

Fifty Years of Admission Exams and Gaps in College Access in Chile

Sebastián Gallegos

UAI Business School, IZA & HCEO-U.Chicago

Chris Neilson

Yale University & NBER

Andres Barrios

UAndes & CEP-LSE

*Sociedad Chilena de Políticas Públicas
XVI Encuentro 2025*

Full disclosure:

“Closing Gaps in Higher Education Opportunities for Underrepresented Students Over the Past Five Decades in Chile”
circulating as background paper in



WORLD BANK GROUP

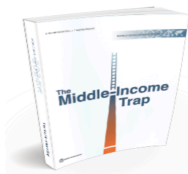
World Development Report 2024

World Development Report 2024

THE MIDDLE-INCOME TRAP

[About](#) [Messages](#) [Chapters](#)

About



Drawing on the development experience and advances in economic analysis since the 1950s, *World Development Report 2024* identifies what developing economies can do to avoid the “middle-income trap.” Lower-middle-income countries must go beyond investment-driven strategies—they must also adopt modern technologies and successful business practices from abroad and infuse them across their economies. Upper-middle-income countries need to accelerate the shift to innovation, by pushing the global frontiers of technology. This requires reconfiguring economic structures governing enterprises, labor, and energy use—in ways that enable greater economic freedom, social mobility, and political contestability.

(Suggested reading!)

Fifty Years of Admission Exams and Gaps in College Access in Chile

Sebastián Gallegos

UAI Business School, IZA & HCEO-U.Chicago

Chris Neilson

Yale University & NBER

Andres Barrios

UAndes & CEP-LSE

*Sociedad Chilena de Políticas Públicas
XVI Encuentro 2025*

Summary 1/4

Why?: We all care about a fundamental question: *how do countries develop?*

- 'Human capital is the main determinant of development' (Jones & Romer, 2010; Lucas 1988)
- But we typically lack long series of microdata to document how development varies *across groups, space and over time*.

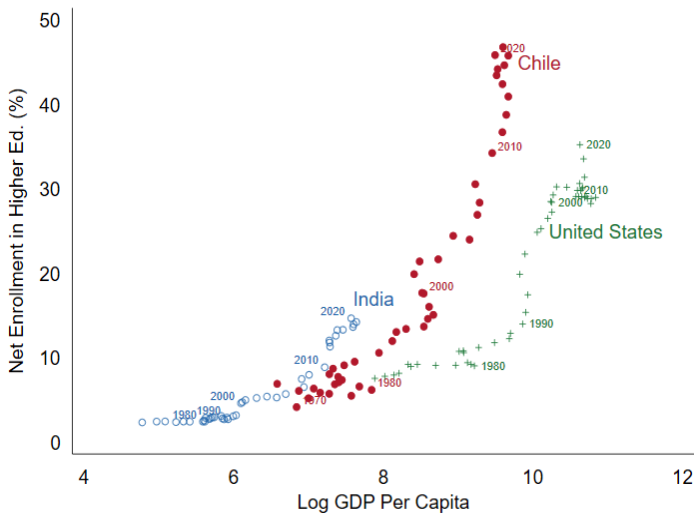
What?:

This paper contributes to fill a gap in our knowledge of the long-run evolution of opportunities in developing countries.

- We describe the evolution of 'education opportunities' over the last five decades *across groups, space and over time*.

Where?: In Chile, perhaps the fastest-growing economy in Latin America over the last half-century.

Fast Economic Growth & Increase in Higher Education Enrollment



Summary 2/4

How?:

- We put together a unique dataset from Chile's centralized application and admissions system to higher education.
⇒ These are detailed administrative records of the population of test takers from 1967 onwards:
 - + We digitized historical records in paper (exhaustive back-and-forth checking procedures) since 1967 - 2000,
 - + We combined them with modern data sources 2000 onwards,
 - + We are merging these data with available administrative records (enrollment, graduation, teacher censuses, and more),
 - + What else? We welcome ideas!

Summary 3/4

Findings? We document the following four novel results:

- Gender gap in scores: $\Downarrow^-$ by a factor of ten (0.55σ to 0.06σ)
- Ethnic gap: $\Downarrow^-$ by about a half in scores & participation
- Share of low SES taking the exam: $\Uparrow^+$ by a factor of 1.5 (from 0.36 to 0.55)
- Geography: Exam take-up $\Uparrow^+$ for under-represented areas (about 10%)

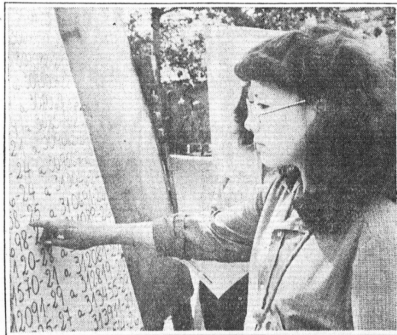
Summary 4/4

So?

- We uncover significant long-term progress on a host of metrics.
- This evidence adds to the medium and shorter term evidence available for Chile.
- Despite progress, there are important challenges ahead: shares of top-scorers, measures of quality, and many more.
- Long term view might help us see advances and challenges typically hidden with short term information
- ... which we believe provides insights feeding our original fundamental question: [how do countries develop?](#)

Admissions System in Chile

- SAT equivalent called ***Prueba de Aptitud Académica*** started in 1967,
- ***Prueba Seleccíon Universitaria*** starting in 2003 and up to 2020.
- Mandatory exams in Math and Language, plus other elective subjects

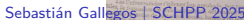


COMIENZA PAA.— Ciento veinticuatro mil postulantes a la educación superior iniciarán hoy, con el reconocimiento de salas, el proceso de la Prueba de Aptitud Académica. Los alumnos deben cotejar sus números de la tarjeta de identificación con los listados expuestos en los distintos planteles habilitados para tal efecto.

Admissions System in Chile

- With the scores in hand, and a GPA equivalent score, students apply to 8-12 preferences of major-university combinations, which we call *programs*.
- Students are assigned to programs in the order of their target specific score until slots are filled up.
- Resembles a *Deferred Acceptance Algorithm* with no incentive for strategic behavior when ordering of preferences.

The information on all test scores, applications and assignment outcomes were printed in newspapers...



Historical Data

- and books!



Historical Data

- We secured an agreement with the local authorities to use this information and have been able to locate and take digital copies of these books.
- We have
 - Collected digital copies of old books and newspapers ;
 - Sent the images to India to be processed;
 - Exhaustive back-and-forth auditing the processed data;
 - Supplemented with aggregated info from official reports

Historical Data

- We made **significant efforts** to find, compile, audit and digitize records from archival sources.
- As a result:
 - 24 Million Test Scores
 - 6.5 Million Observations
 - 135k Pictures [Pre-digital era]
 - 400 Books [Pre-digital era]
 - 50 years of Data



Historical Data

Each year of data consisted of 10-12 books with 300-400 pages each. Three types of books, by subperiod:

Books	1967-1974	1975-76-80	1977-88-{80}
(A) Scores (Antecedentes)	✓	✓	✓
(B) Registration IDs (Indices)	X	✓	✓
(C) Applications (Conglomerado)	X	X	✓

Information printed in the books:

- (A) Reference number, test scores and high school GPA.
- (B) Reference number, ID number (RUT), name, sex, year of graduation, region, school code.
- (C) Reference number, application majors and scores and admission results.

Figure: Example: Old Book (A) with PAA Scores

The diagram illustrates the structure of an old admission book (Old Book A) with PAA Scores. Red boxes and arrows highlight the following columns:

- Test ID:** The first column, containing identification numbers like 310111-67, 310112-64, etc.
- Names:** The second and third columns, labeled 'NOMBRE DEL CANDIDATO' and 'NOMBRES'.
- Grad. Year:** The fourth column, labeled 'GRADO'.
- Scores:** The columns from 'PAA' to 'GPA', including 'PAA', 'PRON', 'PRUEBAS', 'ESPECIFICAS', and 'GPA'.
- GPA:** The final column, labeled 'GPA'.

TEST ID	Names	Grad. Year	Scores	GPA
UNIVERSIDADES CHILENAS PROCESO ADMISION 1986	ANTECEDENTES	PERSONAL	PARA	SELECCION
N° INSCRIP	NOMBRE DEL CANDIDATO	GRADO	PAA	PRON
MATERNO	MATERNO	TRH	PRUEBAS	ESPECIFICAS
			HYG	GPA
310111-67		662802	999	27
310112-64		562213	999	35
310113-61		532018	999	17
310114-69		464406	999	25
310115-66		461662	995	25
310116-63		477169	994	21
310117-60		539317	999	26
310118-68		558870	999	35
310119-65		654223	999	25
310120-66		429781	999	25
310121-63		515019	999	10
310122-60		461428	999	25
310123-68		563050	999	35
310124-65		344974	999	17
310125-62		474327	999	25
310126-60		433316	999	25
310127-67		432739	999	25
310128-64		420317	999	25
310129-61		561893	999	35
310130-62		462997	999	25
310131-60		553896	999	35
310132-67		638925	999	25
310133-64		504563	999	03
310134-61		471231	999	25
310135-69		421395	999	25
310136-66		569774	999	35
310137-63		471009	999	25

