.70	1.70	11.80
	(3.48)	(3.52)	(44.38)	(29.42)	(4.89)	(4.45)	(5.74)	(13.86)	(12.15)	(14.87)	(7.04)	(6.57)	(8.09)
P*Q2 (13%)													
Female	4.40	7.30	10.30	7.00	7.90	0.90	7.80	0.00	0.51	1.50	12.10	5.30	10.50
	(2.07)	(2.05)	(18.41)	(15.58)	(3.24)	(2.88)	(3.43)	(6.84)	(5.45)	(6.16)	(4.42)	(3.34)	(4.37)
Male	-0.90	4.60	-3.00	11.30	6.90	3.10	2.30	-1.00	-1.00	9.50	4.50	2.10	6.60
	(1.99)	(2.04)	(18.85)	(15.71)	(3.24)	(2.89)	(3.57)	(6.50)	(5.55)	(6.42)	(4.26)	(3.84)	(4.75)
P*Q3 (30%)													
Female	-0.10	6.10	-6.90	5.40	6.70	2.80	6.40	3.70	-0.90	7.80	8.80	5.10	13.30
	(1.41)	(1.42)	(9.03)	(8.29)	(2.56)	(2.23)	(2.54)	(4.05)	(3.29)	(3.86)	(3.31)	(2.76)	(3.35)
Male	-0.90	7.20	-7.60	-0.50	5.30	-2.21	5.20	3.90	-0.70	8.80	8.20	6.10	5.21
	(1.38)	(1.43)	(9.71)	(8.99)	(2.46)	(2.37)	(2.78)	(3.97)	(3.57)	(4.02)	(3.22)	(2.80)	(3.46)

Table E1: Mathematics value-added estimates

	G5	G6	G5	G6	G7	G8	G9	G7	G8	G9	G7	G8	G9
P*Q4 (53%)													
Female	1.70	3.50	-3.20	-0.70	15.21	9.90	11.20	13.00	7.10	15.40	17.40	13.50	19.00
	(1.30)	(1.33)	(6.55)	(5.91)	(2.61)	(2.22)	(2.57)	(3.54)	(2.97)	(3.46)	(2.73)	(2.43)	(2.97)
Male	0.10	4.60	-7.90	-1.70	16.70	6.10	8.90	15.10	8.20	16.00	13.00	13.30	17.11
	(1.28)	(1.35)	(6.51)	(5.88)	(2.53)	(2.33)	(2.70)	(3.51)	(3.08)	(3.61)	(2.79)	(2.48)	(3.04)
Education cat. (dad)													
Below primary school	-3.67	-0.83	-2.99	-5.66	-7.23	2.03	-2.83	-13.47	6.94	3.03	0.25	-1.98	-2.60
	(2.18)	(2.21)	(11.17)	(10.80)	(3.59)	(3.27)	(3.89)	(6.87)	(6.11)	(7.12)	(4.62)	(3.97)	(4.89)
Primary school completed	-2.73	0.90	-1.49	-6.57	-6.24	2.05	-1.23	-8.04	6.68	3.22	2.39	0.83	-0.11
	(2.20)	(2.22)	(11.33)	(10.96)	(3.59)	(3.27)	(3.87)	(6.96)	(6.18)	(7.21)	(4.64)	(3.99)	(4.89)
Secondary or below	-1.90	1.58	-4.48	1.24	-1.78	3.68	-0.27	-6.12	9.82	6.91	3.16	3.20	1.17
	(2.15)	(2.18)	(11.58)	(11.05)	(3.50)	(3.19)	(3.78)	(6.95)	(6.18)	(7.19)	(4.54)	(3.89)	(4.74)
College or above	4.66	7.51	2.72	-3.18	3.03	8.44	3.87	-2.82	14.80	9.01	8.23	6.74	6.49
	(2.25)	(2.28)	(12.87)	(12.17)	(3.62)	(3.27)	(3.89)	(7.72)	(6.78)	(7.87)	(4.71)	(4.03)	(4.91)
Working status (dad)													
Full time	3.87	2.81	-9.98	1.32	-0.15	-2.21	1.07	11.29	0.82	9.84	-0.82	-0.40	9.03
	(1.75)	(1.77)	(8.97)	(8.22)	(2.88)	(2.58)	(3.12)	(5.34)	(4.53)	(5.49)	(3.80)	(3.31)	(3.96)
Not full time	2.90	1.56	-4.22	0.48	-0.04	-3.10	-0.47	9.30	-2.81	9.98	-1.14	-0.62	4.20
	(1.67)	(1.69)	(8.65)	(7.98)	(2.76)	(2.45)	(2.98)	(5.17)	(4.38)	(5.31)	(3.66)	(3.19)	(3.77)
Father present													
At home	5.16	5.48	3.32	-2.95	5.37	4.96	2.23	8.28	2.18	2.73	9.95	7.89	7.17

Table E1: Mathematics value-added estimates

	G5	G6	G5	G6	G7	G8	G9	G7	G8	G9	G7	G8	G9
	(1.24)	(1.21)	(5.80)	(5.29)	(2.02)	(1.81)	(2.14)	(3.59)	(3.15)	(3.82)	(2.60)	(2.29)	(2.87)
Not at home	5.97	4.75	9.08	0.34	9.79	5.43	2.93	7.75	3.76	2.63	10.22	6.40	6.04
	(0.96)	(0.94)	(4.26)	(3.81)	(1.58)	(1.44)	(1.67)	(2.71)	(2.33)	(2.86)	(1.99)	(1.77)	(2.20)
Education cat. (mom)													
Primary school	1.98	3.56	-16.84	8.70	0.50	10.65	-2.48	16.35	-18.39	17.78	6.95	-3.11	8.73
	(4.06)	(3.93)	(17.77)	(15.95)	(7.29)	(6.15)	(7.66)	(12.76)	(9.12)	(12.24)	(8.93)	(6.28)	(8.75)
Primary school completed	3.92	6.30	-11.25	16.06	1.08	12.17	-3.91	18.82	-15.68	17.30	8.89	-6.34	9.17
	(4.07)	(3.94)	(17.96)	(16.13)	(7.29)	(6.16)	(7.66)	(12.80)	(9.18)	(12.27)	(8.93)	(6.29)	(8.78)
Secondary or below	4.78	8.06	-10.89	19.49	3.02	13.15	-4.60	20.17	-13.48	20.01	9.64	-5.92	8.09
	(4.06)	(3.93)	(18.25)	(16.37)	(7.27)	(6.13)	(7.63)	(12.83)	(9.21)	(12.29)	(8.90)	(6.27)	(8.74)
College or above	10.51	10.74	-13.60	22.74	8.57	15.85	-1.26	25.89	-8.54	24.79	14.51	-2.53	12.81
	(4.14)	(4.01)	(19.75)	(17.82)	(7.35)	(6.21)	(7.71)	(13.45)	(9.86)	(12.93)	(9.03)	(6.42)	(8.87)
Working status (mom)													
Housework	2.07	0.02	8.84	-1.80	2.46	4.96	2.07	-2.34	-3.78	2.14	9.01	8.28	3.13
	(2.94)	(2.98)	(12.38)	(9.92)	(4.98)	(4.60)	(5.37)	(8.67)	(7.26)	(8.68)	(6.37)	(5.50)	(7.15)
Part time	0.74	-0.85	8.65	-7.16	-0.64	5.40	0.03	-3.92	-4.88	-0.49	7.26	4.97	0.10
	(3.00)	(3.03)	(12.77)	(10.37)	(5.05)	(4.65)	(5.44)	(8.97)	(7.52)	(8.99)	(6.46)	(5.57)	(7.24)
Full time	2.80	0.28	1.74	-12.52	1.77	4.45	2.34	-2.00	-6.21	5.49	6.70	7.08	0.40
	(3.05)	(3.08)	(13.24)	(10.82)	(5.11)	(4.71)	(5.50)	(9.14)	(7.69)	(9.18)	(6.56)	(5.66)	(7.35)
Mother present													
At home	2.38	-0.78	6.12	-2.19	-5.36	2.81	3.89	-0.95	4.85	7.33	-9.09	-5.45	5.03

