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ABSTRACT

Title: Does only the local political voice explain the rise of mass education in Europe? Spain, Italy, France and Sweden between 1870 and 1907.

Authors and e-mails: María José Fuentes-Vásquez. majofuen@gmail.com

Department: Department of Economics and Statistics

University: University of Siena and University of Barcelona

Subject area: Education and development in space and time: new perspectives

Abstract extended

This article examines the role of democracy in public investment and the diffusion of mass education in Europe through supply and demand mechanisms. The paper examines this issue in two contexts: a decentralized and a centralized regime. Democracy as a concept is something that goes beyond citizen participation in elections. Lindert states democracy has been defined in *narrow procedural terms avoiding any outcome dimensions such as "accountability," "responsiveness," "representation," "equality," or "civil rights," or any social and economic sources of political privilege* (Lindert 2004). For this reason, the resulting analyses do not accurately reflect the relationship between democracy and economic growth, or therefore, as is the interest of this work, between democracy and education. Democracy, in this work, is understood through two channels that are the pressure of two political agents: the population with the right to vote and the political elite. Most studies on the relationship between democracy and education tend to be conducted at the single country level or by comparing several countries at the national level. This study contributes to the literature in three aspects. First, it analyses the role of democracy in Lindert terms. Second, it by offering for the first time regionally comparable data (NUTS 3) for four European countries, such as Italy, Spain, France and Sweden. Specifically, this work analyses the impact of the population with the right to vote on education and the interest of the elites measured with the Primary School Support Rate proposed by Lindert (2004). Third. In addition, this analysis covers two historical moments that contrast decentralization with the centralization of the educational system, that is, 1870 and 1907.

Until the beginning of the 19th century, investment in education has assumed an increasingly important role in economic development. According to Lindert (2004), education is imperative for economic growth. Nevertheless, political elites, particularly elite governments, delay economic growth by underinvesting in equal human capital, especially in primary education. The debate on whether political democracy is the "least bad" regime remains unresolved because history has interpreted it in many ways and

because, as stated by Lindert (2004), statistical studies have chosen the wrong tests. Most of the studies have only focused on electoral participation (*political voice*). However, this analysis leaves many elements out of play. In democracies, the critical issue is whether the median voter can influence economic policy rather than a smaller subset of the population, which are the economic elites (Menaldo 2016). Recent empirical analyses have suggested that political elites, particularly landowning elites, drove the expansion of education in the 19th century in Sweden and Austria (Andersson and Berger 2019; Cvrcek and Zajicek 2019). On the contrary, Beltrán Tapia and Martinez-Galarraga (2018); Cinnirella and Hornung (2016); Galor, Moav, and Vollrath (2009); and Goni (2017) have shown that land inequality negatively affected the demand for education.

Theories about the relation between democracy and education should be read with caution and be complemented with an analysis of the role of (de) centralization (Lindert 2004), given that depending on the education financing system, the role of local elites will be more or less crucial. Currently, there is no consensus on the relationship between democracy and the expansion of education. Some authors affirm that there is a clear relationship between the extension of the right to vote and the demand for education. Others, on the contrary, suggest that the expansion of education has focused on the role of top-down reforms implemented by political elites with the purpose of building a nation (Van Horn Melton 2003; Ramirez and Boli 1987).

Along these lines about the relationship between the right to vote, decentralization and education, some studies on France and Italy show that the extension of the right to vote had a modest positive effect in a context of decentralization. Conversely, centralization, along with existing voting rights, led to the expansion of education (Cappelli 2015, 2016; Cappelli and Vasta 2020; Lindert 2004).

Although it is true, there is a clear relationship between democratization and the expansion of education. However, this link is given by various mechanisms that cannot be observed by exclusively analysing the right to vote. Another aspect to consider apart from the access to voting and education is the influence of political motivations rather than centralization or special interests. Keefer (2007) and Keefer and Khemani (2005) showed that governments that employ clientelist practices tend to over-provide specific goods to small groups of voters, on the contrary, under-invest in health and education. In another line, Andersson (2015), about Sweden, analyses both the right to vote and property rights to measure the degree of democratization. The first variable is associated with a bottom-up movement; that is, the population influences the design of educational policies. In comparison, the second one reflects a top-down movement. That is, the initiative comes from the elites. His study showed that the two mechanisms jointly impacted the expansion of mass education in the 19th century in Sweden.

