

Poverty and Income in Latin America

Crecimiento acelerado PIB per cápita (PPP) pobrec Estancamiento Crisis Los noventa 용 BSI PIB per cápita 🔫 pobreza

Pobreza y PIB per cápita en América Latina, 1992-2010

Fuente: SEDLAC (CEDLAS y Banco Mundial).

Nota: La tasa de pobreza se calcula con la línea de 4 dólares por día ajustados por paridad de poder adquisitivo (PPP). La línea de 4 dólares es similar a la mediana de las líneas de pobreza moderada elegidas por los gobiernos de los países latinoamericanos.

Source: http://cedlas.econo.unlp.edu.ar/eng/additional-screen.php?idP=7

Inequality in Latin America

The Gini coefficient: 0 is perfect equality, 100 is perfect inequality



Fuente: Elaboración propia sobre la base de SEDLAC (CEDLAS y Banco Mundial).

Source: http://cedlas.econo.unlp.edu.ar/eng/additional-screen.php?idP=7

25.9



1. School Vouchers (PACES in Colombia)

- PACES program (1991-1997)
- Distributed 125,000 vouchers
- Restricted to low-income high school students





- Distributed randomly (60%) to applicants
- Continuation conditional on performance
- Most graduating students take ICFES college entrance exam

Effect of PACES on Graduation Rates

- Compare voucher "winners" to voucher "losers"
- Proxy graduation with taking ICFES

	Exact I	D match	ID and o	ity match	ID and name	7-letter match	ID, city, a ma	and 7-letter atch
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Average graduate	e rates	A.	All applicat	nts (N = 354	2)			
Dependent var. mean Voucher winner	0.072	0.059 (0.015)	0.069 (0.016)	0.056 0.014)	0. 0.072 (0.016)	0.059 (0.014)	0. 0.068 (0.016)	0.056 (0.014)
Male	(0.010)	-0.052 (0.014)	(0.010)	-0.053 (0.014)	(0.010)	-0.043 (0.014)	(0.010)	-0.045 (0.014)
Age		-0.160 (0.005)		-0.156 (0.005)		-0.153 (0.005)		-0.149 (0.005)

TABLE 2-VOUCHER STATUS AND THE PROBABILITY OF ICFES MATCH

Source: Angrist, Bettinger and Kremer, "Long-Term Educational Consequences of Secondary School Vouchers: Evidence from Administrative Records in Colombia," *American Economic Review* (2006)

Effect of PACES on Graduation Rates

- Compare voucher "winners" to voucher "losers"
- Proxy graduation with taking ICFES

	Exact I	Exact ID match		ID and city match		ID and 7-letter name match		ID, city, and 7-letter match	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	
Effects of vouche	ers	A.	All applicat	nts (N = 354	2)				
Dependent var. mean		354	0.1	339	0.	331	0.1	318	
Voucher winner	0.072	0.059	0.069	0.056	0.072	0.059	0.068	0.056	
	(0.016)	(0.015)	(0.016)	(0.014)	(0.016)	(0.014)	(0.016)	(0.014)	
Male		-0.052		-0.053		-0.043		-0.045	
		(0.014)		(0.014)		(0.014)		(0.014)	
Age		-0.160		-0.156		-0.153		-0.149	
		(0.005)		(0.005)		(0.005)		(0.005)	

TABLE 2-VOUCHER STATUS AND THE PROBABILITY OF ICFES MATCH

Source: Angrist, Bettinger and Kremer, "Long-Term Educational Consequences of Secondary School Vouchers: Evidence from Administrative Records in Colombia," *American Economic Review* (2006)

Effect of PACES on ICFES Scores

 Can't simply compare scores of "winners" and "losers" because program induced more voucher recipients to take the test.



Effect of PACES on ICFES Scores

 Can't simply compare scores of "winners" and "losers" because program induced more voucher recipients to take the test.



• One way to correct these estimates is to use a "Tobit" estimator

So why was PACES cancelled?

So why was PACES cancelled?

- 1. Low quality entrants into private school market
- 2. Payments to schools were late (and private schools' general distrust of government)
- Voucher amounts didn't increase enough leading better (higher cost) schools to drop out of program
- 4. Didn't meet needs of very poor rural population

Lesson: The devil is in the details with voucher programs.

- 2013 infant mortality:
 - Costa Rica: 8 per 1000 (with GDP per cap \$10,185)
 - Mexico: 13 per 1000 (with GDP per cap \$10,307)
 - Chile: 7 per 1000 (with GDP per cap \$15,732)
 - USA: 6 per 1000 (with GDP per cap \$53,042)
- Costa Rica introduced national health insurance in 1973

How are these facts related?





Year

Table 4

Use county-level variation in roll out of child insurance coverage

Infant mortality	(1)	(2)	(3)	(4)	(5)	(6)
Child insurance	-0.874 (0.226)	-0.699 (0.217) ^{***}	-0.293 (0.254)	-0.255 (0.260)	-0.408 (0.268)	0.105 (0.260)
<i>Mother characteristics</i> (<i>women 15–44</i>) Education						
Primary only		-0.252 (1.381)				0.815 (1.221)
Secondary or higher		-0.786 (1.143)				1.026 (1.082)
Married		-1.667 (0.871) [*]				-2.442 (0.927) ^{**}
Migrated		0.676 (0.260) ^{**}				0.461 (0.220) ^{**}
Household characteristics						
Lack water supply, sanitation ^b			0.112 (0.036)***			0.079 $(0.039)^{**}$
Household wealth ^c						
First principle component				-0.092 (0.030)****		-0.101 (0.036) ^{***}
Second principle component				0.032		0.062
County health care infrastructure				(0.025)		(0.050)
Primary healthcare program coverage					-0.021	-0.015
New clinic since 1973					(0.023) -0.010	(0.021) 0.002
Travel time to San Jose					(0.011) 0.414	(0.011) 0.838
Deaths not certified					(0.289) 0.804 $(0.351)^{**}$	(0.252) 0.024 (0.320)
Constant	-0.419	$(0.132)^{**}$	-0.594	-0.606	-0.425	$(0.237)^{***}$
Degrees of freedom $(n = 99)$	97	93	96	95	93	86
<i>R</i> -squared	0.14	0.22	0.22	0.23	0.22	0.40
<i>F</i> -tests for control variables		4.12***	_	4.78**	2.33*	5.77***

Fixed effects and instrumental variables estimates of insurance effect on all-cause infant mortality

Source: Dow and Schmeer, "Health insurance and child mortality in Costa Rica," in *Social Science and Medicine* (2003)

Table 4

Control for changes in mother's characteristics — over time

Infant mortality	(1)	(2)	(3)	(4)	(5)	(6)
Child insurance	-0.874 (0.226)***	-0.699 (0.217)	-0.293 (0.254)	-0.255 (0.260)	-0.408 (0.268)	0.105 (0.260)
Mother characteristics (women 15–44)						
Education						
Primary only		-0.252				0.815
		(1.381)				(1.221)
Secondary or higher		-0.786				1.026
		(1.143)				(1.082)
Married		-1.66^{\prime}				-2.442
Migrated		(0.871)				(0.927) 0.461
Migrated		$(0.260)^{**}$				$(0.401)^{**}$
Household characteristics		(0.200)				(0.220)
Lack water supply, sanitation ^b			0.112			0.079
			(0.036)***			$(0.039)^{**}$
Household wealth ^c						
First principle component				-0.092		-0.101
				(0.030)		(0.036)
Second principle component				0.032		(0.062)
County health care infrastructure				(0.029)		(0.038)
Primary healthcare program coverage					-0.021	-0.015
					(0.023)	(0.021)
New clinic since 1973					-0.010	0.002
					(0.011)	(0.011)
Travel time to San Jose					0.414	0.838
					(0.289)	(0.252)***
Deaths not certified					0.804	0.024
					(0.351)	(0.320)
Constant	-0.419	-0.323	-0 594	-0.606	-0.425	-1.055
Constant	(0.080)***	$(0.132)^{**}$	$(0.089)^{***}$	$(0.089)^{***}$	$(0.138)^{***}$	$(0.237)^{***}$
Degrees of freedom $(n = 99)$	97	93	96	95	93	86
<i>R</i> -squared	0.14	0.22	0.22	0.23	0.22	0.40
F-tests for control variables		4.12***	—	4.78**	2.33*	5.77***

Fixed effects and instrumental variables estimates of insurance effect on all-cause infant mortality

Source: Dow and Schmeer, "Health insurance and child mortality in Costa Rica," in *Social Science and Medicine* (2003)