Table E1: Mathematics value-added estimates

		G5	G6	G5	G6	G7	G8	G9	G7	G8	G9	G7	G8	G9
		(2.29)	(2.21)	(8.33)	(7.41)	(3.85)	(3.47)	(4.17)	(5.90)	(4.99)	(6.09)	(4.91)	(4.33)	(5.22)
A23	Not at home	2.44	0.17	-1.12	3.74	0.23	2.80	-1.46	1.70	-0.98	3.07	-1.86	-2.21	-0.06
		(1.36)	(1.33)	(5.92)	(5.29)	(2.26)	(2.01)	(2.41)	(3.89)	(3.29)	(4.07)	(2.82)	(2.45)	(3.10)
	Number of people at home													
	4 people	1.98	1.16	2.37	14.30	1.85	0.93	2.90	3.03	-0.62	2.01	1.66	1.11	2.42
		(0.84)	(0.82)	(4.97)	(4.46)	(1.29)	(1.14)	(1.37)	(2.60)	(2.23)	(2.62)	(1.69)	(1.47)	(1.78)
	5 people	1.52	0.87	0.21	6.78	1.13	1.63	3.38	3.75	-1.67	3.57	0.27	-0.76	5.07
		(0.92)	(0.90)	(4.73)	(4.28)	(1.45)	(1.29)	(1.55)	(2.74)	(2.33)	(2.73)	(1.89)	(1.64)	(2.00)
	$\geq 6$ people	0.41	-0.04	-2.48	5.38	-1.03	-2.43	1.62	0.91	-2.87	4.83	-1.48	-0.09	1.43
		(0.80)	(0.78)	(3.89)	(3.44)	(1.27)	(1.14)	(1.37)	(2.30)	(1.98)	(2.34)	(1.67)	(1.46)	(1.79)
	Age	2.66	0.94	2.78	-2.57	1.07	4.28	-2.09	-1.05	-3.00	2.36	1.84	4.74	1.40
		(1.04)	(1.02)	(5.13)	(4.39)	(1.70)	(1.51)	(1.84)	(3.13)	(2.71)	(3.27)	(2.14)	(1.91)	(2.41)
	Age <sup>2</sup>	-2.97	-2.72	-2.46	-0.18	-2.96	-3.86	-2.23	-2.06	-1.46	-3.42	-2.31	-3.39	-3.90
		(0.37)	(0.34)	(1.60)	(1.28)	(0.65)	(0.62)	(0.82)	(1.02)	(0.90)	(1.20)	(0.77)	(0.73)	(1.06)
	Male	3.41	2.39	5.60	0.50	7.08	17.74	11.32	-0.22	9.89	0.77	5.67	18.27	9.54
		(0.75)	(0.74)	(7.33)	(6.79)	(1.12)	(1.00)	(1.19)	(3.11)	(2.65)	(3.07)	(1.53)	(1.33)	(1.60)
First language spoken at home														
	Indigenous	-6.19	-5.07	-6.49	-6.78	-9.68	-2.19	-11.79	3.25	2.28	19.16	8.00	13.29	14.13
		(2.35)	(2.23)	(3.66)	(3.25)	(4.64)	(3.94)	(5.07)	(3.45)	(3.08)	(4.02)	(3.47)	(2.98)	(3.84)
	Both Spanish and indigenous	-0.85	-4.03	4.08	5.99	-6.04	4.21	2.14	3.45	9.99	7.89	5.50	0.01	14.24
		(2.25)	(2.22)	(4.64)	(4.12)	(4.32)	(3.78)	(4.43)	(4.82)	(3.95)	(4.38)	(4.12)	(3.67)	(4.28)



Table E1: Mathematics value-added estimates

	G5	G6	G5	G6	G7	G8	G9	G7	G8	G9	G7	G8	G9
Internet access	-6.58	-7.75	-6.87	-7.13	-9.15	-6.46	-8.42	-16.64	-3.75	-14.87	-8.08	-6.44	-5.00
	(0.93)	(0.92)	(5.24)	(4.65)	(1.44)	(1.28)	(1.54)	(3.20)	(2.70)	(3.30)	(1.86)	(1.66)	(1.97)
Computer access	1.48	4.16	-5.31	0.84	3.43	4.08	3.92	-4.41	0.48	-1.98	1.21	3.73	2.83
	(0.83)	(0.81)	(4.75)	(4.09)	(1.26)	(1.12)	(1.34)	(2.71)	(2.31)	(2.75)	(1.66)	(1.46)	(1.73)
Number of pre-school years													
1 year	5.27	-1.18	-2.73	9.65	-3.09	-5.06	3.48	3.45	3.82	-7.74	1.34	-6.12	0.81
	(2.22)	(2.18)	(9.44)	(8.41)	(3.86)	(3.31)	(4.24)	(6.02)	(5.03)	(6.34)	(4.52)	(4.10)	(5.36)
2 years	4.50	1.24	9.89	12.26	0.65	-4.62	2.70	1.50	3.70	-3.99	2.61	-8.49	2.26
	(2.04)	(2.00)	(9.15)	(8.24)	(3.51)	(2.91)	(3.78)	(5.65)	(4.69)	(5.87)	(4.09)	(3.68)	(4.95)
3 years	5.40	1.32	0.76	11.54	2.27	-1.85	2.18	7.20	4.23	-1.40	6.46	-4.24	5.10
	(2.02)	(1.98)	(9.04)	(8.07)	(3.47)	(2.86)	(3.73)	(5.60)	(4.63)	(5.82)	(4.04)	(3.63)	(4.90)
4 years	6.52	0.59	-5.14	3.90	-0.99	-0.73	4.75	8.21	6.97	-0.56	3.07	-0.18	2.11
	(2.05)	(2.00)	(8.71)	(7.85)	(3.52)	(2.91)	(3.78)	(5.58)	(4.61)	(5.81)	(4.09)	(3.67)	(4.94)
Urban dummy	-1.02	3.24	12.51	26.04	-9.49	-6.41	-2.96	-15.72	-6.29	-4.02	-10.04	-4.41	-6.07
	(0.76)	(0.77)	(3.96)	(3.52)	(1.46)	(1.30)	(1.54)	(2.19)	(1.91)	(2.20)	(1.69)	(1.48)	(1.77)
Regions													
North-center	-3.18	-2.03	1.23	12.27	-1.89	-2.92	-6.11	-42.13	-30.33	-16.80	2.52	0.50	3.19
	(0.85)	(0.84)	(4.53)	(4.31)	(1.32)	(1.16)	(1.43)	(2.74)	(2.36)	(2.92)	(1.78)	(1.52)	(1.95)
Center	-1.16	-4.20	-7.80	-9.27	-7.30	7.70	7.33	-51.22	-25.96	-4.59	-0.92	0.88	14.91
	(1.06)	(1.05)	(4.83)	(4.49)	(1.71)	(1.44)	(1.72)	(3.14)	(2.78)	(3.28)	(2.36)	(1.99)	(2.37)
South	2.42	1.45	3.93	10.08	-0.45	-2.07	-4.22	-32.66	-20.97	-11.53	11.23	4.98	7.29