From the above, it is clear that different mechanisms are underlying the expansion of voting and education. However, in all of them, the role of local elites always ends up gaining prominence, especially in more decentralized contexts. Lindert says that the world leaders in educational attainment have been countries that have relied on public funding at the primary and secondary levels. On the contrary, the inability to offer free public education to the entire population suggests an elitist political bias, sacrificing GDP growth and discriminating against those who would benefit from primary

education (particularly, poor rural areas and women). These elitist policy decisions leave traces that can be "pursued". For this, Lindert suggests a series of indicators that allow us to observe if the expansion of education was sustained by real support from the elites. One of the mentioned fingerprints that would leave an elitist bias is related to the primary school support rate, which, according to the author, is the best prima facie clue to an elitist bias in educational policy during the eighteenth and nineteenth centuries. The ratio defines as follows:

$$\text{Primary school support ratio} = \frac{\text{public funding for primary school per child in school age}}{\text{GDP per capita}} \quad (1)$$

Considering the previous idea, together with the conditioning factor of (de) centralization, the question that is tried to be resolved in this paper is: *Does democracy, understood as a set of movements from the bottom-up (political voice) and the top-down (support of the elites), have a different impact on educational results depending on the degree of centralization of the education system?* In other words, this work seeks to evaluate the impact of democracy on the expansion of education based on the degree of (de) centralization.

In order to answer this question, I use a group of four countries (Italy, Spain, France, and Sweden) in two historical moments, one highly decentralized and the other on the way to centralization. Sweden and France started the path to centralization in 1869, while Italy and Spain did it around 1900. Likewise, these four countries are also a representative sample of different institutions, trajectories, and levels of development and what happens internally in each one of them.

The empirical approach uses as variables of interest the Gross Enrolment Rate (GER) explained by the percentage of men who can vote, and the Primary School Support Ratio proposed by Lindert; controlled by a set of control variables such as population, child dependency ratio, the share agrarian population, the share urban population, male literacy, female literacy, surface and the total fertility rate, in 1870 and 1907.[1]

[1] For more details on constructing the variables and sources, see the Appendix.

Table 1. Summary of variables

Variable	Obs	Mean	Std. Dev.	Min	Max
GER 1870	228	0,62	0,33	0,10	1,76
GER 1907	230	0,63	0,19	0,17	0,97
GER 1921	231	0,63	0,18	0,17	1,45
Regional education expenditure per child in school-age 1870	231	3,66	3,31	-	23,35
Regional education expenditure per child in school-age 1907	230	6,34	8,24	0,09	61,52
Total children 1870	231	60.813,99	35.713,55	7.057,00	252.000,00
Total children 1907	231	74.206,02	52.790,12	7.772,00	458.147,00
Total population 1870	229	367.870,90	244.236,70	54.028,00	2.684.873,00
Total population 1907	231	434.821,90	392.435,50	55.217,00	4.972.034,00
Percentage of men who can vote 1870	234	66,74	41,33	6,68	100,00
Percentage of men who can vote 1907	234	79,22	29,20	12,90	100,00
Share urban population 1870	235	12,56	42,46	-	619,19
Share urban population 1907	231	14,65	16,58	-	100,00
Share agrarian population 1870	228	0,40	0,18	0,02	1,73
Share agrarian population 1907	229	0,26	0,09	-	0,85
Male literacy 1870	230	49,36	24,27	12,95	100,00
Female literacy 1870	230	37,76	28,20	3,18	100,00
Male literacy 1907	230	66,00	20,32	24,17	100,00
Female literacy 1907	230	58,52	24,77	15,44	100,00
Surface 1870	235	7.492,61	8.296,16	32,00	97.696,00
Surface 1907	235	7.514,59	8.428,12	31,00	99.166,00
Total fertility rate 1870	232	127,13	26,44	73,53	183.409,00
Total fertility rate 1907	231	113,62	32,04	59,10	182,50
GDP 1870	227	107,15	37,83	24,65	277,76
GDP 1910	227	163,29	57,00	71,80	465,21
Elitist bias 1860	227	0,04	0,04	-	0,21
Elitist bias 1907	227	0,07	0,07	0,00	0,45

At a methodological level, a cross-section analysis is proposed for the years 1870 and 1907 as follows,

$$GER = \beta_1 + \beta_2 PSSR + \beta_3 \% voice + X + \varepsilon \qquad (2)$$

where *PSSR* is the primary school support ratio, *voice* is the percentage of men who can vote, and *X* is a group of control variables. The first variable seeks to capture a top-down movement; that is, the initiative comes from the elites; and the second reflects a bottom-up movement, that is, the "common" population gives the initiative.

Considering the above, I suggest three hypotheses to be tested:

- *Hypothesis 1. The expansion of education came from only bottom-up movements.* This hypothesis is accepted if the voice variable is positive and significant while the support ratio is not.