Figure: Example: Old Book (B) with ID number (RUT)

NUMERO INSCRIP	NUMERO FOLIO	SEER	APELLIDO	APELLIDO MATERNO	NOMBRES	SEXO	EDAD	CIUDAD	GABINETE	FECHA	SEDE REND	CODIGO COLEGIO	FECHA C	FECHA DE P	FECHA DE C
217721-06	412473	29	CARRASCO	KAY	PAOLA GONZALEZ	FEM	19	SANTIAGO	00000000-0	36	22500990	24	2500		
217721-03	500465	01	CARRASCO	PAOLA	PAOLA GONZALEZ	FEM	19	LA JICA	00000000-0	01	01000990	24	1900		
217721-00	412730	29	CARRASCO	PAOLA	PAOLA GONZALEZ	FEM	19	SANTIAGO	00000000-0	25	23000990	24	1900		
217721-08	4124327	29	CARRASCO	PAOLA	PAOLA GONZALEZ	FEM	19	SANTIAGO	00000000-0	25	23000990	24	1900		
217721-08	4124333	29	CARRASCO	PAOLA	PAOLA GONZALEZ	FEM	19	SANTIAGO	00000000-0	25	23000990	24	1900		
217721-06	4124820	29	CARRASCO	PAOLA	PAOLA GONZALEZ	FEM	19	SANTIAGO	00000000-0	25	23000990	24	1900		
217721-03	412113	29	CARRASCO	PAOLA	PAOLA GONZALEZ	FEM	19	SANTIAGO	00000000-0	25	23000990	24	1900		
217721-00	519077	19	CARRASCO	PAOLA	PAOLA GONZALEZ	FEM	19	SANTIAGO	00000000-0	25	23000990	24	1900		
217721-08	412401	29	CARRASCO	PAOLA	PAOLA GONZALEZ	FEM	19	SANTIAGO	00000000-0	25	23000990	24	1900		
217721-05	537452	43	CARRASCO	PAOLA	PAOLA GONZALEZ	FEM	19	SANTIAGO	00000000-0	25	23000990	24	1900		
217721-02	453258	29	CARRASCO	PAOLA	PAOLA GONZALEZ	FEM	19	SANTIAGO	00000000-0	25	23000990	24	1900		
217721-00	524513	24	CARRASCO	PAOLA	PAOLA GONZALEZ	FEM	19	SANTIAGO	00000000-0	25	23000990	24	1900		
217721-07	533182	24	CARRASCO	PAOLA	PAOLA GONZALEZ	FEM	19	SANTIAGO	00000000-0	25	23000990	24	1900		
217721-06	535074	24	CARRASCO	PAOLA	PAOLA GONZALEZ	FEM	19	SANTIAGO	00000000-0	25	23000990	24	1900		
217721-05	524514	24	CARRASCO	PAOLA	PAOLA GONZALEZ	FEM	19	SANTIAGO	00000000-0	25	23000990	24	1900		
217721-02	533660	24	CARRASCO	PAOLA	PAOLA GONZALEZ	FEM	19	SANTIAGO	00000000-0	25	23000990	24	1900		
295901-06	534343	24	CARRASCO	PAOLA	PAOLA GONZALEZ	FEM	19	SANTIAGO	00000000-0	25	23000990	24	1900		
217721-00	530389	24	CARRASCO	PAOLA	PAOLA GONZALEZ	FEM	19	SANTIAGO	00000000-0	25	23000990	24	1900		

Note: Personal information intentionally blurred.

Figure: Example: Old Book (B) with Applications

UNIVERSIDADES CHILENAS / PROCESO DE ADMISION 1979										X * LISTADO CONGLOMERADO										FALDONES											
N. INSCRIP	FOLIO	23 DE	TRE 16	PUNTAJES DE PRUEBAS				F. Q	MAT	BAC	P. #01	P. #02	P. #03	P. #04	P. #05	P. #06	P. #07	P. #08	P. #09	P. #10	P. #11	P. #12	P. #13	P. #14	P. #15	P. #16	P. #17	P. #18	P. #19	P. #20	
		NOTAS=STO		VER MAT		P. A. A.		P. A. A.		P. A. A.		P. A. A.		P. A. A.		P. A. A.		P. A. A.		P. A. A.		P. A. A.		P. A. A.		P. A. A.		P. A. A.		P. A. A.	
		NOMBRE COMPLETO		VER MAT		P. A. A.		P. A. A.		P. A. A.		P. A. A.		P. A. A.		P. A. A.		P. A. A.		P. A. A.		P. A. A.		P. A. A.		P. A. A.		P. A. A.		P. A. A.	
010221-92	718082	999	12112	930	78	608	499	5555	602	592	456	430	1775	4213	1929	4418	1890	1775	1790	4475	56745	56745	56745	56745	56745	56745	56745	56745	56745	56745	56745
		CALIXTO		LOPEZ		OLGA ANGELA																									
010223-90	700444	999	01046	930	78	433	557	4950	549	457	594	501	8501	1415	8081	1078	1870	1881	1895	1895	1895	1895	1895	1895	1895	1895	1895	1895	1895	1895	1895
		CALIZATA		GOMEZ		CESAR EUGENIO																									
010224-92	701315	999	02053	910	77	534	558	5460	656	544	594	500	1932	1995	1950	1981	1980	1982	1982	1982	1982	1982	1982	1982	1982	1982	1982	1982	1982	1982	1982
		CALLE		REGARARREN		GONZALO NGISE																									
010227-90	700461	999	15366	940	78	724	615	6695	585	702	474	450	1356	2354	1373	2373	1851	2490	1349	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500
		CALLEJA		MESTRE		EDUARDO EMILI																									
010228-97	700849	444	01024	430	70	521	499	5100	319	319	319	319	8621	8611	33500	32500	33500	33500	33500	33500	33500	33500	33500	33500	33500	33500	33500	33500	33500	33500	33500
		CALLEJAS		ANTEZANA		LUIS EMILIO																									
010230-95	700598	992	19038	131	77	048	686	6670	482	592	584	587	1290	2290	6750	1532	1204	2204	6351	6099	6099	6099	6099	6099	6099	6099	6099	6099	6099	6099	6099
		CALLEJAS		BRAVO		ANDRES ERNEST																									
010231-92	700170	999	19469	960	78	633	694	6335	505	651	614	587	1373	2863	1863	1745	2351	1851	2760	2760	2760	2760	2760	2760	2760	2760	2760	2760	2760	2760	2760
		CALLEJAS		GALVEZ		MARIA ELENA																									
010233-93	710119	999	09078	930	78	584	644	6140	620	620	620	561	6203	2520	4682	4979	6313	6303	1301	2200	2200	2200	2200	2200	2200	2200	2200	2200	2200	2200	2200
		CALLEJAS		MARTINEZ		HUGO ROBERTO																									
010234-90	710358	444	10023	430	78	562	578	5700	568	474	505	496	6367	6301	6960	6960	1952	4660	1810	5320	5320	5320	5320	5320	5320	5320	5320	5320	5320	5320	5320
		CALLEJAS		MUNOZ		SEGUNDO MIGUE																									

Historical Data

- We distinguish three components within the 1967-1988 period:
 - ① The first is to finish the process of digitalizing and processing the scores, applications, and results from 1981-1988.
 - ② The second piece is to add test score data for all participants from 1967 onward.
 - ③ The final part is adding the scores, applications, and results from 1976-1980.

How Did we Do?: Test-Takers by Year

Old Aggregated Data Sources:
Diaz, Himmel, Maltes (1985).

TABLA 3
CARACTERISTICAS DE LA PARTE MATEMATICA DE LA PRUEBA DE APTITUD ACADEMICA

AÑOS	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
Nº Preg.	50	50	50	50	50	50	50	50	50	50	50	50
N	29.678	31.011	36.042	49.244	50.079	76.858	107.818	103.219	119.504	91.445	84.806	102.494
Puntajes Brutos	$\bar{X}$ 16,1 s 11,38	16,9 11,46	18,1 11,24	17,9 12,34	17,7 13,20	16,7 12,62	16,1 12,51	17,5 13,21	19,7 13,43	20,7 13,69	23,1 14,03	23,1 13,30

How Did we Do?: Test-Takers by Year [1967-1988]

Aggregated Data (External)

Year	
1967	29,678
1968	31,011
1969	36,042
1970	49,244
1971	50,079
1972	76,858
1973	107,818
1974	103,219
1975	119,504
1976	91,445
1977	84,806
1978	102,494
1979	107,274
1980	110,508
1981	117,371
1982	109,351
1983	119,245
1984	122,201
1985	121,169
1986	125,522
1987	114,775
1988	110,652

How Did we Do?: Test-Takers by Year [1967-1988]

Year	Aggregated Data (External)	Our Data
1967	29,678	29,655
1968	31,011	31,014
1969	36,042	35,935
1970	49,244	42,759
1971	50,079	50,072
1972	76,858	76,076
1973	107,818	107,795
1974	103,219	103,219
1975	119,504	119,521
1976	91,445	91,424
1977	84,806	84,820
1978	102,494	102,541
1979	107,274	107,275
1980	110,508	110,354
1981	117,371	117,344
1982	109,351	109,196
1983	119,245	119,238
1984	122,201	122,120
1985	121,169	121,164
1986	125,522	125,519
1987	114,775	114,462
1988	110,652	110,650

How Did we Do?: Test-Takers by Year [1967-1988]

Year	Aggregated Data (External)	Our Data	Percentage
1967	29,678	29,655	99.92
1968	31,011	31,014	100.01
1969	36,042	35,935	99.70
1970	49,244	42,759	86.83
1971	50,079	50,072	99.99
1972	76,858	76,076	98.98
1973	107,818	107,795	99.98
1974	103,219	103,219	100.00
1975	119,504	119,521	100.01
1976	91,445	91,424	99.98
1977	84,806	84,820	100.02
1978	102,494	102,541	100.05
1979	107,274	107,275	100.00
1980	110,508	110,354	99.86
1981	117,371	117,344	99.98
1982	109,351	109,196	99.86
1983	119,245	119,238	99.99
1984	122,201	122,120	99.93
1985	121,169	121,164	100.00
1986	125,522	125,519	100.00
1987	114,775	114,462	99.73
1988	110,652	110,650	100.00

How Did we Do?: Test-Takers by Year, Special Subjects

Year	Advanced Math		Biology		Chemistry/Physics		Soc. Sciences	
	External	Ours	External	Ours	External	Ours	External	Ours
1975	88,976		72,769		72,769		71,610	
1976	73,788		63,998		63,998		63,513	
1977	67,762		56,036		51,913		53,252	
1978	83,446		65,505		65,076		65,776	
1979	85,503		72,165		68,157		72,601	
1980	84,698		73,836		68,629		73,954	
1981	85,255		66,428		58,498		59,306	
1982	73,431		53,743		61,713		45,359	
1983	72,916		57,943		45,852		49,503	
1984	71,939		64,447		36,510		52,097	

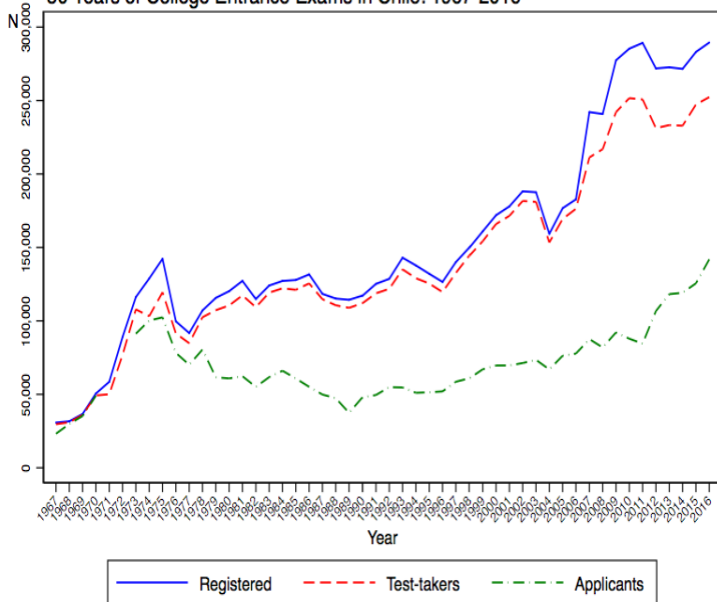
How Did we Do?: Test-Takers by Year Special Subjects

Year	Advanced Math		Biology		Chem./Physics		Soc. Sciences	
	External	Ours	External	Ours	External	Ours	External	Ours
1975	88,976	88,672	72,769	72,780	72,769	72,780	71,610	71,498
1976	73,788	73,692	63,998	64,032	63,998	64,032	63,513	63,529
1977	67,762	67,587	56,036	56,027	51,913	51,965	53,252	53,143
1978	83,446	83,383	65,505	65,502	65,076	65,142	65,776	65,798
1979	85,503	85,213	72,165	71,946	68,157	68,243	72,601	72,507
1980	84,698	84,453	73,836	73,727	68,629	68,297	73,954	73,813
1981	85,255	85,170	66,428	66,262	58,498	58,324	59,306	59,116
1982	73,431	73,215	53,743	53,502	61,713	61,426	45,359	45,244
1983	72,916	72,865	57,943	57,836	45,852	45,684	49,503	49,462
1984	71,939	71,808	64,447	64,296	36,510	36,385	52,097	51,998

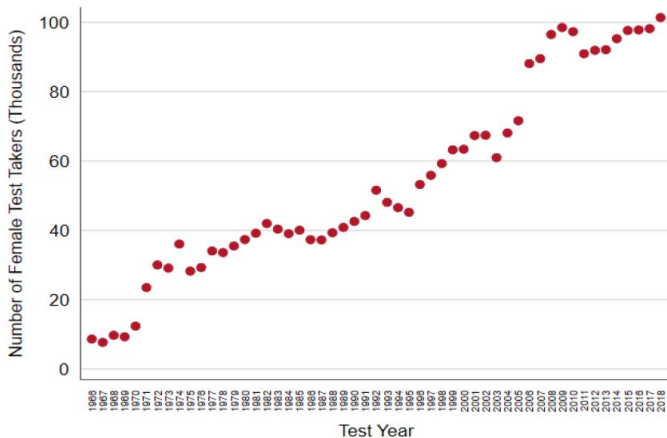
How Did we Do?: Test-Takers by Year [1989-2003]

Year	Aggregated Data (External)	Our Data	Percentage
1989	108,871	108,855	99.99
1990	112,091	112,090	100.00
1991	118,778	118,778	100.00
1992	121,824	121,364	99.62
1993	135,081	135,221	100.10
1994	129,048	129,050	100.00
1995	125,444	125,432	99.99
1996	119,643	119,588	99.95
1997	132,664	132,610	99.96
1998	144,381	142,382	98.62
1999	154,244	154,244	100.00
2000	165,904	165,908	100.00
2001	171,491	171,879	100.23
2002	181,640	182,019	100.21
2003	181,063	181,486	100.23

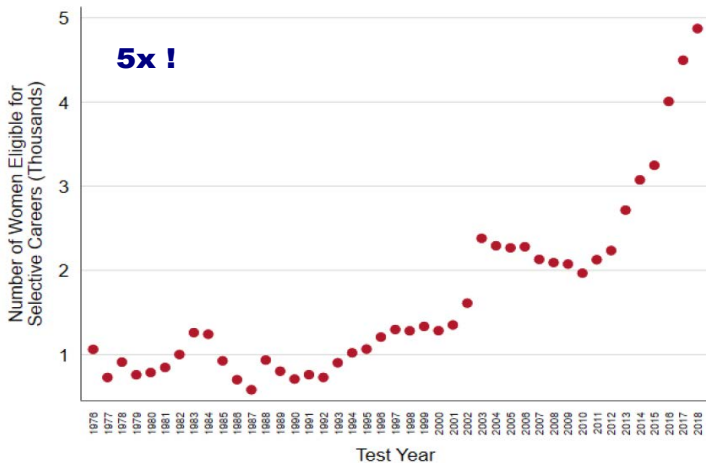
50 Years of College Entrance Exams in Chile: 1967-2016



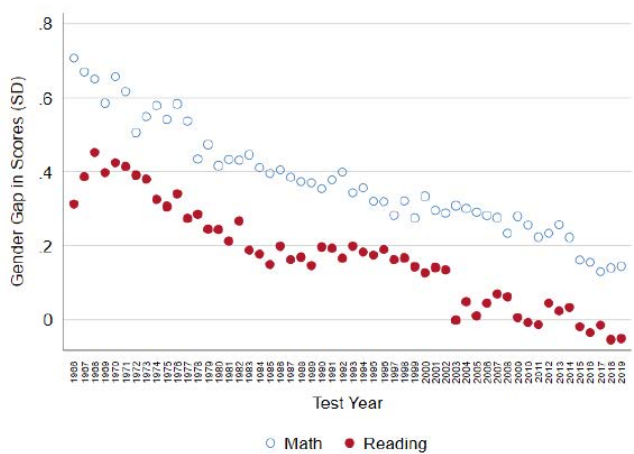
Women taking College Entrance Exam



Women eligible for Elite College/Majors

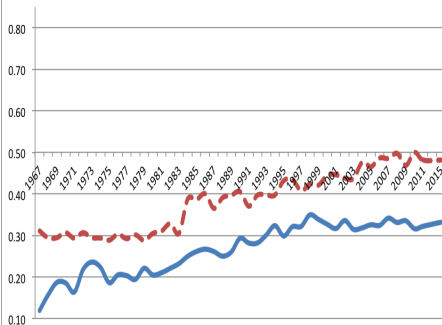


Gender Gap in Average Math/Lang Score



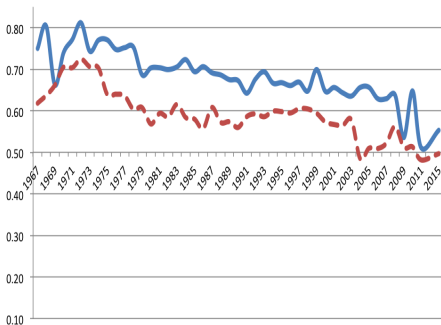
Fraction of Girls in the Top 5%

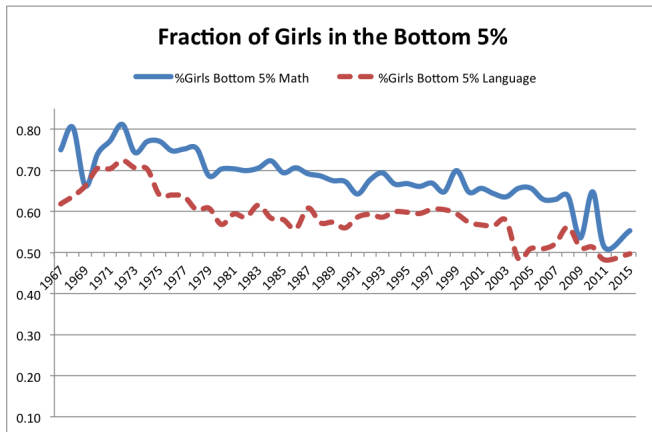
— %Girls Top 5% Math — %Girls Top 5% Language



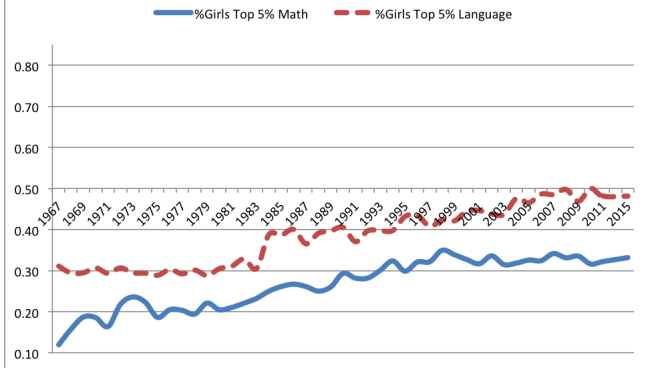
Fraction of Girls in the Bottom 5%

— %Girls Bottom 5% Math — %Girls Bottom 5% Language



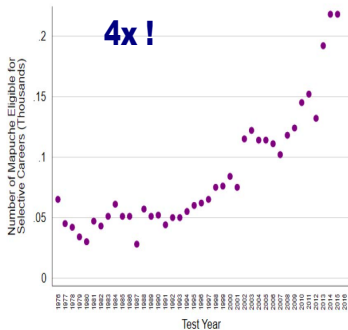


Fraction of Girls in the Top 5%

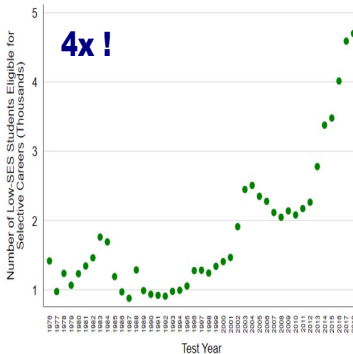


Disadvantaged Groups @ Elite College/Majors

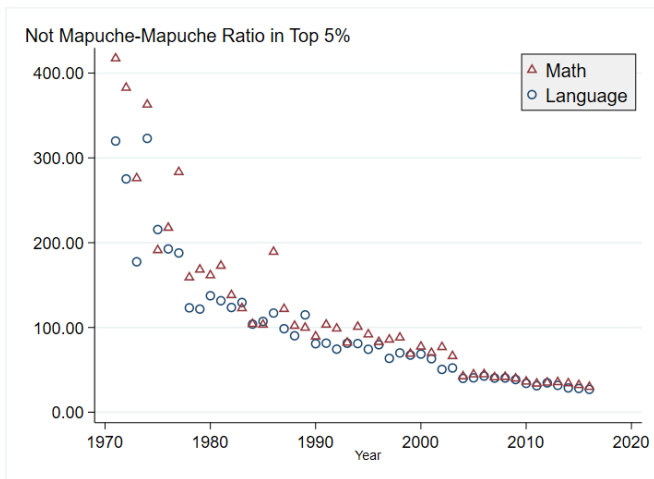
Mapuche Descendants



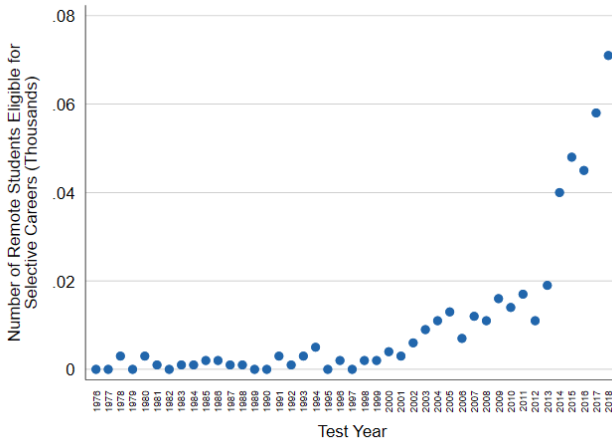
Low SES



Share in Top 5% by Ethnicity

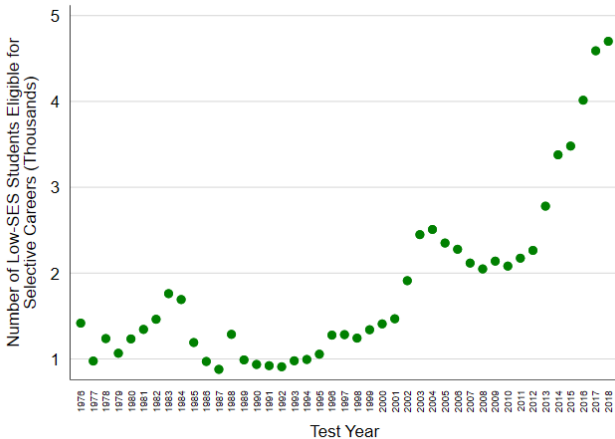


Geography



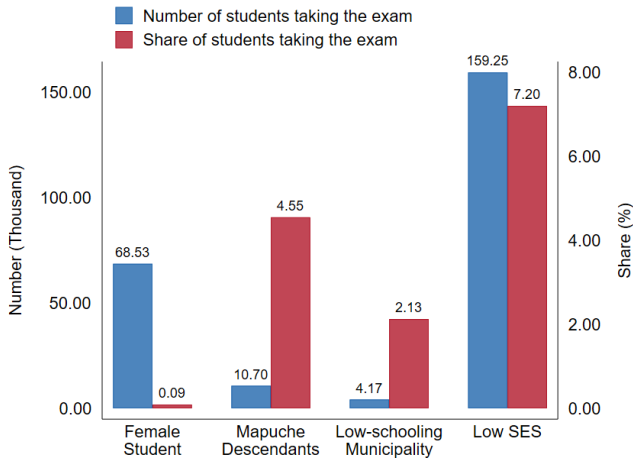
(c) Municipalities with low levels of schooling in the 1980s

Low SES

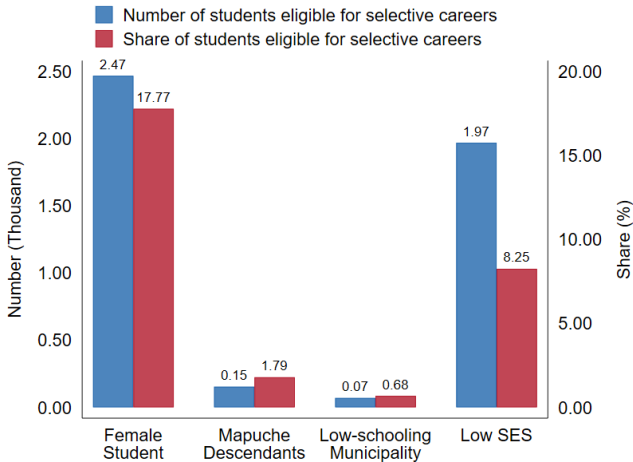


(d) Low-SES students

All Test-Takers Progress



Test-Takers Progress for Elite Degrees



Conclusion

- We uncover significant long-term progress on a host of metrics.
- This evidence adds to the medium and shorter term evidence available for Chile.
- Despite progress, there are important challenges ahead: shares of top-scorers, measures of quality, and many more.
- Long term view might help us see advances and challenges typically hidden with short term information
- ... which we believe provides some insights feeding the original fundamental question: how do countries develop?