Table E1: Mathematics value-added estimates

		G5	G6	G5	G6	G7	G8	G9	G7	G8	G9	G7	G8	G9
		(0.90)	(0.88)	(3.92)	(3.41)	(1.44)	(1.30)	(1.52)	(2.70)	(2.32)	(2.88)	(1.75)	(1.56)	(1.89)
A25	Copying dummy	43.15	46.21	68.50	53.89	59.08	79.95	73.93	89.58	101.06	49.10	74.48	79.01	60.61
		(1.29)	(1.42)	(6.12)	(6.21)	(3.16)	(1.90)	(2.91)	(4.61)	(2.71)	(3.49)	(3.60)	(2.09)	(2.75)
	Unobserved types													
	Type I	3.04	10.58	-3.03	-6.22	18.73	0.98	2.05	10.13	8.15	9.11	28.78	21.26	34.43
		(1.23)	(1.22)	(5.97)	(5.32)	(2.25)	(2.04)	(2.22)	(3.69)	(3.14)	(3.60)	(2.34)	(2.06)	(2.41)
	Type II	3.41	8.26	-2.01	-1.52	5.66	5.44	2.34	4.55	4.55	3.84	13.47	7.37	3.21
		(1.69)	(1.65)	(8.66)	(7.50)	(2.95)	(2.69)	(2.99)	(5.43)	(4.69)	(5.23)	(3.25)	(2.97)	(3.32)
	Type III	-3.99	5.18	-1.83	34.23	-5.05	-6.38	-3.55	-24.46	-14.54	-7.72	-0.68	-3.84	-4.576
		(2.06)	(2.00)	(9.22)	(7.80)	(3.36)	(3.21)	(3.66)	(6.91)	(5.59)	(6.62)	(3.89)	(3.61)	(4.16)
	Intercept term	141.07	189.81	240.04	206.84	100.76	176.16	159.73	218.54	295.57	213.37	84.88	193.30	131.38
		(5.66)	(5.55)	(24.98)	(23.13)	(9.93)	(8.41)	(10.22)	(17.37)	(12.97)	(17.14)	(12.44)	(8.99)	(12.88)
Standard error ( $\sigma$ )		82.05	83.05	84.85	83.68	89.47	85.17	97.18	114.15	106.93	116.40	91.64	85.08	98.56
		(0.22)	(0.23)	(1.10)	(1.44)	(0.46)	(0.31)	(0.36)	(0.78)	(0.62)	(0.71)	(0.59)	(0.41)	(0.58)

Table E2: Spanish value-added estimates

	General		Indigenous		General			Telesecondary			Technical		
	G5	G6	G5	G6	G7	G8	G9	G7	G8	G9	G7	G8	G9
Lag Mathematics	0.22	0.20	0.24	0.18	0.13	0.23	0.19	0.08	0.17	0.15	0.12	0.22	0.18
	(0.00)	(0.00)	(0.02)	(0.02)	(0.01)	(0.00)	(0.00)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Lag Spanish	0.42	0.39	0.28	0.34	0.52	0.47	0.48	0.43	0.40	0.40	0.53	0.47	0.48
	(0.00)	(0.00)	(0.02)	(0.02)	(0.01)	(0.01)	(0.00)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Prospera by score quartile and gender													
P*Q1 (4%)													
Female	-1.30	-0.60	6.00	4.00	2.80	-7.10	2.90	10.80	-2.10	5.00	4.01	-1.00	-4.70
	(3.33)	(3.10)	(32.30)	(68.93)	(4.75)	(4.32)	(4.43)	(9.85)	(9.48)	(11.13)	(5.99)	(5.60)	(6.38)
Male	6.20	-1.10	0.00	3.00	1.30	-8.80	-3.50	13.50	-6.20	-6.00	-1.80	3.60	-7.50
	(3.26)	(2.95)	(28.50)	(30.14)	(4.85)	(3.90)	(4.44)	(10.67)	(9.27)	(10.12)	(6.38)	(5.49)	(5.80)
P*Q2 (13%)													
Female	2.00	-2.40	0.59	-6.60	4.40	0.60	1.00	3.00	2.00	-5.00	5.10	4.50	-4.60
	(1.90)	(1.69)	(14.62)	(12.96)	(3.12)	(2.71)	(2.76)	(5.28)	(4.44)	(5.00)	(3.65)	(3.13)	(3.52)
Male	-2.60	-6.00	1.00	-7.70	4.30	-6.00	-5.00	1.30	0.10	-0.10	2.80	-6.50	-0.70
	(1.89)	(1.67)	(15.84)	(14.89)	(3.14)	(2.70)	(2.92)	(5.05)	(4.28)	(4.76)	(3.79)	(3.23)	(3.57)
P*Q3 (30%)													
Female	-3.40	-2.10	-1.90	-5.80	4.31	-0.60	-2.50	1.20	-4.00	-3.30	4.40	1.30	-2.90
	(1.34)	(1.20)	(8.16)	(7.14)	(2.52)	(2.13)	(2.21)	(3.23)	(2.70)	(3.08)	(2.93)	(2.61)	(2.73)
Male	-2.50	-3.29	0.00	-6.30	3.20	-5.40	-7.10	1.60	-3.30	-2.40	3.90	4.70	-4.60
	(1.32)	(1.17)	(8.44)	(7.28)	(2.53)	(2.17)	(2.27)	(3.21)	(2.72)	(3.05)	(2.88)	(2.45)	(2.68)

Table E2: Spanish value-added estimates

		G5	G6	G5	G6	G7	G8	G9	G7	G8	G9	G7	G8	G9
A27	P*Q4 (53%)													
	Female	-1.00	-6.70	0.00	-1.99	8.30	1.30	-5.50	4.70	-2.99	0.90	10.50	1.00	-0.70
		(1.25)	(1.10)	(6.00)	(5.00)	(2.61)	(2.27)	(2.27)	(2.86)	(2.44)	(2.74)	(2.54)	(2.40)	(2.42)
	Male	0.60	-2.70	0.00	-2.00	15.80	0.10	-2.00	15.20	0.80	7.30	10.90	6.11	3.50
		(1.24)	(1.09)	(5.97)	(4.84)	(2.55)	(2.31)	(2.38)	(2.83)	(2.42)	(2.74)	(2.55)	(2.34)	(2.41)
	Education cat. (dad)													
	Below primary school	-3.91	-0.41	-7.44	8.23	-7.38	1.07	-2.01	-14.04	-5.46	-2.60	-2.19	-0.25	-1.01
		(2.06)	(1.83)	(10.23)	(9.84)	(3.34)	(2.97)	(3.23)	(5.54)	(4.83)	(5.62)	(4.05)	(3.65)	(3.90)
	Primary school completed	-2.92	1.29	-4.25	6.86	-6.46	2.13	-0.81	-9.76	-6.10	-0.89	-0.49	-0.35	2.04
		(2.07)	(1.85)	(10.39)	(9.95)	(3.35)	(2.96)	(3.22)	(5.61)	(4.89)	(5.68)	(4.07)	(3.66)	(3.90)
	Secondary or below	-0.69	2.69	-6.04	12.24	-3.35	2.94	1.63	-8.06	-3.38	3.91	0.40	2.84	1.03
		(2.03)	(1.81)	(10.55)	(10.03)	(3.25)	(2.88)	(3.13)	(5.60)	(4.89)	(5.65)	(3.96)	(3.55)	(3.79)
	College or above	5.52	7.44	-4.67	11.06	4.83	7.00	4.14	-1.17	0.37	6.48	7.23	8.20	5.21
		(2.12)	(1.90)	(11.59)	(11.00)	(3.35)	(2.97)	(3.22)	(6.26)	(5.34)	(6.17)	(4.10)	(3.68)	(3.90)
	Working status (dad)													
	Full time	2.42	-1.69	-8.55	-11.33	0.19	-2.92	-2.00	6.71	0.57	1.78	1.94	-3.93	1.22
		(1.64)	(1.48)	(7.50)	(7.44)	(2.76)	(2.43)	(2.66)	(4.41)	(3.61)	(4.25)	(3.25)	(2.98)	(3.17)
	Not full time	1.73	-1.85	-4.64	-10.98	1.37	-2.12	-2.23	6.15	0.56	3.39	0.35	-1.11	1.59
		(1.57)	(1.42)	(7.23)	(7.25)	(2.63)	(2.31)	(2.55)	(4.26)	(3.48)	(4.11)	(3.12)	(2.86)	(3.04)
	Father present													
	At home	2.50	4.98	3.07	-2.79	6.30	2.46	4.38	5.58	1.91	4.38	8.77	5.70	5.68