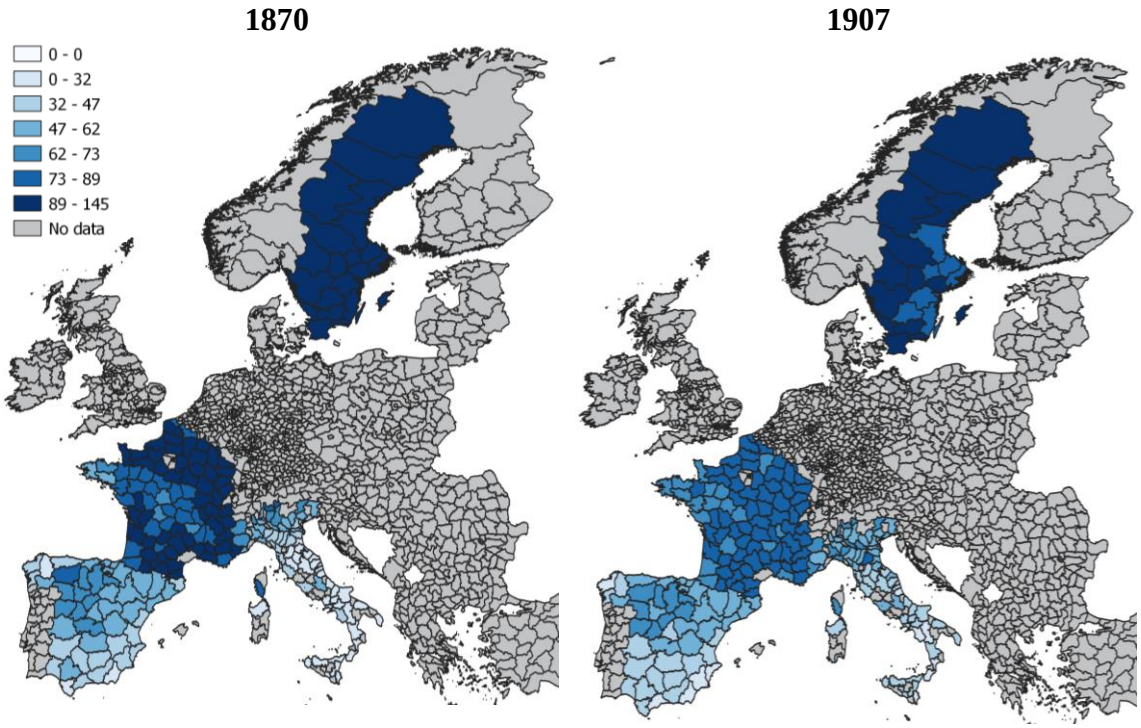
- *Hypothesis 2. The expansion of education came only from top-down movements.*
  This hypothesis is accepted if the variable support ratio is positive and significant. However, on the contrary, the variable voice is not significant. This would indicate that elites decide to forego economic growth in favour of investing in mass education.

- *Hypothesis 3. The expansion of education was based on both bottom-up and top-down movements.*
  This hypothesis is accepted when the two variables are positive and significant.

Preliminary results

As a starting point, Figure 1 shows us the enrolment levels in primary education by region in the four countries in 1870 and 1907. The first thing that strikes us is that the GER was much higher in Sweden and France than in Spain and Italy, both in 1870 and 1907. Second, when comparing the educational outcome of the countries with the highest GERs (Sweden and France), we see that the outcome was much higher in 1870 than in 1907, that is, something must explain the decrease in enrolment rates in 1907 Finally, regarding Italy and Spain, it is observed that there are apparent differences within the country between the northern regions with respect to those of the south.

Figure 1. Regional gross enrolment rate in 1870 and 1907; Italy, Spain, France, and Sweden



Source: See text.

Table 2 shows a cross-section analysis of equation (2) for 1870 and 1907, including all countries and regions (NUTS2). Based on the results, several things can be suggested. Firstly, of the three proposed hypotheses, the number 3 is fulfilled for the two years. In the late 19th and early 19th centuries, the expansion of education appears to have been carried out by both bottom-up and top-down movements. Therefore, it can be affirmed that said expansion is associated with pressure from voters as an interest of the elites who, for one reason or another, decided to give up growth so that education could reach a larger population. On the other hand, from the results, the two variables coefficients (*PSSR* and *voice*) behave differently, depending on the degree of (de) centralization. In the case of *political voice*, it is slightly higher the more centralized education is, in general terms.

Table 2. Cross-section. Gross enrolment rate in primary school in 1870 and 1907.

