

Social structure, social classes and fertility decline

Revisiting the Latin American fertility transition

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Introduction and objectives

Data and methods

Results

Conclusions and discussion

Introduction

The standard social science model is that society works pretty much like a regression equation: the task is to find a right set of predictors, solve the equation, and discover what factors are most important in predicting social outcomes.

Charles Hirschman (1994). Why fertility changes?

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Charles Hirschman (1994). Why fertility changes?

Despite a plethora of new theories of fertility change, none has emerged as hegemonic or as an alternative guide to empirical research or population policy. Not surprisingly, the opinions about the long-term implications of fertility change and the need for policy intervention are inconclusive.

Hans-Peter Kohler (2010). Fertility Trends and Implications

Introduction

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- ▶ Studies tend to overstate the role of agency (*Rational Actor*) and economic development (*Modernization*)
- ▶ Methodologically, studies assume that fertility outcomes are influenced by social factors in a linear fashion, as additive inputs that predict fertility levels regardless of the social structure

Objective

My overreaching objective is to contribute to the discussion on *why fertility changes* from a sociological perspective

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- c. The role of fertility differentials on **social reproduction**

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- a. The **connection** between fertility and social structure
- b. **Class differences** in fertility change (level and timing)
- c. The role of fertility differentials on **social reproduction**

My main argument is that fertility is both an outcome of socioeconomic differences and a factor that triggers class differentiation

Introduction and objectives

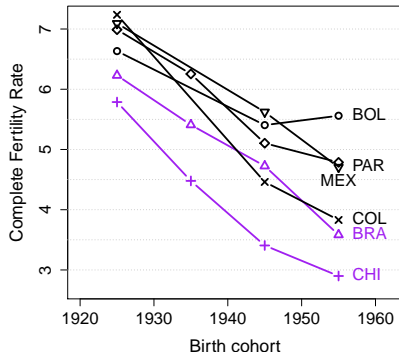
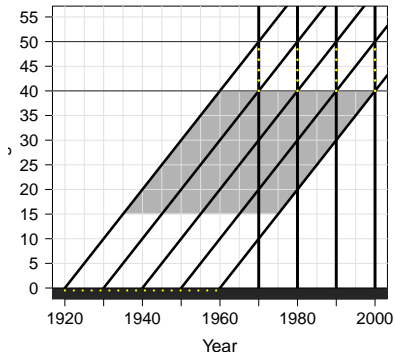
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Data: Censuses from IPUMS-I

Figure: Lexis diagram (left) and complete fertility rates by country (right). **Total sample size = 1,7 million of couples**



Methods

Multiple correspondence analysis (MCA), cluster analysis (CA) based on the first four factorial coordinates, and linear models (OLS)

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Active variables	Illustrative variables
Educational level (couple)	Children ever born
Place of residence	Children surviving
Ownership of the dwelling	Household type
Position at work (couple)	Age at last birth*
Job's industry (partner)	Age at first birth*
Television and/or electricity	
Water supply	Parent's information**
	Mother's education
	Children ever born

Note: *Imputed from the household roster

**Conditional on living together

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MCA and CA were stratified by country and cohort

Introduction and objectives

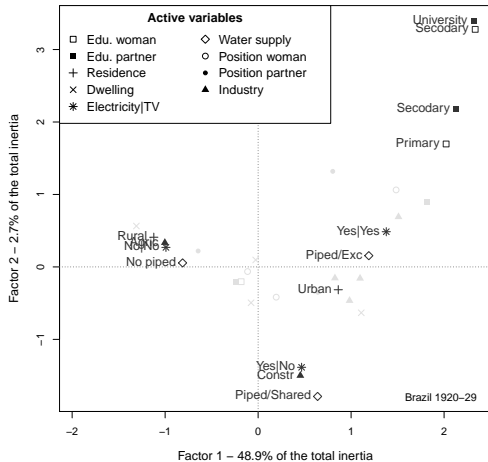
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Fertility and social structure

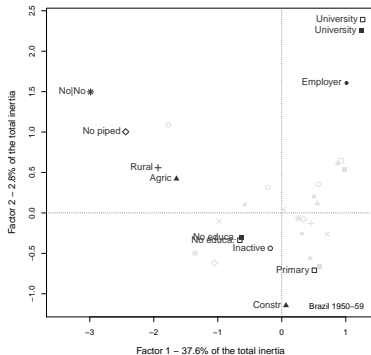
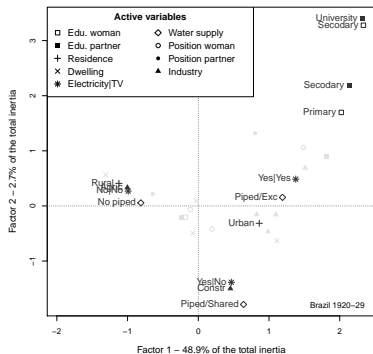
Figure: First factorial maps for the first cohort in Brazil



Categories contributing 20% above the average are displayed

Fertility and social structure

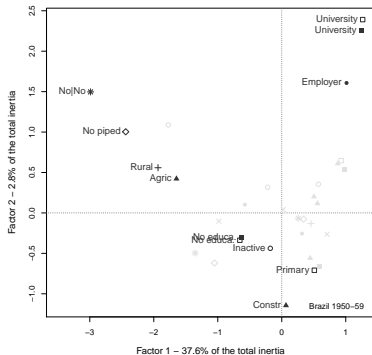
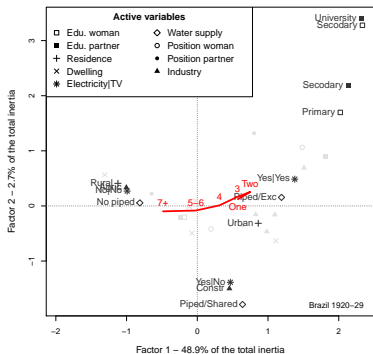
Figure: First factorial maps for the first and the last cohort in Brazil



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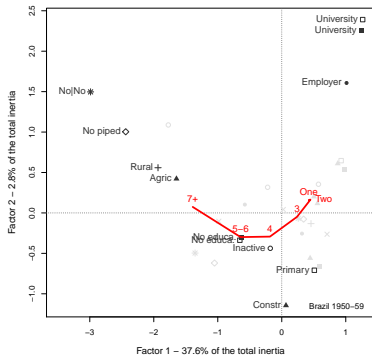
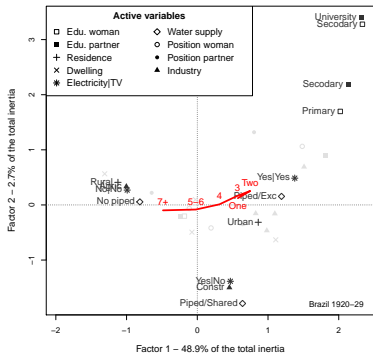
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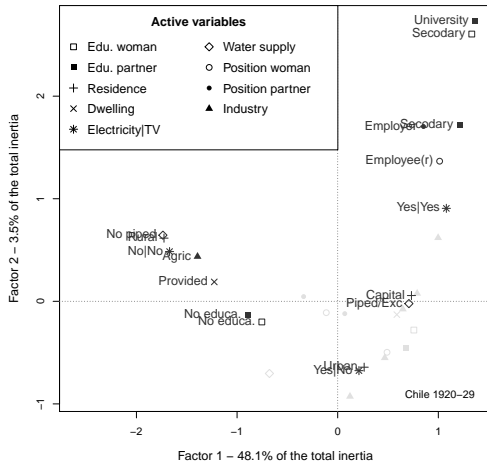
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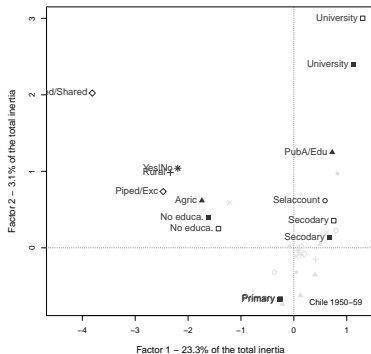
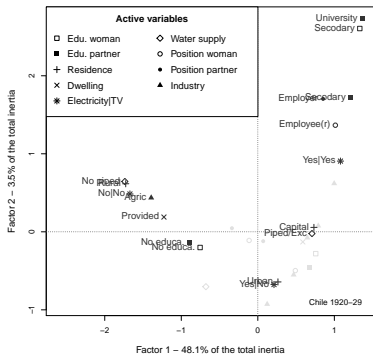
Figure: First factorial maps for the first cohort in Chile



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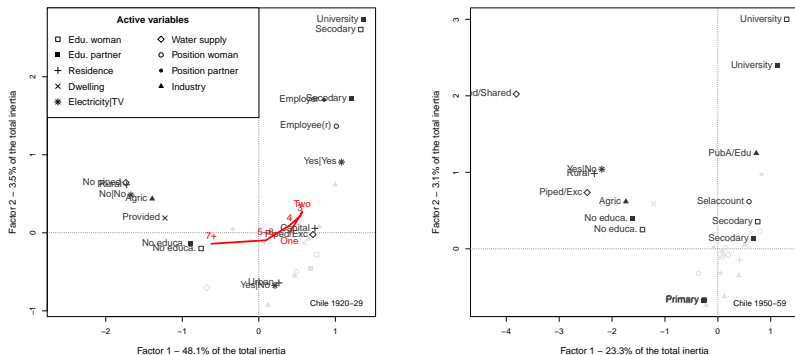
Figure: First factorial maps for the first and the last cohort in Chile



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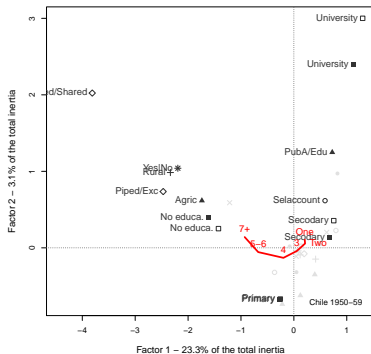
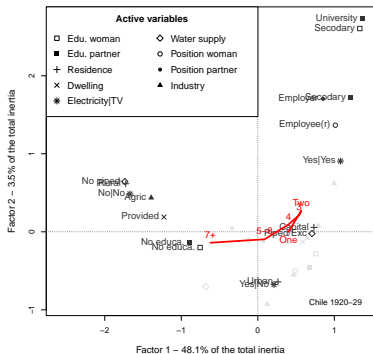
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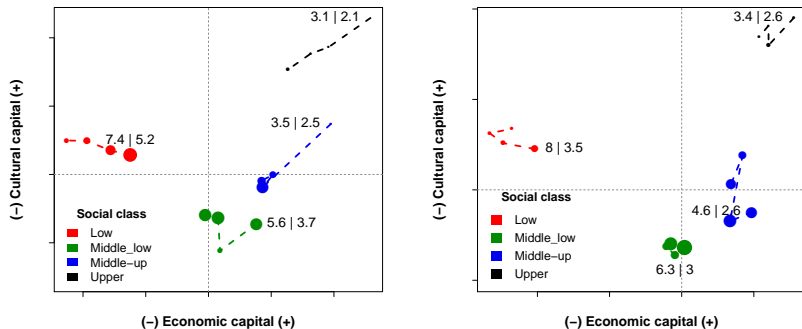
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Class-specific fertility transitions: level

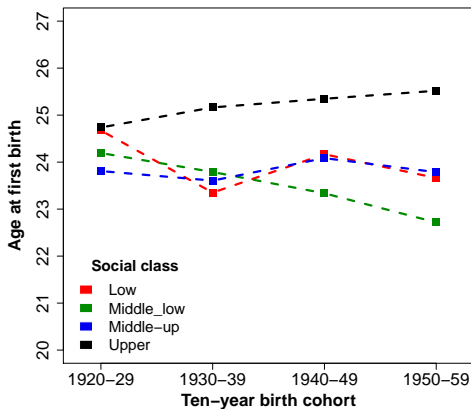
Figure: Fertility levels in Brazil (left) and Chile (right) by **probable social class** and cohort



CFR: 1920-29 | 1950-59. Circles are proportional to the % of the population

Class-specific fertility transitions: timing

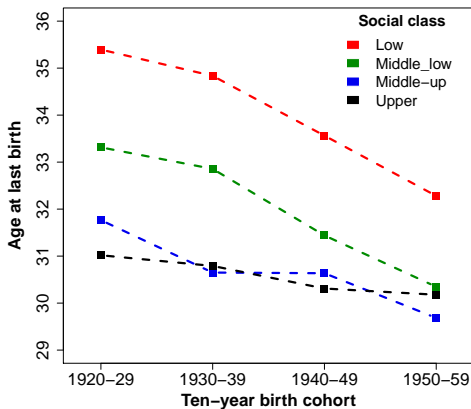
Figure: Predicted mean age at **first** birth by class and cohort, controlling for woman's age and country



Model's adjusted $R^2 = 0.792$, $n = 800$ (woman's age = 40 and country = Brazil)

Class-specific fertility transitions: timing

Figure: Predicted mean age at **last** birth by class and cohort, controlling for woman's age and country



Model's adjusted $R^2 = 0.805$, $n = 800$ (woman's age = 40 and country = Brazil)

Fertility and social reproduction

Table: Percent (%) of complete household

BRAZIL

Class	Cohort				Change
	1920-29	1930-39	1940-49	1950-59	
Low	36.6	37.5	36.7	38.9	+2.3
Middle-low	50.8	37.6	46.7	50.8	+0.0
Middle-up	72.8	55.6	71.3	75.5	+2.7
Upper	82.4	80.3	85.6	89.1	+6.7

CHILE

Class	Cohort				Change
	1920-29	1930-39	1940-49	1950-59	
Low	22.9	27.7	32.2	42.3	+19.4
Middle-low	39.9	39.6	49.5	54.2	+14.3
Middle-up	54.9	56.2	68.1	69.5	+14.6
Upper	67.3	68.9	78.5	79.0	+11.7

Complete household: all surviving children living in their mother's house

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Fertility and social reproduction

Table: Education and fertility for mothers of the 1950-59 birth cohort

Respondent's class	Mother's years of schooling					
	BOL	BRA	CHI	COL	PAR	MEX
Low	0.0	1.1	2.2	1.3	0.7	1.8
Middle-low	1.6	1.6	4.4	2.5	0.9	2.7
Middle-up	6.0	3.6	6.7	4.9	2.8	5.3
Upper	9.8	6.0	8.7	6.8	5.7	7.5

Respondent's class	Mother's children ever born					
	BOL	BRA	CHI	COL	PAR	MEX
Low	7.0	7.1	6.5	7.2	6.5	7.1
Middle-low	7.3	6.6	5.5	6.5	7.3	6.8
Middle-up	6.2	4.9	4.2	5.8	6.2	4.5
Upper	4.8	3.8	3.7	6.1	4.9	4.0

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Middle-low	1.6	1.6	4.4	2.5	0.9	2.7
Middle-up	6.0	3.6	6.7	4.9	2.8	5.3
Upper	9.8	6.0	8.7	6.8	5.7	7.5

Respondent's class	Mother's children ever born					
	BOL	BRA	CHI	COL	PAR	MEX
Low	7.0	7.1	6.5	7.2	6.5	7.1
Middle-low	7.3	6.6	5.5	6.5	7.3	6.8
Middle-up	6.2	4.9	4.2	5.8	6.2	4.5
Upper	4.8	3.8	3.7	6.1	4.9	4.0

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- a. Fertility is closely tied to social structure
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- b. Fertility decline was different across social classes
 - ▶ Opposed social classes experienced divergent fertility transitions
 - ▶ Same factors (i.e. modernization) had different consequences for each social class

Conclusions and discussion

- a. Fertility is closely tied to social structure
 - ▶ Changes in the social structure were associated with fertility decline
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- b. Fertility decline was different across social classes
 - ▶ Opposed social classes experienced divergent fertility transitions
 - ▶ Same factors (i.e. modernization) had different consequences for each social class

- c. Class differences in fertility behavior are likely to contribute to social reproduction
 - ▶ Fertility change is better understood as both an outcome of socioeconomic differences and a factor that triggers class differentiation

Acknowledgments

I thank professor Herbert Smith from the University of Pennsylvania for his support and guidance for the development of this paper.

Thank you.

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Fertility and social structure

Table: Squared cosines for the first axis (economic capital)

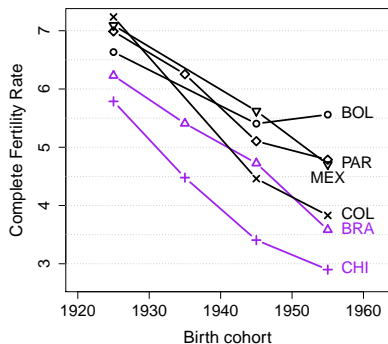
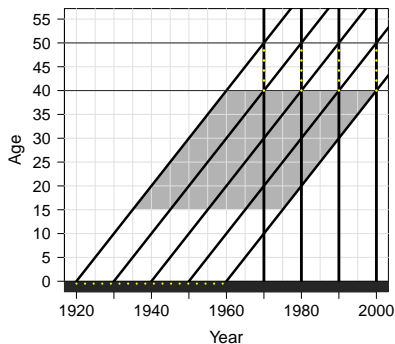
Cohort	BOL	BRA	CHI	COL	PAR	MEX
1920-29	7.0	21.4	23.8	10.7	28.7	9.1
1930-39		20.1	21.4		35.0	
1940-49	16.0	27.0	16.1	32.3	33.8	25.8
1950-59	36.8	27.2	6.7	27.7	32.4	33.3

Table: Squared cosines for the second axis (cultural capital)

Cohort	BOL	BRA	CHI	COL	PAR	MEX
1920-29	2.7	1.4	2.1	1.6	0.8	1.8
1930-39		3.4	2.8		0.8	
1940-49	3.5	2.5	2.1	2.6	1.4	4.2
1950-59	4.9	2.9	0.7	2.8	1.4	4.8

Sample selection

Figure: Lexis diagram for the samples and CFR for by country and cohort



OLS estimates

	Dependent variable							
	Age at first birth				Age at last birth			
	(1)		(2)		(3)		(4)	
Constant	25.99	***	7.69	***	37.79	***	22.34	***
Cohort (1920-29)								
1930-39	-1.26	***	-1.32	***	-0.89	*	-0.56	*
1940-49	-0.66	*	-0.51	***	-1.77	***	-1.83	***
1950-59	-1.13	***	-1.01	***	-3.05	***	-3.11	***
Class (Low)								
Middle low	-0.56		-0.48	**	-3.63	***	-3.63	***
Middle up	-0.9	**	-0.86	***	-2.08	***	-2.08	***
Upper	-0.02		0.06		-4.38	***	-4.38	***
Cohort × Class (1920-29 × Low)								
1930-39 × Middle low	1.04		0.92	**	-0.56		-0.56	
1940-49 × Middle low	-0.25		-0.35		0.7		0.7	**
1950-59 × Middle low	-0.34		-0.47	*	1.03	*	1.03	***
1930-39 × Middle up	1.21	*	1.12	***	0.1		0.1	
1940-49 × Middle up	0.58		0.78	***	-0.04		-0.04	
1950-59 × Middle up	0.77		0.99	***	0.15		0.15	
1930-39 × Upper	1.83	*	1.75	***	0.33		0.33	
1940-49 × Upper	0.96		1.12	***	1.12	*	1.12	***
1950-59 × Upper	1.69	**	1.79	***	2.27	***	2.27	***
Controls	No		Yes		No		Yes	
<i>R² adjusted</i>	0.202		0.792		0.484		0.805	
Degrees of freedom	784		778		784		778	

Note: Significance levels are represented as: * 0.05, ** 0.01 and *** 0.001 Reference category in parenthesis. The control variables are the age of the women and the country.

Sample sizes

Table: Total sample size by country, cohort and type of household.

Country	Birth cohort							
	1920-29		1930-39		1940-49		1950-59	
	Comp	Inco	Comp	Inco	Comp	Inco	Comp	Inco
Bolivia	4,316	4,147			2,525	2,339	8,076	7,905
Brazil	89,815	55,430	99,958	69,906	153,079	106,925	201,705	119,126
Chile	13,945	9,649	16,207	12,878	24,351	17,512	37,124	22,058
Colombia	14,868	17,939			31,363	28,422	26,928	26,223
Mexico	683	10,240			102,926	91,727	137,045	139,043
Paraguay	2,550	3,437	3,705	3,377	6,138	4,812	8,033	6,442
Total	126,177	100,842	119,870	86,161	320,382	251,737	418,911	320,797

Note: *Complete* indicates the cases in which the number of children surviving matched the number of children in the household roster; *Inco* indicates the reverse.

Descriptive

Birth cohort 1900	Bol		Bra		Chi		Col	
	20-29	50-59	20-29	50-59	20-29	50-59	20-29	50-59
Mean								
CFR	6.6	5.6	6.2	3.6	5.8	2.9	7.2	3.8
W. schooling	1.4	6.0	2.0	5.9	5.3	9.8	3.1	5.5
M. schooling	2.9	7.9	2.5	5.7	5.9	10.3	3.5	5.2
Percentage (%)								
Urban	33.9	63.7	55.1	75.1	75.4	88.5	60.0	50.9
Owning a house	83.2	76.7	66.5	81.2	59.2	76.7	67.2	65.5
Electricity	30.4	70.2	48.6	92.9	76.8	98.4	60.3	91.0
Piped water	12.7	39.7	36.3	82.4	64.0	93.6	57.6	73.0
Percentage (%)								
W. employee(r)	3.7	16.6	6.4	32.5	8.4	29.8	5.4	18.3
M. employee	28.2	37.1	45.3	51.9	70.3	71.7	55.0	72.8
Agriculture	65.1	35.2	50.0	28.9	30.5	16.3	44.2	53.5
Manufacturing	7.2	11.0	10.7	12.3	18.4	15.2	14.3	5.3
Construction	6.4	11.2	7.8	11.2	9.5	11.7	7.4	7.6
Services	12.4	22.0	13.4	26.8	18.1	30.2	15.1	21.6
Sales	4.2	11.7	11.7	12.6	14.9	16.7	12.2	6.4
Pub/Edu.	4.7	8.9	6.4	8.2	8.7	9.9	6.7	5.5

Table: Descriptive statistics for the 1920-29 and 1950-59 birth cohorts in six Latin American countries