Table E2: Spanish value-added estimates

		G5	G6	G5	G6	G7	G8	G9	G7	G8	G9	G7	G8	G9
		(1.18)	(1.03)	(5.07)	(4.43)	(1.92)	(1.69)	(1.81)	(2.98)	(2.56)	(2.90)	(2.31)	(2.07)	(2.24)
A28	Not at home	3.28	3.61	5.23	0.58	7.51	2.16	4.06	5.30	2.87	1.47	8.81	5.44	4.67
		(0.92)	(0.80)	(3.80)	(3.27)	(1.53)	(1.34)	(1.43)	(2.26)	(1.90)	(2.19)	(1.80)	(1.60)	(1.72)
	Education cat. (mom)													
	Primary school	-3.68	0.51	-8.38	0.96	3.38	-0.95	1.72	7.30	-7.82	4.28	9.67	-1.40	7.10
		(3.67)	(3.23)	(15.91)	(12.76)	(6.42)	(5.56)	(6.35)	(9.77)	(7.41)	(8.99)	(7.32)	(6.45)	(7.08)
	Primary school completed	-1.33	1.82	-6.39	8.17	2.61	2.76	1.01	8.53	-5.46	3.93	10.11	-2.22	8.38
		(3.67)	(3.24)	(16.05)	(12.90)	(6.41)	(5.55)	(6.35)	(9.80)	(7.44)	(9.02)	(7.31)	(6.45)	(7.07)
	Secondary or below	-0.29	4.70	-2.90	10.24	4.38	2.55	0.99	10.47	-7.01	6.34	10.61	-1.41	10.10
		(3.66)	(3.23)	(16.28)	(13.09)	(6.38)	(5.53)	(6.32)	(9.82)	(7.47)	(9.04)	(7.28)	(6.42)	(7.04)
	College or above	4.96	9.54	-9.57	13.74	10.72	8.03	6.25	17.93	5.74	10.07	15.06	3.60	12.60
		(3.74)	(3.30)	(17.45)	(14.44)	(6.46)	(5.60)	(6.38)	(10.37)	(7.90)	(9.56)	(7.39)	(6.52)	(7.13)
	Working status (mom)													
	Housework	2.39	-1.17	10.47	2.20	5.87	10.05	0.33	0.56	-3.98	7.09	6.80	-0.41	0.62
		(2.78)	(2.51)	(10.98)	(9.72)	(4.82)	(4.13)	(4.38)	(7.08)	(5.88)	(6.96)	(5.65)	(4.64)	(5.27)
	Part time	0.85	-1.82	8.35	-4.74	5.47	10.13	0.09	2.72	-5.70	4.75	4.73	-1.81	2.07
		(2.83)	(2.55)	(11.34)	(10.07)	(4.88)	(4.17)	(4.44)	(7.33)	(6.07)	(7.19)	(5.73)	(4.71)	(5.36)
	Full time	2.74	-1.43	-0.71	-2.48	4.03	9.25	1.04	1.18	-9.14	7.19	3.70	-1.22	1.60
		(2.88)	(2.59)	(11.75)	(10.28)	(4.94)	(4.23)	(4.49)	(7.46)	(6.19)	(7.31)	(5.80)	(4.80)	(5.43)
	Mother present													
	At home	0.16	-4.37	8.54	-9.27	-10.28	1.53	-1.39	-1.76	0.21	-3.86	-5.46	-5.18	-3.88

Table E2: Spanish value-added estimates

		G5	G6	G5	G6	G7	G8	G9	G7	G8	G9	G7	G8	G9
		(2.20)	(1.88)	(7.60)	(6.55)	(3.78)	(3.29)	(3.61)	(4.82)	(4.20)	(4.72)	(4.35)	(3.85)	(4.18)
A29	Not at home	1.31	-1.86	1.04	-3.07	-1.38	1.43	0.11	-0.16	-0.64	0.35	-1.61	-0.51	0.72
		(1.30)	(1.11)	(5.54)	(4.71)	(2.18)	(1.87)	(2.04)	(3.24)	(2.69)	(3.11)	(2.59)	(2.23)	(2.47)
	Number of people at home													
	4 people	0.48	-0.01	1.28	10.00	-0.31	-1.29	2.43	3.06	2.72	3.28	-0.21	2.56	-0.29
		(0.78)	(0.69)	(4.51)	(3.85)	(1.23)	(1.06)	(1.14)	(2.11)	(1.78)	(2.03)	(1.49)	(1.33)	(1.42)
	5 people	0.14	-1.63	3.74	2.80	-0.39	-1.42	0.40	3.17	0.12	2.54	-0.17	-1.46	2.42
		(0.86)	(0.76)	(4.18)	(3.63)	(1.39)	(1.20)	(1.29)	(2.24)	(1.89)	(2.11)	(1.69)	(1.50)	(1.61)
	≥ 6 people	-1.76	-2.79	-1.70	3.76	-3.86	-3.54	0.19	1.68	0.75	0.62	-4.22	-1.51	-2.18
		(0.75)	(0.66)	(3.49)	(2.96)	(1.21)	(1.05)	(1.13)	(1.88)	(1.60)	(1.82)	(1.48)	(1.32)	(1.42)
	Age	4.25	2.17	-3.08	-2.94	4.00	4.16	2.51	-1.17	0.57	0.92	2.12	5.74	3.80
		(0.99)	(0.85)	(4.55)	(3.69)	(1.61)	(1.38)	(1.53)	(2.51)	(2.15)	(2.52)	(1.92)	(1.71)	(1.93)
	Age <sup>2</sup>	-3.24	-2.82	-0.20	-0.46	-3.81	-4.03	-5.30	-1.44	-2.15	-3.43	-2.28	-4.22	-5.34
		(0.36)	(0.29)	(1.45)	(1.07)	(0.64)	(0.56)	(0.69)	(0.82)	(0.72)	(0.93)	(0.72)	(0.64)	(0.85)
	Male	-16.81	-16.16	-3.99	-14.24	-26.70	-15.36	-12.28	-30.31	-20.63	-17.24	-26.21	-16.84	-14.09
		(0.69)	(0.62)	(6.64)	(5.56)	(1.05)	(0.91)	(0.98)	(2.49)	(2.08)	(2.39)	(1.32)	(1.18)	(1.27)
First language spoken at home														
	Indigenous	-11.78	-9.19	-8.96	-11.27	1.76	-8.02	-13.07	-6.13	-7.85	-0.94	6.51	2.91	-18.12
		(2.33)	(1.93)	(3.27)	(2.79)	(4.66)	(3.99)	(4.71)	(2.91)	(2.55)	(2.98)	(3.52)	(3.08)	(3.30)
	Both Spanish and indigenous	-3.00	-6.84	0.47	1.50	-6.11	0.68	-4.15	4.18	-0.22	-3.31	6.11	-0.58	-0.04
		(2.12)	(1.87)	(4.10)	(3.52)	(4.26)	(3.57)	(3.86)	(3.90)	(3.16)	(3.47)	(4.14)	(3.55)	(3.52)

Table E2: Spanish value-added estimates

A30

Table E2: Spanish value-added estimates

	G5	G6	G5	G6	G7	G8	G9	G7	G8	G9	G7	G8	G9
	(0.85)	(0.75)	(3.45)	(2.95)	(1.39)	(1.21)	(1.28)	(2.21)	(1.91)	(2.15)	(1.58)	(1.44)	(1.49)
Copying dummy	26.65	29.35	49.75	37.14	35.03	45.95	26.13	55.28	65.58	19.68	47.84	42.20	25.80
	(1.28)	(1.14)	(5.25)	(4.72)	(2.92)	(1.79)	(2.53)	(3.70)	(2.11)	(2.82)	(3.53)	(2.06)	(2.41)
Unobserved types													
Type I	1.36	-3.45	-4.88	-10.77	22.76	-3.01	3.03	9.37	8.92	3.47	16.02	3.81	8.77
	(1.14)	(1.04)	(5.57)	(4.59)	(2.28)	(1.94)	(1.89)	(2.94)	(2.47)	(2.75)	(2.17)	(2.00)	(2.06)
Type II	1.53	0.50	-5.10	-6.08	3.09	-0.36	-2.38	5.73	7.40	-2.02	9.79	-4.68	-3.63
	(1.60)	(1.39)	(8.22)	(6.55)	(2.94)	(2.56)	(2.52)	(4.31)	(3.67)	(4.01)	(3.10)	(2.87)	(2.85)
Type III	0.56	-5.13	2.34	32.53	1.31	-3.35	1.80	-6.67	-1.53	1.78	0.03	-3.06	3.92
	(1.97)	(1.67)	(8.43)	(7.09)	(3.35)	(2.87)	(3.05)	(5.37)	(4.32)	(5.06)	(3.88)	(3.44)	(3.54)
Intercept term	188.69	241.27	242.83	245.48	127.08	141.92	158.49	231.93	242.31	212.21	112.37	157.36	143.27
	(4.85)	(4.31)	(21.57)	(17.12)	(8.91)	(7.74)	(8.42)	(12.94)	(10.52)	(12.25)	(10.37)	(8.98)	(9.85)
Standard error ( $\sigma$ )	76.61	71.37	76.05	70.33	83.40	79.14	80.41	93.50	86.32	90.25	85.05	80.74	82.59
	(0.20)	(0.19)	(0.96)	(1.28)	(0.52)	(0.32)	(0.31)	(0.57)	(0.47)	(0.49)	(0.54)	(0.37)	(0.43)



Table E3: Primary and lower-secondary school choices

	Indigenous	General	Telesecondary	Technical
Lag mathematics		0.0018 (0.0001)	0.0004 (0.0001)	0.002 (0.0001)
Lag Spanish		0.0027 (0.0001)	0.0016 (0.0001)	0.0029 (0.0001)
Prospera by score quartile and gender				
P*Q1 (4%)				
Female	-0.47 (0.72)	0.61 (0.19)	1.46 (0.21)	0.78 (0.19)
Male	0.37 (0.52)	0.19 (0.16)	0.66 (0.18)	0.24 (0.16)
P*Q2 (13%)				
Female	0.05 (0.28)	0.38 (0.10)	1.06 (0.10)	0.60 (0.10)
Male	-0.10 (0.28)	0.29 (0.09)	0.98 (0.09)	0.54 (0.09)
P*Q3 (30%)				
Female	0.19 (0.16)	0.28 (0.07)	1.12 (0.06)	0.37 (0.07)
Male	0.08 (0.17)	0.35 (0.07)	1.05 (0.06)	0.45 (0.07)
P*Q4 (53%)				
Female	0.41 (0.13)	0.16 (0.06)	1.11 (0.05)	0.35 (0.06)
Male	0.50 (0.13)	0.41 (0.06)	1.23 (0.05)	0.63 (0.06)
Education cat. (dad)				
Below primary school	0.13 (0.24)	-0.25 (0.08)	-0.08 (0.09)	-0.32 (0.09)
Primary school completed	0.07	-0.10	-0.03	-0.14

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Table E3: Primary and secondary school choices

	Indigenous	General	Telesecondary	Technical
	(0.24)	(0.08)	(0.09)	(0.09)
Secondary or below	-0.18	0.22	0.12	0.19
	(0.24)	(0.08)	(0.09)	(0.09)
College or above	-0.11	0.36	-0.03	0.32
	(0.26)	(0.09)	(0.10)	(0.09)
Working status (dad)				
Full time	0.15	0.08	0.00	0.03
	(0.19)	(0.07)	(0.07)	(0.07)
Not full time	0.03	0.27	0.13	0.23
	(0.19)	(0.06)	(0.07)	(0.07)
Father present				
At home	-0.28	0.03	-0.02	-0.02
	(0.12)	(0.05)	(0.05)	(0.05)
Not at home	-0.27	0.11	0.17	0.17
	(0.09)	(0.04)	(0.04)	(0.04)
Education cat. (mom)				
Primary school	0.01	-0.16	-0.16	-0.32
	(0.40)	(0.15)	(0.16)	(0.16)
Primary school completed	-0.12	0.11	0.00	-0.04
	(0.40)	(0.15)	(0.16)	(0.16)
Secondary or below	-0.37	0.36	0.13	0.18
	(0.40)	(0.15)	(0.16)	(0.16)
College or above	-0.31	0.58	0.02	0.36
	(0.42)	(0.16)	(0.17)	(0.17)
Working status (mom)				
Housework	-0.15	-0.28	-0.25	-0.13
	(0.28)	(0.12)	(0.12)	(0.12)
Part time	-0.02	-0.30	-0.32	-0.18
	(0.29)	(0.12)	(0.12)	(0.12)

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Table E3: Primary and secondary school choices

	Indigenous	General	Telesecondary	Technical
Full time	0.08 (0.30)	-0.26 (0.12)	-0.24 (0.12)	-0.17 (0.12)
Mother present				
At home	0.29 (0.20)	-0.13 (0.08)	-0.18 (0.08)	-0.16 (0.09)
Not at home	0.06 (0.14)	0.03 (0.05)	0.03 (0.05)	0.07 (0.05)
Number of people at home				
4 people	-0.11 (0.10)	0.14 (0.04)	0.09 (0.04)	0.18 (0.04)
5 people	0.05 (0.10)	-0.03 (0.04)	0.01 (0.04)	-0.03 (0.04)
$\geq 6$ people	0.10 (0.08)	-0.21 (0.03)	-0.11 (0.03)	-0.18 (0.03)
Age	-0.07 (0.11)	-0.49 (0.05)	-0.47 (0.05)	-0.42 (0.05)
Age <sup>2</sup>	-0.02 (0.04)	-0.10 (0.01)	-0.06 (0.01)	-0.14 (0.02)
Male	-0.02 (0.10)	-0.05 (0.03)	0.07 (0.04)	-0.04 (0.03)
First language spoken at home				
Indigenous	1.47 (0.13)	-0.56 (0.08)	-0.14 (0.06)	-0.37 (0.07)
Both Spanish and indigenous	1.10 (0.13)	-0.23 (0.08)	-0.14 (0.07)	-0.27 (0.08)
Internet access	0.06 (0.11)	-0.13 (0.04)	-0.12 (0.04)	-0.13 (0.04)
Computer access	-0.15 (0.10)	0.31 (0.03)	0.06 (0.04)	0.34 (0.04)

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Table E3: Primary and secondary school choices

	Indigenous	General	Telesecondary	Technical
Number of pre-school years				
1 year	-0.12 (0.21)	-0.27 (0.08)	-0.04 (0.08)	-0.31 (0.08)
2 years	-0.14 (0.20)	0.12 (0.07)	0.16 (0.08)	0.07 (0.08)
3 years	-0.13 (0.20)	0.37 (0.07)	0.34 (0.07)	0.40 (0.08)
4 years	0.03 (0.20)	0.36 (0.08)	0.33 (0.08)	0.36 (0.08)
Urban dummy	-0.92 (0.08)	0.72 (0.16)	0.25 (0.15)	1.79 (0.15)
Regions				
North-center	-0.10 (0.10)	2.00 (0.22)	1.56 (0.25)	1.54 (0.23)
Center	1.04 (0.12)	2.38 (0.29)	2.64 (0.32)	2.42 (0.31)
South	0.34 (0.09)	0.02 (0.21)	0.09 (0.24)	-0.01 (0.21)
Distance to general school		-0.64 (0.02)	0.31 (0.02)	0.29 (0.02)
Distance to general school (squared)		0.04 (0.00)	-0.02 (0.00)	-0.03 (0.00)
Distance to telesecondary school		0.14 (0.02)	-0.89 (0.02)	0.22 (0.02)
Distance to telesecondary school (squared)		-0.01 (0.00)	0.05 (0.00)	-0.02 (0.00)
Distance to technical school		0.34 (0.02)	0.13 (0.02)	-0.68 (0.02)
Distance to technical school (squared)		-0.03	-0.01	0.04

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Table E3: Primary and secondary school choices

	Indigenous	General	Telesecondary	Technical
		(0.00)	(0.00)	(0.00)
Imputed wages		0.08	0.09	0.25
		(0.02)	(0.01)	(0.01)
Imputed wages (squared)		0.00	0.00	0.00
		(0.00)	(0.00)	(0.00)
(Log) number of general schools	-0.50	0.34	0.20	0.06
	(0.04)	(0.05)	(0.06)	(0.05)
(Log) number of general schools (squared)		0.00	0.01	0.02
		(0.01)	(0.01)	(0.01)
(Log) number of indigenous schools	0.75			
	(0.05)			
(Log) number of telesecondary schools		-0.08	-0.12	0.51
		(0.05)	(0.07)	(0.05)
(Log) number of telesecondary schools (squared)		0.02	0.11	-0.02
		(0.01)	(0.01)	(0.01)
(Log) number of technical schools		-0.44	-0.37	-0.43
		(0.07)	(0.08)	(0.07)
(Log) number of technical schools (squared)		0.03	0.01	0.02
		(0.02)	(0.02)	(0.02)
North-center $\times$ Urban dummy		-0.03	0.44	0.59
		(0.10)	(0.11)	(0.10)
Center $\times$ Urban dummy		-0.60	0.49	0.35
		(0.13)	(0.12)	(0.13)
South $\times$ Urban dummy		-0.24	0.80	0.48
		(0.11)	(0.11)	(0.10)
North-center $\times$ distance to general school		-0.04	-0.03	0.02
		(0.02)	(0.02)	(0.02)
Center $\times$ distance to general school		-0.04	-0.04	0.00
		(0.02)	(0.02)	(0.02)

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Table E3: Primary and secondary school choices

	Indigenous	General	Telesecondary	Technical
South $\times$ distance to general school		0.03 (0.02)	-0.03 (0.02)	0.05 (0.02)
North-center $\times$ (log) number of general schools		-0.15 (0.05)	-0.23 (0.06)	-0.43 (0.05)
Center $\times$ (log) number of general schools		-0.29 (0.06)	-0.36 (0.07)	-0.49 (0.06)
South $\times$ (log) number of general schools		-0.35 (0.05)	-0.19 (0.06)	-0.25 (0.05)
North-center $\times$ distance to technical school		0.00 (0.02)	0.09 (0.01)	-0.05 (0.02)
Center $\times$ distance to technical school		0.10 (0.02)	0.04 (0.02)	-0.07 (0.02)
South $\times$ distance to technical school		-0.04 (0.02)	0.06 (0.02)	-0.07 (0.02)
North-center $\times$ (log) number of technical schools		0.25 (0.06)	0.18 (0.07)	0.70 (0.06)
Center $\times$ (log) number of technical schools		0.67 (0.08)	0.16 (0.09)	0.74 (0.08)
South $\times$ (log) number of technical schools		0.32 (0.07)	-0.07 (0.08)	0.52 (0.07)
North-center $\times$ distance to telesecondary school		-0.01 (0.01)	0.03 (0.02)	-0.08 (0.01)
Center $\times$ distance to telesecondary school		-0.07 (0.02)	-0.02 (0.03)	-0.06 (0.02)
South $\times$ distance to telesecondary school		0.03 (0.01)	-0.02 (0.02)	0.01 (0.01)
North-center $\times$ (log) number of telesecondary schools		-0.23 (0.04)	-0.42 (0.06)	-0.65 (0.04)
Center $\times$ (log) number of telesecondary schools		-0.28	-0.15	-0.46

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Table E3: Primary and secondary school choices

	Indigenous	General	Telesecondary	Technical
		(0.07)	(0.08)	(0.07)
South $\times$ (log) number of telesecondary schools		0.00	-0.04	-0.43
		(0.04)	(0.06)	(0.04)
North-center $\times$ imputed wages		-0.11	-0.08	-0.05
		(0.01)	(0.02)	(0.01)
Center $\times$ imputed wages		-0.14	-0.16	-0.14
		(0.02)	(0.02)	(0.02)
South $\times$ imputed wages		0.03	-0.02	0.00
		(0.01)	(0.01)	(0.01)
Urban dummy $\times$ imputed wages		-0.04	-0.06	-0.16
		(0.01)	(0.01)	(0.01)
Type I	3.08	-1.29	-0.02	-1.10
	(0.17)	(0.06)	(0.05)	(0.05)
Type II	1.04	-0.27	0.25	-0.32
	(0.14)	(0.08)	(0.08)	(0.08)
Type III	-1.37	0.26	-0.52	0.06
	(0.19)	(0.10)	(0.09)	(0.10)
Intercept	-1.46	-0.94	-0.37	-2.82
	(0.55)	(0.28)	(0.29)	(0.28)

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Table E4: Retention estimates (choice and value-added)

	Choice	Mathematics	Spanish	Choice	mathematics	Spanish
Lag mathematics	-0.0039	0.37	0.16	-0.0012	0.38	0.16
	(0.0001)	(0.03)	(0.02)	(0.0001)	(0.05)	(0.05)
Lag Spanish	0.0002	0.13	0.25	-0.0107	0.12	0.31
	(0.0001)	(0.03)	(0.03)	(0.0002)	(0.05)	(0.05)
Prospera by score quartile and gender						
P*Q1 (4%)						
Female	-0.05	30.59	6.13	-0.26	16.33	29.94
	(0.30)	(42.02)	(31.21)	(0.46)	(44.06)	(112.18)
Male	-0.22	-10.57	4.72	-0.01	-27.62	-11.72
	(0.21)	(21.29)	(17.86)	(0.27)	(51.30)	(40.62)
P*Q2 (13%)						
Female	-0.04	14.07	-4.78	-0.52	-16.33	-57.39
	(0.16)	(18.28)	(14.90)	(0.36)	(70.21)	(52.04)
Male	-0.11	-1.65	-2.85	-0.11	10.90	-22.15
	(0.12)	(10.13)	(9.73)	(0.18)	(20.68)	(20.88)
P*Q3 (30%)						
Female	-0.14	-7.17	-10.50	-0.08	20.50	-2.89
	(0.11)	(11.36)	(9.36)	(0.22)	(27.76)	(24.39)
Male	-0.10	-3.06	-2.59	-0.44	5.83	-0.96
	(0.08)	(7.58)	(6.40)	(0.14)	(18.50)	(17.22)
P*Q4 (53%)						
Female	-0.14	-1.55	-2.83	-0.65	58.52	6.46
	(0.08)	(8.14)	(7.05)	(0.22)	(24.08)	(25.54)
Male	-0.08	-2.05	-1.11	-0.56	0.03	-1.02
	(0.07)	(6.37)	(5.64)	(0.14)	(17.55)	(16.56)
Education cat. (dad)						
Below primary school	-0.48	-1.10	3.47	-0.53	-8.72	-14.60
	(0.13)	(13.39)	(10.83)	(0.20)	(28.02)	(21.87)
Primary school completed	-0.32	2.47	5.30	-0.54	-21.56	-23.40



Table E4: Retention estimates (choice and value-added)

	Choice	Mathematics	Spanish	Choice	mathematics	Spanish
	(0.13)	(13.62)	(11.09)	(0.20)	(28.55)	(22.25)
Secondary or below	-0.20	5.79	10.44	-0.25	-2.84	-16.73
	(0.13)	(13.45)	(10.91)	(0.19)	(27.58)	(20.82)
College or above	-0.39	5.47	11.18	-0.26	1.23	-5.36
	(0.14)	(14.83)	(11.91)	(0.21)	(28.97)	(22.29)
Working status (dad)						
Full time	-0.08	-6.15	-13.76	-0.02	15.23	11.30
	(0.11)	(10.65)	(9.27)	(0.17)	(22.84)	(19.44)
Not full time	0.02	-5.44	-10.29	-0.08	19.50	4.97
	(0.10)	(10.32)	(8.92)	(0.17)	(21.47)	(18.03)
Father present						
At home	-0.03	8.39	6.93	0.18	31.91	22.00
	(0.07)	(7.17)	(6.13)	(0.12)	(14.83)	(14.01)
Not at home	0.05	7.02	3.10	0.09	13.36	5.67
	(0.06)	(5.59)	(4.82)	(0.10)	(12.47)	(11.93)
Education cat. (mom)						
Primary school	-0.52	-8.30	-3.47	-0.46	-19.49	-14.06
	(0.21)	(24.39)	(19.41)	(0.38)	(50.49)	(40.96)
Primary school completed	-0.34	-7.76	-0.76	-0.33	-28.04	-9.81
	(0.21)	(24.49)	(19.52)	(0.38)	(50.32)	(41.06)
Secondary or below	-0.33	-2.08	-3.87	0.00	-19.77	-7.99
	(0.21)	(24.48)	(19.43)	(0.38)	(49.94)	(40.29)
College or above	-0.15	-0.58	5.47	0.12	-5.39	0.56
	(0.23)	(25.22)	(20.29)	(0.39)	(50.99)	(41.43)
Working status (mom)						
Housework	0.17	-4.94	1.37	0.17	17.71	12.86
	(0.16)	(15.33)	(14.98)	(0.31)	(48.23)	(45.92)
Part time	0.17	-4.65	5.40	0.27	13.49	6.46
	(0.16)	(15.75)	(15.31)	(0.31)	(48.44)	(45.91)

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Table E4: Retention estimates (choice and value-added)

	Choice	Mathematics	Spanish	Choice	mathematics	Spanish
Full time	0.09	-0.72	5.91	0.17	18.52	4.48
	(0.16)	(16.10)	(15.62)	(0.32)	(49.16)	(46.64)
Mother present						
At home	-0.04	-9.38	-4.22	-0.21	-22.13	-3.46
	(0.13)	(11.88)	(11.27)	(0.23)	(30.01)	(26.36)
Not at home	0.09	-4.81	-1.60	-0.14	-14.08	-4.73
	(0.08)	(7.67)	(6.82)	(0.13)	(17.70)	(17.88)
Number of people at home						
4 people	-0.05	6.32	4.38	-0.03	15.94	3.58
	(0.06)	(5.41)	(4.66)	(0.08)	(10.89)	(9.99)
5 people	-0.14	12.77	5.63	-0.19	0.38	-4.91
	(0.06)	(5.72)	(5.04)	(0.10)	(12.35)	(11.80)
$\geq 6$ people	-0.14	13.13	3.57	-0.16	3.78	5.61
	(0.05)	(4.68)	(4.07)	(0.08)	(10.27)	(9.50)
Age	4.38	8.02	7.58	6.09	16.11	-4.59
	(0.05)	(9.89)	(8.73)	(0.08)	(26.18)	(23.14)
Age <sup>2</sup>	-0.66	-1.64	-1.69	-1.15	-4.76	0.51
	(0.01)	(1.99)	(1.77)	(0.02)	(6.08)	(5.26)
Male	0.40	3.19	-14.40	0.78	26.51	-6.36
	(0.06)	(5.75)	(4.74)	(0.09)	(11.81)	(10.44)
First language spoken at home						
Indigenous	-0.02	-22.02	-10.40	-0.63	13.64	33.88
	(0.08)	(8.02)	(7.09)	(0.22)	(24.83)	(26.93)
Both Spanish and indigenous	-0.15	-20.58	-11.51	-0.13	-12.44	-9.75
	(0.11)	(9.92)	(8.64)	(0.20)	(30.25)	(35.29)
Internet access	0.17	-11.46	-10.30	-0.01	-16.94	-10.39
	(0.06)	(5.38)	(4.78)	(0.09)	(12.22)	(10.72)
Computer access	0.01	-3.72	2.05	0.09	6.71	4.89
	(0.05)	(5.01)	(4.55)	(0.08)	(11.38)	(10.00)

Table E4: Retention estimates (choice and value-added)

	Choice	Mathematics	Spanish	Choice	mathematics	Spanish
Number of pre-school years						
1 year	0.09	-9.80	-10.18	-0.43	-29.00	-37.54
	(0.12)	(13.26)	(10.62)	(0.23)	(30.48)	(27.25)
2 years	0.37	-8.63	-13.40	0.05	-27.07	-29.41
	(0.12)	(12.41)	(9.87)	(0.20)	(28.06)	(22.95)
3 years	0.52	-3.13	-5.04	0.24	-32.14	-34.48
	(0.12)	(12.26)	(9.79)	(0.20)	(27.39)	(22.04)
4 years	0.33	-0.98	-6.12	-0.09	-36.98	-31.53
	(0.12)	(12.30)	(9.78)	(0.20)	(27.71)	(22.76)
Urban dummy	-0.03	14.90	10.78	0.54	-6.78	-4.23
	(0.05)	(4.51)	(3.94)	(0.11)	(13.87)	(13.59)
Regions						
North-center	-0.02	-7.22	-3.73	-0.01	-0.93	-6.82
	(0.06)	(5.28)	(4.56)	(0.09)	(11.65)	(10.96)
Center	-0.09	1.26	7.05	0.01	8.13	-2.13
	(0.08)	(8.31)	(7.06)	(0.12)	(14.44)	(13.61)
South	0.09	10.10	1.65	0.00	4.27	2.91
	(0.05)	(4.96)	(4.47)	(0.09)	(12.27)	(11.09)
Indigenous school	0.09	-11.24	-13.62			
	(0.09)	(8.83)	(7.86)			
Grade 5	-0.57	-2.82	-1.34			
	(0.04)	(3.87)	(3.42)			
Grade 6	-2.70	11.59	12.87			
	(0.09)	(9.56)	(8.31)			
Telesecondary school				0.09	44.43	23.75
				(0.09)	(13.72)	(12.70)
Technical school				-0.57	-1.65	-3.02
				(0.04)	(9.70)	(8.68)
Grade 8				-2.70	9.76	-0.73

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Table E4: Retention estimates (choice and value-added)

	Choice	Mathematics	Spanish	Choice	mathematics	Spanish
				(0.09)	(8.74)	(8.55)
Unobserved types						
Type I	-0.54	1.67	-2.05	-0.54	-8.02	7.69
	(0.09)	(9.48)	(8.19)	(0.09)	(18.99)	(18.28)
Type II	-0.36	2.42	3.32	-0.36	11.82	7.99
	(0.13)	(12.65)	(11.30)	(0.13)	(27.98)	(27.09)
Type III	0.00	5.85	12.99	0.00	-6.53	4.27
	(0.13)	(11.78)	(10.60)	(0.13)	(23.27)	(24.02)
Intercept term	-6.91	246.71	290.06	-6.91	234.37	289.08
	(0.28)	(32.70)	(27.06)	(0.28)	(75.93)	(64.81)
Standard error ( $\sigma$ )		91	79		99	93
		(1.43)	(1.28)		(3.05)	(2.80)

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Table E5: Dropout during lower-secondary school

Dropout period	Grade 7	Grade 8
Lag mathematics	-0.0015 (0.0001)	-0.0007 (0.0001)
Lag Spanish	-0.0029 (0.0001)	-0.0032 (0.0001)
Prospera by score quartile and gender		
P*Q1 (4%)		
Female	-0.16 (0.15)	-0.14 (0.13)
Male	-0.47 (0.16)	-0.09 (0.11)
P*Q2 (13%)		
Female	-0.47 (0.10)	-0.34 (0.07)
Male	-0.38 (0.08)	-0.20 (0.07)
P*Q3 (30%)		
Female	-0.32 (0.06)	-0.14 (0.05)
Male	-0.42 (0.06)	-0.32 (0.05)
P*Q4 (53%)		
Female	-0.23 (0.05)	-0.18 (0.05)
Male	-0.58 (0.05)	-0.37 (0.04)
Education cat. (dad)		
Below primary school	0.29 (0.09)	-0.02 (0.07)
Primary school completed	0.21	-0.11

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Table E5: Dropout during secondary school

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Dropout period	Grade 7	Grade 8
	(0.09)	(0.07)
Secondary or below	0.03	-0.09
	(0.09)	(0.07)
College or above	-0.15	-0.22
	(0.09)	(0.07)
Working status (dad)		
Full time	-0.07	-0.03
	(0.07)	(0.06)
Not full time	-0.09	-0.05
	(0.06)	(0.06)
Father present		
At home	0.07	0.02
	(0.05)	(0.04)
Not at home	-0.14	-0.17
	(0.04)	(0.03)
Education cat. (mom)		
Primary school	0.20	-0.09
	(0.16)	(0.14)
Primary school completed	0.12	-0.09
	(0.16)	(0.14)
Secondary or below	0.00	-0.10
	(0.16)	(0.14)
College or above	-0.22	-0.23
	(0.17)	(0.14)
Working status (mom)		
Housework	-0.02	-0.13
	(0.12)	(0.10)
Part time	0.20	0.07
	(0.12)	(0.10)

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Table E5: Dropout during secondary school

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Dropout period	Grade 7	Grade 8
Full time	0.09 (0.12)	-0.02 (0.10)
Mother present		
At home	0.14 (0.08)	0.04 (0.07)
Not at home	-0.01 (0.05)	0.03 (0.04)
Number of people at home		
4 people	0.01 (0.04)	-0.06 (0.03)
5 people	0.02 (0.04)	0.00 (0.03)
$\geq 6$ people	0.15 (0.03)	0.00 (0.03)
Age	0.55 (0.05)	0.84 (0.04)
Age <sup>2</sup>	0.06 (0.02)	0.08 (0.01)
Male	0.18 (0.03)	0.19 (0.03)
First language spoken at home		
Indigenous	-0.02 (0.07)	0.06 (0.06)
Both Spanish and indigenous	-0.20 (0.09)	0.01 (0.07)
Internet access	0.10 (0.04)	0.18 (0.03)
Computer access	-0.12 (0.04)	-0.11 (0.03)

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Table E5: Dropout during secondary school

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Dropout period	Grade 7	Grade 8
Number of pre-school years		
1 year	0.03 (0.08)	-0.06 (0.07)
2 years	-0.14 (0.07)	-0.03 (0.07)
3 years	-0.27 (0.07)	-0.08 (0.06)
4 years	-0.09 (0.07)	-0.06 (0.07)
Urban dummy	-0.20 (0.17)	-0.16 (0.15)
Regions		
North-center	0.09 (0.12)	-0.30 (0.09)
Center	0.09 (0.14)	-0.38 (0.12)
South	0.58 (0.11)	-0.12 (0.10)
Telesecondary school dummy	-0.15 (0.10)	0.03 (0.08)
Technical school dummy	0.27 (0.07)	0.17 (0.06)
Distance to the closest school	0.11 (0.03)	0.02 (0.03)
Distance to the closest school (squared)	-0.01 (0.00)	0.00 (0.00)
Imputed wages	-0.14 (0.01)	0.08 (0.01)
Imputed wages (squared)	0.005	-0.003



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Table E5: Dropout during secondary school

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Dropout period	Grade 7	Grade 8
	(0.0003)	(0.0003)
North-center $\times$ Urban dummy	0.02	0.33
	(0.11)	(0.09)
Center $\times$ Urban dummy	0.12	0.48
	(0.13)	(0.11)
South $\times$ Urban dummy	-0.14	0.22
	(0.10)	(0.08)
North-center $\times$ distance to the closest school	-0.01	0.00
	(0.03)	(0.02)
Center $\times$ distance to the closest school	-0.02	0.00
	(0.04)	(0.03)
South $\times$ distance to the closest school	-0.03	0.03
	(0.03)	(0.02)
North-center $\times$ telesecondary school dummy	0.18	0.02
	(0.11)	(0.09)
North-center $\times$ technical school dummy	-0.22	-0.10
	(0.08)	(0.07)
Center $\times$ telesecondary school dummy	0.06	0.04
	(0.14)	(0.11)
Center $\times$ technical school dummy	-0.34	-0.21
	(0.11)	(0.09)
South $\times$ telesecondary school dummy	-0.23	-0.02
	(0.12)	(0.09)
South $\times$ technical school dummy	-0.29	-0.06
	(0.08)	(0.07)
Urban dummy $\times$ imputed wage	0.03	0.01
	(0.01)	(0.01)
Unobserved types		
Type I	-0.15	-0.22

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Table E5: Dropout during secondary school

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Dropout period	Grade 7	Grade 8
	(0.06)	(0.05)
Type II	0.12	-0.17
	(0.07)	(0.07)
Type III	-0.22	0.25
	(0.09)	(0.06)
Intercept term	-0.82	-1.50
	(0.27)	(0.23)

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Table E6: Coefficients associated with cheating equation

	Mathematics		Spanish	
	Value	S.D.	Value	S.D.
For non-retained students				
<u>Grade 5</u>				
General	43	1.29	27	1.28
Indigenous	69	6.12	50	5.25
<u>Grade 6</u>				
General	46	1.42	29	1.14
Indigenous	54	6.21	37	4.72
<u>Grade 7</u>				
General	59	3.16	35	2.92
Telesecondary	90	4.61	55	3.70
Technical	74	3.60	48	3.53
<u>Grade 8</u>				
General	80	1.90	46	1.79
Telesecondary	101	2.71	66	2.11
Technical	79	2.09	42	2.06
<u>Grade 9</u>				
General	74	2.91	26	2.53
Telesecondary	49	3.49	20	2.82
Technical	61	2.75	26	2.41
For retained students				
Primary school	65	15	48	12
Secondary school	107	37	77	28