VARIABLES	(1) GER 1870	(2) GER 1870	VARIABLES	(1) GER 1907	(2) GER 1907
Percentage of men who can vote 1870	0.00160***	0.0150***	Percentage of men who can vote	-0.00137***	0.00187**
	[4.294]	[6.624]		[-3.146]	[2.495]
Primay school support ratio 1870	-0.326	1.554***	Primay school support ratio 1907	-1.046***	0.631***
	[-0.797]	[3.735]		[-5.474]	[5.161]
Italy Dummy		0.589***	Italy Dummy		-0.153***
		[3.258]			[-3.737]
Spain Dummy		-0.588***	Spain Dummy		-0.190***
		[-9.648]			[-6.367]
Sweeden Dummy		1.378***	Sweeden Dummy		0.167**
		[6.107]			[2.359]
Log population 1870	-0.0356	-0.0288	Log population 1907		-0.0401***
	[-1.600]	[-1.376]			[-3.663]
Child dependency 1870	-4.302***	-2.180***	Child dependency 1907		-1.233***
	[-7.317]	[-4.025]			[-3.447]
Share agrarian population 870	0.497***	0.0445	Share agrarian population 1907		-0.217***
	[5.726]	[0.467]			[-3.346]
Share urban population 1870	-0.000243	5.79e-05	Share urban population 1907		-0.00114***
	[-0.976]	[0.285]			[-2.753]
Male literacy 1870	0.000738	0.00265*	Male literacy 1907		0.00213
	[0.431]	[1.807]			[1.641]
Female literacy 1870	0.00538***	-0.00190	Female literacy 1907		0.00147
	[3.344]	[-1.284]			[1.320]
Surface 1870	-5.97e-07	-8.75e-07	Surface 1907		-2.00e-06*
	[-0.253]	[-0.426]			[-1.709]
Total fertility rate 1870	4.14e-05	0.00109*	Total fertility rate 1907		0.000832**
	[0.0530]	[1.670]			[2.585]
Constant	1.266***	-0.108	Constant	0.806***	1.005***
	[3.952]	[-0.311]		[18.87]	[6.195]
Observations	221	221	Observations	227	223
R-squared	0.789	0.866	R-squared	0.122	0.874
F	78.65	102.8	F	15.52	111.4

t-statistics in brackets
*** p<0.01, ** p<0.05, * p<0.1

Because the centralization processes occurred at different times between countries, in table 3, I show the separate analyses between the first to initiate the centralization of education (France and Sweden) and the late ones (Italy and Spain). As for 1870, results show that the relationship between the variables is entirely different. In the first place, if we look at the effect of voice in Sweden and France, we see that *hypothesis 2* is fulfilled, that the expansion of the education of masses was mainly supported by the interest of the elites in educating the "common" population. On the contrary, for the case of Italy and Spain, *hypothesis 3* continues to be valid; both the *political voice* and the interests of the elites are associated with higher schooling. Finally, facing this analysis, it can be observed that the *PSSR* coefficient is much higher in the case of France and Sweden so that the role of the elites seems to be much more noticeable than in the case of Italy and Spain.

Table 3. Cross-section. Gross enrolment rate in primary school in 1870.

	France and Sweden		Italy and Spain	
	(1)	(2)	(3)	(4)
VARIABLES	GER 1870	GER 1870	GER 1870	GER 1870
Percentage of men who can vote 1870	-0.00120***	-0.00763	0.00109***	0.0128***
	[-3.493]	[-0.698]	[3.473]	[7.189]
Primay school support ratio 1870	25.40***	22.91***	2.112***	0.970***
	[8.897]	[7.411]	[5.041]	[3.438]
France dummy		0.651		
		[0.655]		
Italy dummy				0.985***
				[6.762]
Log population 1870		-0.0619*		0.00605
		[-1.703]		[0.318]
Child dependency 1870		-1.109		-2.558***
		[-1.498]		[-3.343]
Share agrarian population 870		0.0504		-0.112
		[0.357]		[-0.930]
Share urban population 1870		-9.01e-05		-0.00121*
		[-0.412]		[-1.746]
Male literacy 1870		-0.000511		0.00340***
		[-0.170]		[3.147]
Female literacy 1870		0.000777		-7.69e-05
		[0.296]		[-0.0549]
Surface 1870		1.27e-06		-2.47e-06
		[0.438]		[-1.081]
Total fertility rate 1870		-6.18e-05		0.00166***
		[-0.0547]		[2.996]
Constant	0.859***	1.794***	0.139***	-0.866**
	[25.88]	[3.666]	[4.386]	[-2.528]
Observations	108	103	118	118
R-squared	0.446	0.499	0.305	0.781
F	42.21	8.232	25.28	34.30

t-statistics in brackets
*** p<0.01, ** p<0.05, * p<0.1

Finally, Table 4 replicates the same previous exercise for 1907. At this time, France and Sweden had consolidated the centralization process quite a bit, while Italy and Spain were just starting down the road. The results show that in both cases, the effect of the *PSSR* is still essential, but less, since the coefficient is much lower than in 1870, especially in France and Sweden. Thus, while the political voice loses relevance, the closer the system is to centralization.

Table 4. Cross-section. Gross enrolment rate in primary school in 1907.

	France and Sweden		Italy and Spain	
	(1)	(2)	(3)	(4)
VARIABLES	GER 1907	GER 1907	GER 1907	GER 1907
Percentage of men who can vote 1907	-0.00131***	0.00314	0.00186***	0.00129
	[-2.665]	[1.207]	[4.098]	[1.289]
Primay school support ratio 1907	0.722	1.245**	1.126***	0.602***
	[1.250]	[2.021]	[6.893]	[3.936]
France dummy		-0.339		
		[-1.488]		
Italy dummy				0.00361
				[0.0645]
Log population 1907		-0.0218**		-0.0352*
		[-2.550]		[-1.802]
Child dependency 1907		-0.000520		-0.00242***
		[-1.509]		[-3.483]
Share agrarian population 1907		0.00118		0.00130
		[0.699]		[0.738]
Share urban population 1907		-0.00111		0.00299*
		[-0.918]		[1.883]
Male literacy 1907		-9.66e-07		-4.94e-06*
		[-1.358]		[-1.859]
Female literacy 1907		-0.000213		0.000890**
		[-0.519]		[2.003]
Surface 1907		-0.0307		-1.909**
		[-0.109]		[-2.591]
Total fertility rate 1907		-0.0783*		-0.476***
		[-1.957]		[-3.219]
Constant	0.879***	1.095***	0.220***	1.035***
	[16.84]	[7.935]	[5.062]	[3.727]
Observations	108	104	119	119
R-squared	0.775	0.833	0.317	0.650
F	180.5	41.66	26.86	18.10

t-statistics in brackets
*** p<0.01, ** p<0.05, * p<0.1

To conclude, this work has sought to dialogue with the analyses on the role of democratization in the expansion of mass education. To do this, I have built the *PSSR* to capture the interest of the elites in investing in public education. Additionally, this mechanism has been contrasted with electoral participation to provide new evidence on the mechanisms that explain the expansion of education in Europe at the end of the 19th century. The results suggest that the increase in schooling is mainly associated with the interest of the elites and electoral participation. That is, it seems that it is carried out through ascending and descending movements. Although the degree of centralization of

the educational system conditions the impact of the political voice, it is much more significant the more decentralized the system is.

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Appendix

Table A1. Description of variables and sources

Variable	Description	Sources
GER	Gross enrollement rate	Italy and Spain from Cappelli & Quiroga (2021): France from from Mouvement de la population, 1800-1925 Données de la SGF; and Sweden from Elever-i-obligatoriska-skolor-1847-1962.
Regional education expenditure per child in school-age*	Expenditure on municipal and departmental education, or equivalent, among the number of school-age children. Expressed in 1881 US dollars	Italy and Spain from Cappelli & Quiroga (2021): France from from Mouvement de la population, 1800-1925 Données de la SGF; and Sweden from Elever-i-obligatoriska-skolor-1847-1962.
Total children	Total children aged 6-14	Italy and Spain from Cappelli & Quiroga (2021): France from from Mouvement de la population, 1800-1925 Données de la SGF; and Sweden from Elever-i-obligatoriska-skolor-1847-1962.
Child Dependency	Total population/ Total children aged 6-14	
Total population	Total population	Italy and Spain from Cappelli & Quiroga (2021): France from from Mouvement de la population, 1800-1925 Données de la SGF; and Sweden from Historisk statistik för Sverige Del 1. Befolkning Andra upplagan 1720-1967
Percentage of men who can vote	Number of men with the right to vote / total men over 18 years of age	Italy and Spain from Cappelli & Quiroga (2021): France from from Mouvement de la population, 1800-1925 Données de la SGF; and Sweden from Historisk statistik för Sverige Del 1. Befolkning Andra upplagan 1720-1967
Share urban population	Population in cities: more than 30.000 inhabitants	Italy and Spain from Cappelli & Quiroga (2021): France from from Mouvement de la population, 1800-1925 Données de la SGF; and Sweden; Sweden from Enflo & