



8^o Seminario
Internacional
de Investigación

sobre la calidad de la educación 2017

PISA 2015 | CARTAGENA DE INDIAS

MINEDUCACIÓN

icfes
mejor saber

TODOS POR UN
NUEVO PAÍS

Information Policies and Higher Education Choices Experimental Evidence from Colombia

Leonardo Bonilla ¹ Andrés Ham ² Nicolas Bottan ³

¹Banco de la República

²Universidad de los Andes

³University of Illinois

Information Policies for Higher Education

1. **Governments are investing in providing online information:**
 - ▶ Labor Observatories
 - ▶ Student loan calculators

Information Policies for Higher Education

1. **Governments are investing in providing online information:**
 - ▶ Labor Observatories
 - ▶ Student loan calculators
2. **Cost-effective for secondary school enrollment:**
 - ▶ Jensen, 2010, Nguyen, 2008



Information Policies for Higher Education

1. Less promising results in higher education:

- ▶ Earning Premiums:
 - ▶ Pekkala-Kerr et al., 2015, Wiswall and Zafar, 2015, Fryer Jr., 2016, Rao, 2016.
- ▶ Costs and funding:
 - ▶ Bettinger et al., 2012, Booij et al., 2012, Hoxby and Turner, 2013, Loyalka et al., 2013, Dinkelman and Martínez, 2014.
- ▶ Both:
 - ▶ Oreopoulos and Petronijevic, 2013, Hastings et al., 2015, Avitabile and De Hoyos Navarro, 2015, Busso et al., 2016, McGuigan et al., 2016.

This paper

- ▶ RCT in public schools of Bogotá providing information on **funding programs** and **earning premiums** by degree-college:
 1. How informed are students?
 2. Do simple information treatments reduce misinformation and affect higher education choices?
- ▶ Randomly selected 120 schools, half of which receive a 35-minute talk.
- ▶ Surveys and administrative records to analyze student beliefs and choices.

Main Results

1. Students are generally misinformed, specially regarding higher education wage premiums.
2. They learn about funding programs from the talk but not about labor observatory or earning beliefs.
3. The intervention has no average effect on exit exam scores or average enrollment.
4. Additional information has a small effect on intensive margin (More selective colleges).

Policy implications

1. Providing information is not enough to raise college enrollment.
 - ▶ As opposed to student-loans and merit-based scholarships which have proven to be effective in increasing enrollment and test scores of low-income students ((Melguizo et al.,2016, Londoño et al., 2017, Laajaj et al., 2017)
2. Even though less targeted or personalized than Hastings et al. (2015) or Busso et al. (2016), our intervention does affect intensive margin choices.

Outline

Introduction

Higher Education in Colombia

Experimental Setting

Data and Empirical Strategy

Results

Conclusions

Outline

Introduction

Higher Education in Colombia

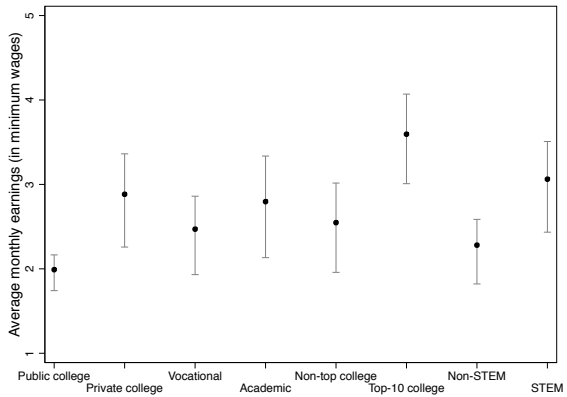
Experimental Setting

Data and Empirical Strategy

Results

Conclusions

Higher education premiums by college and degree



1 monthly MW \approx US\$288

Outline

Introduction

Higher Education in Colombia

Experimental Setting

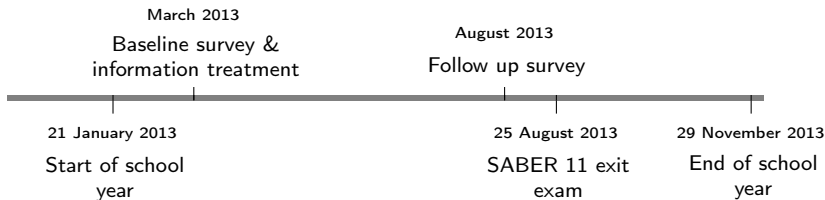
Data and Empirical Strategy

Results

Conclusions

RCT design and timeline

We target the universe of public schools in Bogotá and randomly select 120 schools from the 570 available: [▶ Targeting](#) [▶ Map](#)



Treatment: Informative session

Students in 115 schools surveyed. In 58 schools, students listened to a 35-minute talk given by young Colombian college graduates on:

1. Higher education premiums:

- ▶ Average premiums by education level. [Premiums 1](#)
- ▶ Earning premiums and probability of formal employment by college-degree (Labor Observatory website). [Premiums 2](#)

2. Funding programs:

- ▶ Emphasis on ICETEX and FESBO. We provide links for them to explore further.

3. Importance of exit exam test scores

Note: Students also received the information in print.

[Printed version](#)

Outline

Introduction

Higher Education in Colombia

Experimental Setting

Data and Empirical Strategy

Results

Conclusions

Data and empirical strategy

▶ Surveys

- ▶ Baseline: 6,601 students in 115 schools.
- ▶ Follow up: 5,503 students in 115 schools.
- ▶ 16.6% attrition between surveys, mainly due to student absences.

▶ Administrative records

- ▶ SABER 11 test scores: 95.7% match to baseline.
- ▶ Enrollment data: 95.4% match to baseline.

▶ Sample is balanced and attrition unrelated to treatment status.

▶ Balance

▶ Attrition diagnostics

Empirical Strategy

1. Cross-section:

$$y_{is,t=1} = \alpha + \beta Treat_{s,t=0} + \gamma X_{is,t=0} + u_{is,t=1} \quad (1)$$

2. Diff-in-Diff with student fixed effects (data permitting):

$$y_{ist} = \alpha Post + \beta (Treat_s \times Post) + \lambda_i + u_{ist} \quad (2)$$

- ▶ Covariates: basic individual, family, and school characteristics.
- ▶ Standard errors clustered at the school-level.
- ▶ Multiple hypothesis testing adjusted p -values (Aker et al., 2012).

Outline

Introduction

Higher Education in Colombia

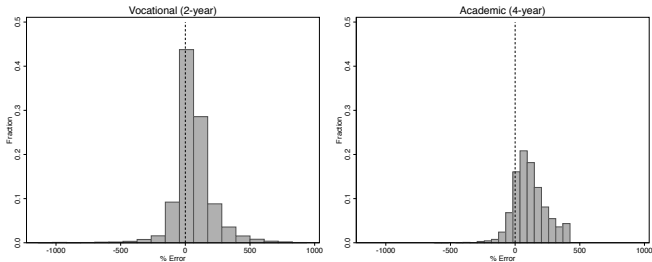
Experimental Setting

Data and Empirical Strategy

Results

Conclusions

Earning premium beliefs (at baseline)



- ▶ Almost 90% of students overestimate college premiums.
- ▶ Consistent with previous findings:
 - ▶ Gamboa and Rodríguez (2014), McGuigan et al. (2014), Pekkala-Kerr et al. (2015), Hastings et al. (2015)

Treatment effects on knowledge and beliefs

	Knowledge			Perceived earning errors	
	Labor Observatory	ICETEX	FESBO	Vocational	Academic
A. ANCOVA					
Treatment	0.008 (0.007)	0.049*** (0.016)	0.016 (0.012)	-0.002 (0.027)	0.001 (0.029)
Adjusted p-value	0.761	0.009	0.608	1.000	1.000
Observations	5,080	5,365	5,112	5,121	5,169
B. Difference-in-differences					
Treatment × Post	-0.005 (0.010)	0.046** (0.018)	0.007 (0.014)	0.037 (0.038)	0.035 (0.035)
Adjusted p-value	0.978	0.051	0.986	0.844	0.832
Observations	10,556	10,861	10,591	10,599	10,656
Baseline mean	0.077	0.694	0.175	0.636	0.949

Source: Authors' calculations from survey data.

* Significant at 10%; ** significant at 5%; *** significant at 1%.

Treatment effects on test scores and enrollment

	Test scores			Higher education choices				
	Overall score	Math	Language	College enrollment	Academic degree	Private college	Top-10 college	STEM field
<i>A. Full sample</i>								
Treatment	-0.002 (0.038)	0.045 (0.042)	-0.004 (0.033)	0.004 (0.022)	0.008 (0.008)	0.013 (0.012)	0.005** (0.003)	0.005 (0.006)
Adjusted p-value	0.997	0.343	0.952	0.997	0.754	0.593	0.086	0.872
Observations	6,318	6,318	6,318	6,298	6,298	6,298	6,298	6,298
<i>B. Balanced sample</i>								
Treatment	0.019 (0.039)	0.065 (0.041)	0.011 (0.035)	-0.001 (0.023)	0.010 (0.008)	0.012 (0.013)	0.006** (0.003)	0.006 (0.006)
Adjusted p-value	0.858	0.144	0.826	1.000	0.601	0.719	0.082	0.779
Observations	5,427	5,427	5,427	5,414	5,414	5,414	5,414	5,414
Baseline mean				0.438	0.096	0.150	0.011	0.052

Source: Authors' calculations from surveys matched to administrative data.

* Significant at 10%; ** significant at 5%; *** significant at 1%.

Heterogeneous effects

	Knowledge			Perceived earning errors	
	Labor Observatory	ICETEX	FESBO	Vocational	Academic
A. Gender					
Female	-0.012 (0.013)	0.033 (0.023)	-0.005 (0.019)	0.047 (0.053)	0.068 (0.046)
Male	0.002 (0.015)	0.060* (0.024)	0.021 (0.019)	0.025 (0.042)	-0.003 (0.042)
Female=Male	0.998	0.963	0.969	1.000	0.891
B. Family income					
Low (≤ 2 MW)	-0.003 (0.011)	0.051 (0.021)	0.004 (0.016)	0.020 (0.048)	0.032 (0.039)
Middle (> 2 MW)	-0.009 (0.016)	0.035 (0.024)	0.013 (0.025)	0.073 (0.047)	0.045 (0.051)
Low=Middle	1.000	0.997	1.000	0.996	1.000
C. Error direction					
Under or equal	-0.010 (0.040)	0.162** (0.051)	0.080 (0.048)	0.195 (0.100)	0.119 (0.090)
Over	-0.006 (0.011)	0.038 (0.019)	0.002 (0.015)	0.025 (0.037)	0.022 (0.035)
Under=Over	1.000	0.141	0.738	0.603	0.978

Heterogeneous effects

	Test scores			Higher education choices				
	Overall score	Math	Language	College enrollment	Academic degree	Private college	Top-10 college	STEM field
A. Gender								
Female	-0.030 (0.043)	0.029 (0.047)	-0.045 (0.041)	-0.014 (0.026)	0.007 (0.015)	0.004 (0.003)	0.006 (0.011)	0.001 (0.007)
Male	0.030 (0.048)	0.063 (0.050)	0.043 (0.041)	0.025 (0.024)	0.021 (0.014)	0.007 (0.004)	0.011 (0.013)	0.008 (0.010)
Female=Male	0.632	0.677	0.133	0.659	0.961	0.991	1.000	0.998
B. Family income								
Low (≤ 2 MW)	-0.022 (0.042)	0.022 (0.043)	-0.017 (0.039)	0.006 (0.023)	0.024 (0.011)	0.004 (0.003)	0.013 (0.009)	0.005 (0.007)
Middle (> 2 MW)	0.042 (0.049)	0.096 (0.055)	0.026 (0.046)	0.000 (0.027)	-0.010 (0.021)	0.009 (0.006)	-0.002 (0.016)	0.004 (0.013)
Low=Middle	0.541	0.221	0.591	1.000	0.492	0.974	0.986	1.000
C. Error direction								
Under or equal	0.004 (0.099)	0.081 (0.099)	0.033 (0.094)	0.056 (0.045)	0.027 (0.034)	-0.001 (0.008)	0.030 (0.033)	0.032 (0.018)
Over	-0.008 (0.037)	0.043 (0.041)	-0.011 (0.034)	-0.006 (0.022)	0.010 (0.013)	0.006 (0.003)	0.004 (0.009)	0.002 (0.007)
Under=Over	1.000	0.853	0.826	0.636	0.998	0.959	0.994	0.620

Outline

Introduction

Higher Education in Colombia

Experimental Setting

Data and Empirical Strategy

Results

Conclusions

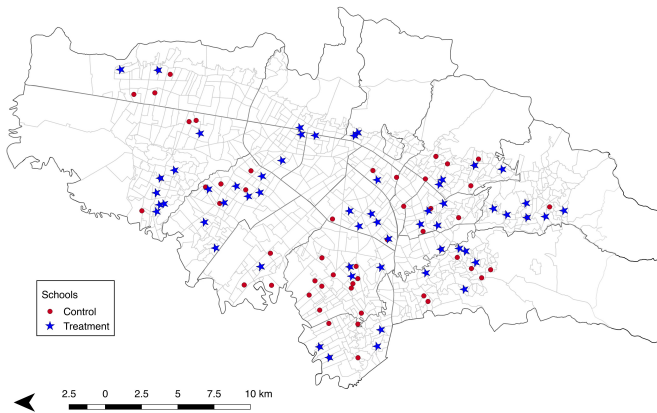
Thank you

Targeting: Public high schools in Bogotá

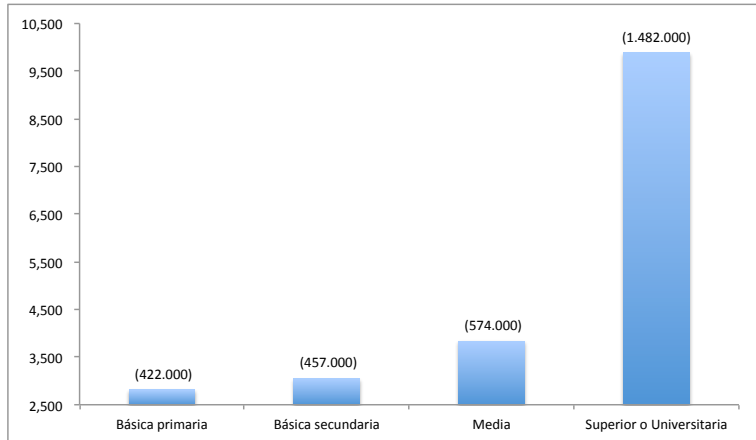
	Private schools		Public schools	
	Mean	(SD)	Mean	(SD)
<i>Panel A: Student characteristics</i>				
Parent completed college	0.580	(0.494)	0.156	(0.363)
Family income (>2 MWs)	0.726	(0.446)	0.297	(0.457)
<i>Panel B: Exit Exam</i>				
Standardized SABER 11 score (2010-2012)	0.874	(0.809)	0.117	(0.254)
<i>Panel C: Higher education choices</i>				
Enrolled	0.571	(0.495)	0.426	(0.495)
Public college	0.147	(0.354)	0.278	(0.448)
Private college	0.424	(0.494)	0.148	(0.355)
Top-10 college	0.160	(0.366)	0.011	(0.106)
Academic degree (4-year)	0.370	(0.483)	0.098	(0.298)
Vocational degree (2-year)	0.201	(0.400)	0.328	(0.469)
STEM degree	0.211	(0.408)	0.054	(0.227)
Total number of students	37,068		37,787	
Total number of schools	790		570	

Source: Authors' calculations from ICFES and SNIES administrative data.

Selected schools



Average college premiums (1)



College premiums (1)



Calculadora de salarios por profesión para graduados 2001-2011

*Calcule el salario promedio del programa e institución en la que piensa estudiar o estudió para darse una idea de cuál es el sueldo de estos profesionales.

Región: ▾

Institución: ▾

Programa: ▾

Sexo: ▾

Programa	Sexo	Ingreso	Graduados
GEOGRAFIA	HOMBRES	2,001,204	110
GEOGRAFIA	MUJERES	1,920,567	72

Fuente: [Observatorio Laboral para la Educación](#)

College premiums (2)



Calculadora de salarios por profesión para graduados 2001-2011

*Calcule el salario promedio del programa e institución en la que piensa estudiar o estudió para darse una idea de cuál es el sueldo de estos profesionales.

Región: ▾

Institución: ▾

Programa: ▾

Sexo: ▾

Programa	Sexo	Ingreso	Graduados
GEOLOGIA	HOMBRES	5,693,092	292
GEOLOGIA	MUJERES	5,254,615	149
MAESTRIA EN CIENCIAS - GEOLOGIA	HOMBRES	6,602,101	33
MAESTRIA EN CIENCIAS - GEOLOGIA	MUJERES	7,083,250	7

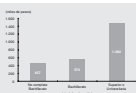
Fuente: [Observatorio Laboral para la Educación](#)

Handout given to students

¡La educación superior paga!

La relación entre estudios e ingresos

La educación superior es un factor determinante de la situación económica y por tanto la calidad de vida de los familias. En el siguiente gráfico se presentan los salarios promedio por nivel educativo en Bogotá.



Fuente: Encuesta de Hogares 2011, DANE

Como se puede observar, mayor educación se traduce en salarios más altos. Solo con terminar el Bachillerato se pasa de ganar 407.000 a 574.000 por mes. Si además más evidencia para aquellos con un título de nivel superior, ya que el salario promedio mensual crece a 1.402.000. Estos estadísticos presentan un mensaje claro: vale la pena estudiar.

¿Cómo puedo averiguar cuánto ganaré en la carrera que a mí me interesa?

Es probable que usted ya tenga una idea sobre las carreras que le interesan y la institución donde quiere realizar estos estudios. Si es así, ¿hay alguna manera de saber cuánto puede esperar ganar en su situación específica?

Existen dos lugares donde pueden consultar el salario promedio de los graduados por profesión y carreras. Son:

- Calculadora de salarios promedio para graduados: www.fondecapersonales.edu.co

Esta página cuenta con una herramienta que le permite consultar el salario promedio por región, institución educativa, programa de estudio y género de las personas que obtuvieron su título entre 2001-2011.

¿Cómo funciona?

- Acceda al enlace y busque el Calculador de Salario por profesión para Graduados

- Escija la región donde quiere realizar la búsqueda (por ejemplo, Bogotá).
- Selecciona la institución donde quiere realizar sus estudios y el programa que planea cursar

- Observatorio laboral del Ministerio de Educación: www.graduadosobservatorio.edu.co

Esta página también provee información sobre los salarios promedio de personas con título de educación superior para toda Colombia. Además, le permite conocer las perspectivas laborales del programa de estudio de su interés.

¿Cómo funciona?

- Acceda al enlace y busque el botón rojo que dice Sistema de información del Observatorio Laboral
- Si quiere conocer el número de graduados por carrera, acceda a la pestaña que dice "Perfil nacional". Después, escija el departamento donde planea estudiar y obtendrá los datos de graduados por área de estudio.

Si desea saber cuántos individuos en su área de interés tienen un empleo formal (cotizando a la seguridad social) y cuánto ganan en promedio vaya a "Tercelización laboral recién graduados". Aquí tiene la opción de buscar por institución o por carrera.

Recuerde que estas páginas le permiten conocer el salario promedio de los profesionales graduados en su área de interés.

¿Qué necesito para entrar a la Universidad y la carrera que me interesa?

- Buenos resultados académicos: Uno de los criterios más importantes a la hora de buscar admisión a una institución de educación superior es el rendimiento académico. Muchas instituciones utilizan el puntaje del ICFES (SABER 11), y otras instituciones como la Universidad Nacional que tienen su propio examen de admisión. En cualquier caso, estudiar aumenta las posibilidades de ser admitido y también las posibilidades de acceder a becas o financiación.

- Financiación: Existen varias maneras de financiar la educación superior en Colombia. En general, recibes preferencia los alumnos de escasos recursos y buen desempeño académico. Las siguientes son algunas opciones a tener en cuenta:

- Becas provistas por cada institución por mérito académico y/o escasos recursos. Consulte las políticas de becas ya que estas son diferentes para cada institución.

- ICFES: <http://www.icfes.gov.co>
- Secretaría de Educación de Bogotá (Banco de cupos, Fondo de Financiamiento de Educación Superior de Bogotá): <http://www.pedagogia.edu.co/cedesba-planes-educacion-superior.html>

Baseline balance (F-test p-value=0.239)

	Control		Treatment		Difference
	Mean	(SD)	Mean	(SD)	p-value
<i>Student attributes</i>					
Male	0.475	(0.499)	0.472	(0.499)	0.831
Age	17.639	(0.925)	17.663	(0.942)	0.504
Parent completed secondary	0.398	(0.489)	0.392	(0.488)	0.719
Parent completed higher education	0.176	(0.381)	0.155	(0.362)	0.270
Family income (<1 minimum wage)	0.136	(0.343)	0.151	(0.358)	0.289
Family income (1-2 minimum wages)	0.538	(0.499)	0.539	(0.499)	0.941
Family income (>2 minimum wages)	0.320	(0.467)	0.307	(0.461)	0.589
Student works	0.164	(0.370)	0.176	(0.381)	0.352
Perceived high academic ranking	0.424	(0.494)	0.395	(0.489)	0.128
Perceived high self-efficacy	0.350	(0.477)	0.355	(0.479)	0.749
Risk averse	0.857	(0.350)	0.845	(0.362)	0.374
Perceived in likelihood of enrollment	0.841	(0.366)	0.844	(0.363)	0.832
<i>School characteristics</i>					
Number of students (2010-2012)	95.264	(48.292)	92.349	(31.826)	0.718
SABER 11 score (2010-2012)	0.160	(0.216)	0.118	(0.275)	0.381
Morning shift	0.647	(0.478)	0.625	(0.484)	0.811
Afternoon shift	0.330	(0.470)	0.359	(0.480)	0.748
Single shift	0.023	(0.150)	0.016	(0.125)	0.803
School has computer lab	0.969	(0.173)	0.958	(0.201)	0.749
Total number of students	3,224			3,377	
Total number of schools	58			57	

Attrition

	Surveys: Baseline to Follow-Up	Baseline survey to ICFES	Baseline survey to ICFES-SNIES
	(1)	(2)	(3)
<i>A. Attrition Rates</i>			
Baseline <i>N</i>	6,601	6,601	6,601
Final <i>N</i>	5,503	6,323	6,303
Attrition Rate	0.166	0.043	0.046
<i>B. Random attrition tests (OLS)</i>			
Treatment	0.015 (0.027)	-0.012 (0.013)	-0.012 (0.014)

▶ Data

Treatment effects on knowledge and beliefs

Reference earnings by: Reference earnings by:	Vocational		Academic	
	College, degree & field	Public/private college, degree & field	College, degree & field	Public/private college, degree & field
A. ANCOVA				
Treatment	0.009 (0.024)	-0.001 (0.023)	0.010 (0.038)	-0.010 (0.037)
Adjusted p-value	0.829	0.989	0.884	0.893
Observations	2,782	3,972	2,802	4,009
B. Difference-in-differences				
Treatment × Post	0.033 (0.029)	0.039 (0.028)	0.038 (0.040)	0.049 (0.040)
Adjusted p-value	0.356	0.228	0.444	0.297
Observations	5,691	8,152	5,715	8,196
Baseline mean	0.096	0.217	0.944	1.147

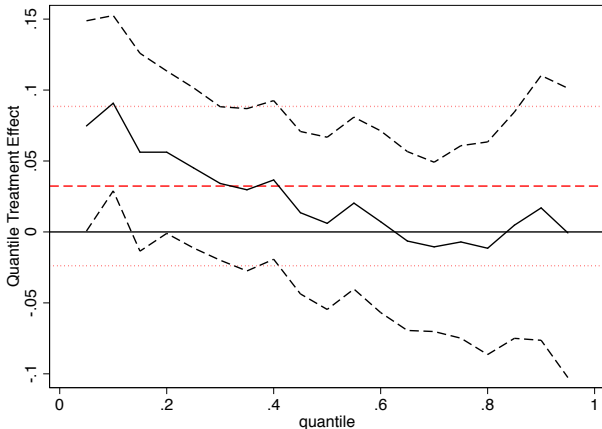
Heterogeneous effects on knowledge and beliefs

	Knowledge			Perceived earnings error	
	Labor Observatory	ICETEX	FESBO	Vocational	Academic
<i>A. Academic ranking</i>					
Low	0.000 (0.012)	0.065** (0.022)	0.008 (0.019)	0.042 (0.045)	0.002 (0.039)
High	-0.016 (0.015)	0.016 (0.024)	0.002 (0.021)	0.029 (0.051)	0.077 (0.049)
Low=High	0.986	0.520	1.000	1.000	0.826
<i>B. Self-efficacy</i>					
Low	0.004 (0.011)	0.024 (0.022)	0.015 (0.017)	0.041 (0.044)	0.009 (0.040)
High	-0.025 (0.016)	0.083*** (0.024)	-0.013 (0.024)	0.027 (0.058)	0.076 (0.053)
Low=High	0.697	0.230	0.977	1.000	0.958
<i>C. Risk aversion</i>					
Low	-0.048 (0.028)	0.047 (0.042)	0.085 (0.037)	0.013 (0.102)	-0.072 (0.078)
High	0.004 (0.010)	0.047 (0.019)	-0.002 (0.015)	0.031 (0.041)	0.043 (0.037)
Low=High	0.529	1.000	0.221	1.000	0.858

Heterogeneous effects on test scores and enrollment

	Test scores			Higher education choices				
	Overall score	Math	Language	College enrollment	Academic degree	Private college	Top-10 college	STEM field
A. Academic ranking								
Low	0.015 (0.045)	0.066 (0.049)	-0.010 (0.042)	0.005 (0.025)	0.016 (0.013)	0.005 (0.003)	0.007 (0.009)	0.004 (0.007)
High	-0.002 (0.047)	0.038 (0.050)	0.024 (0.043)	0.007 (0.027)	0.008 (0.018)	0.006 (0.005)	0.011 (0.015)	0.008 (0.011)
Low=High	0.993	0.768	0.692	1.000	0.999	1.000	1.000	1.000
B. Self-efficacy								
Low	-0.034 (0.044)	0.032 (0.049)	-0.052 (0.039)	0.003 (0.023)	0.014 (0.013)	0.004 (0.003)	0.002 (0.011)	0.000 (0.008)
High	0.076 (0.048)	0.091 (0.051)	0.094* (0.046)	0.005 (0.027)	0.012 (0.017)	0.008 (0.005)	0.021 (0.012)	0.013 (0.010)
Low=High	0.103	0.423	0.011	1.000	1.000	0.973	0.892	0.871
C. Risk aversion								
Low	0.020 (0.085)	0.081 (0.090)	0.039 (0.074)	0.031 (0.039)	0.019 (0.024)	0.016 (0.009)	0.032 (0.018)	0.032 (0.015)
High	-0.012 (0.040)	0.035 (0.041)	-0.015 (0.036)	-0.002 (0.022)	0.011 (0.013)	0.004 (0.003)	0.005 (0.009)	0.002 (0.007)
Low=High	0.992	0.762	0.668	0.950	1.000	0.720	0.719	0.200

Math score (SABER 11) - QTE



Language score (SABER 11) - QTE