Table 4

Control for changes in household characteristics — over time

Infant mortality	(1)	(2)	(3)	(4)	(5)	(6)
Child insurance	-0.874 $(0.226)^{***}$	-0.699 (0.217)***	-0.293 (0.254)	-0.255 (0.260)	-0.408 (0.268)	0.105 (0.260)
Mother characteristics (women 15–44) Education Primary only Secondary or higher Married Migrated Household characteristics Lack water supply, sanitation ^b Household wealth ^c First principle component Second principle component County health care infrastructure Primary healthcare program coverage New clinic since 1973 Travel time to San Jose Deaths not certified		-0.252 (1.381) -0.786 (1.143) -1.667 (0.871)* 0.676 (0.260)**	0.112 (0.036)***	-0.092 (0.030)*** 0.032 (0.029)	-0.021 (0.023) -0.010 (0.011) 0.414 (0.289) 0.804 (0.351)**	0.815 (1.221) 1.026 (1.082) -2.442 (0.927)** 0.461 (0.220)** 0.079 (0.039)** -0.101 (0.036)*** 0.062 (0.038) -0.015 (0.021) 0.002 (0.011) 0.838 (0.252)*** 0.024 (0.320)
Constant Degrees of freedom ($n = 99$) <i>R</i> -squared <i>F</i> -tests for control variables	-0.419 (0.080)*** 97 0.14 —	-0.323 (0.132)** 93 0.22 4.12***	-0.594 (0.089)*** 96 0.22 	-0.606 (0.089)*** 95 0.23 4.78**	-0.425 (0.138)*** 93 0.22 2.33*	-1.055 (0.237) ^{***} 86 0.40 5.77 ^{***}

Fixed effects and instrumental variables estimates of insurance effect on all-cause infant mortality

Source: Dow and Schmeer, "Health insurance and child mortality in Costa Rica," in *Social Science and Medicine* (2003)

Table 4

Infant mortality	(1)	(2)	(3)	(4)	(5)	(6)
Child insurance	-0.874 $(0.226)^{***}$	-0.699 $(0.217)^{***}$	-0.293 (0.254)	-0.255 (0.260)	-0.408 (0.268)	0.105 (0.260)
Mother characteristics (women 15–44)						
Education						
Primary only		-0.252 (1.381)				0.815 (1.221)
Secondary or higher		-0.786				1.026
Married		(1.143) -1.667				-2.442
Migrated		(0.871) 0.676				(0.927) 0.461
e		$(0.260)^{**}$				$(0.220)^{**}$
Household characteristics						
Lack water supply, sanitation ^b			0.112 (0.036)***			0.079 $(0.039)^{**}$
Household wealth ^c						
First principle component				-0.092		-0.101
Construction in the community				(0.030)		(0.036)
Second principle component				(0.032)		(0.062)
County health care infrastructure				· /		. ,
Primary healthcare program coverage					-0.021	-0.015
					(0.023)	(0.021)
New chine since 1973					-0.010 (0.011)	(0.002)
Travel time to San Jose					0.414	0.838
					(0.289)	(0.252)***
Deaths not certified					0.804	0.024
					(0.351)	(0.320)
Constant	-0.419	-0.323	-0.594	-0.606	-0.425	-1.055
	$(0.080)^{***}$	(0.132)**	$(0.089)^{***}$	$(0.089)^{***}$	(0.138)***	(0.237)***
Degrees of freedom $(n = 99)$	97	93	96	95	93	86
<i>R</i> -squared	0.14	0.22	0.22	0.23	0.22	0.40
F-tests for control variables		4.12		4.78**	2.33*	5.77***

Source: Dow and Schmeer, "Health insurance and child mortality in Costa Rica," in *Social Science and Medicine* (2003)

Control for changes in household wealth over time

Table 4

	Infant mortality	(1)	(2)	(3)	(4)	(5)
e in	Child insurance	-0.874 (0.226) ^{***}	-0.699 $(0.217)^{***}$	-0.293 (0.254)	-0.255 (0.260)	-0.408 (0.268)
5 11 1	Mother characteristics (noncon 15, 14)					
	Education					
	Primary only		-0.252			
			(1.381)			
	Secondary or higher		-0.786			
			(1.143)			
	Married		-1.667			
	Migratad		(0.8/1)			
	Migrated		$(0.070)^{**}$			
	Household characteristics		(0.200)			
	Lack water supply, sanitation ^b			0.112		
				$(0.036)^{***}$		
	Household wealth ^c					
	First principle component				-0.092	
					(0.030)	
	Second principle component				(0.032)	
	County health care infrastructure				(0.029)	
	Primary healthcare program coverage					-0.021
						(0.023)
	New clinic since 1973					-0.010
						(0.011)
	Travel time to San Jose					0.414
	Deaths not contified					(0.289)
	Deaths not certified					$(0.304)^{*}$
						(0.551)
	Constant	-0.419	-0.323	-0.594	-0.606	-0.425

(0.080)***

97

0.14

(0.132)**

93

0.22

4.12***

Fixed effects and instrumental variables estimates of insurance effect on all-cause infant mortality

Source: Dow and Schmeer, "Health insurance and child mortality in Costa Rica," in Social Science and Medicine (2003)

Degrees of freedom (n = 99)

F-tests for control variables

R-squared

Control for change county healthcare infrastructure over time

(6)

0.105

0.815

(1.221)1.026

(1.082)-2.442 $(0.927)^{**}$ 0.461 $(0.220)^{**}$

0.079 $(0.039)^{**}$

-0.101 $(0.036)^{***}$ 0.062 (0.038)

-0.015

(0.021)

0.002

0.838 $(0.252)^{***}$

0.024

(0.320)

-1.055

86

0.40

5.77***

(0.237)***

(0.011)

(0.260)

(0.351)**

93

0.22

 2.33^{*}

(0.138)***

(0.089)****

95

0.23

4.78**

(0.089)***

96

0.22

Table 4

Infant mortality	(1)	(2)	(3)	(4)	(5)	(6)
Child insurance	-0.874 $(0.226)^{***}$	-0.699 $(0.217)^{***}$	-0.293 (0.234)	-0.255 (0.260)	0.408 (0.268)	0.105 (0.260)
Mother characteristics (women 15–44)						
Education						
Primary only		-0.252				0.815
		(1.381)				(1.221)
Secondary or higher		-0.786				1.026
		(1.143)				(1.082)
Married		-1.667				-2.442
		(0.8/1)				(0.927)
Migrated		$(0.0/6)^{**}$				0.461
Household characteristics		(0.200)				(0.220)
Lack water supply sanitation ^b			0.112			0.079
Lack water supply, santation			$(0.036)^{***}$			(0.039)
Household wealth ^c			(01020)			(0.025)
First principle component				-0.092		-0.101
				$(0.030)^{***}$		(0.036)
Second principle component				0.032		0.062
				(0.029)		(0.038)
County health care infrastructure						
Primary healthcare program coverage					-0.021	-0.013
					(0.023)	(0.021)
New clinic since 1973					-0.010	0.002
					(0.011)	(0.011)
I ravel time to San Jose					0.414	0.838
Deaths not contified					(0.289)	(0.252)
Deaths not certified					$(0.351)^{**}$	(0.024)
					(0.551)	(0.520)
Constant	-0.419	-0.323	-0.594	-0.606	-0.425	-1.055
	(0.080)***	(0.132)**	(0.089)***	(0.089)***	(0.138)***	(0.237)
Degrees of freedom $(n = 99)$	97	93	96	95	93	86
<i>R</i> -squared	0.14	0.22	0.22	0.23	0.22	0.40
F-tests for control variables		4.12***	_	4.78^{**}	2.33*	5.77***

Source: Dow and Schmeer, "Health insurance and child mortality in Costa Rica," in *Social Science and Medicine* (2003)

Control for changes in all of that stuff together —— over time

Table 4 Fixed effects and instrumental variables estimates of insurance effect on all-cause infant mortality Infant mortality (1)(2)(3) (4) (5) (6) Child insurance -0.874-0.699-0.293-0.2550.105 (0.226)*** $(0.217)^{***}$ (0.260)(0.254) (0.268)(0.260)Mother characteristics (women 15–44) Education Primary only -0.2520.815 (1.221)(1.381)Secondary or higher -0.7861.026 (1.143)(1.082)-1.667-2.442Married $(0.871)^*$ $(0.927)^{**}$ Migrated 0.676 0.461 $(0.260)^{**}$ $(0.220)^{**}$ Household characteristics 0.079 Lack water supply, sanitation^b 0.112 $(0.036)^{***}$ $(0.039)^{**}$ Household wealth^c -0.092-0.101First principle component $(0.030)^*$ $(0.036)^{**}$ 0.032 0.062 Second principle component (0.029)(0.038)County health care infrastructure -0.021-0.015Primary healthcare program coverage (0.021)(0.023)New clinic since 1973 -0.0100.002 (0.011)(0.011)Travel time to San Jose 0.414 0.838 (0.252)*** (0.289)Deaths not certified 0.804 0.024 $(0.351)^{**}$ (0.320)-0.419-0.323-0.594-0.425Constant -0.606-1.055(0.080)*** (0.089)*** (0.089)**** (0.138)*** $(0.132)^{**}$ (0.237)*** Degrees of freedom (n = 99)97 93 96 95 93 86 0.14 R-squared 0.22 0.22 0.23 0.22 0.40 4.12*** 4.78** 2.33^{*} 5.77*** F-tests for control variables ____

Source: Dow and Schmeer, "Health insurance and child mortality in Costa Rica," in *Social Science and Medicine* (2003)

Control for changes in all of that stuff together over time

Lesson: Seemingly no causal effect of national health insurance on infant mortality

3. Child Nutrition Supplementation in Guatemala



- INCAP Nutritional RCT (1969-1977) in 4 Guatemalan villages
- 2 treatment villages got protein-rich supplement (atole)
- 2 control villages got less nutritious drink (fresco)

What were the short and long-term consequences for education and cognitive skills?

3. Child Nutrition Supplementation in Guatemala



What were the short and long-term consequences for education and cognitive skills?

- 1.17 additional years of schooling for women
- No additional schooling for men
- Big increases for both men and women on reading comprehension and non-verbal cognitive ability

4. Paying Mothers to Keep Kids in School (Progresa/Oportunidades)

- Rolled out in 1997 as a randomized control trial (RCT)
 - 286 control communities
 - 320 treatment communities
- Grants for each child enrolled in school
- \$10.50 to \$66 per month
- Grants increased with grade
- High school grants were higher for girls
- Additional health and nutrition benefits for little kids



4. Paying Mothers to Keep Kids in School (Progresa/Oportunidades)

- Relative to control group, treatment group experienced:
 - 20% increase in enrollment of secondary school girls
 - 10% increase in enrollment of secondary school boys
 - no effect on primary school enrollment
 - 12% lower incidence of illness for children age 1 to 5
- Many countries around the world have copied Progresa/Oportunidades



- ALI (Aligning Learning Incentives) gave money for scores on math tests
- Control group and three treatment groups (88 schools total)

Learn more: Behrman, Parker, Todd, and Wolpin, "Aligning Learning Incentives of Students and Teachers: Results from Social Experiment in Mexican High Schools," *Journal of Political Economy* (forthcoming)



- ALI (Aligning Learning Incentives) gave money for scores on math tests
- Control group and three treatment groups (88 schools total)
- T1: Individual payments to students



- ALI (Aligning Learning Incentives) gave money for scores on math tests
- Control group and three treatment groups (88 schools total)
- T1: Individual payments to students
- T2: Payments to teachers for their students' success



- ALI (Aligning Learning Incentives) gave money for scores on math tests
- Control group and three treatment groups (88 schools total)
- T1: Individual payments to students
- T2: Payments to teachers for their students' success
- T3: Combination of T1 and T2

- ALI (Aligning Learning Incentives) gave money for scores on math tests
- Control group and three treatment groups (88 schools total)
- T1: Individual payments to students
- T2: Payments to teachers for their students' success
- T3: Combination of T1 and T2 plus:
 - Bonuses for students based on scores of other students in class
 - Bonuses for other teachers and administrators



What worked?

- T1: Individual payments to students
- T2: Payments to teachers for their students' success
- T3: Combination of T1 and T2 plus:
 - Bonuses for students based on scores of other students in class
 - Bonuses for other teachers and administrators



What worked?

- T1: Individual payments to students Moderate positive effects
- T2: Payments to teachers for their students' success
- T3: Combination of T1 and T2 plus:
 - Bonuses for students based on scores of other students in class
 - Bonuses for other teachers and administrators



What worked?

- T1: Individual payments to students Moderate positive effects
- T2: Payments to teachers for their students' success No effects
- T3: Combination of T1 and T2 plus:
 - Bonuses for students based on scores of other students in class
 - Bonuses for other teachers and administrators



What worked?

T1: Individual payments to students Moderate positive effects

33

- T2: Payments to teachers for their students' success No effects
- T3: Combination of T1 and T2 plus: Big positive effects
 - Bonuses for students based on scores of other students in class
 - Bonuses for other teachers and administrators



Big Lessons Learned

1. Social policy can be powerful

Big Lessons Learned

- 1. Social policy can be powerful
- 2. Details matter

Big Lessons Learned

- 1. Social policy can be powerful
- 2. Details matter
- Good policy design + data + statistical methods
 = real answers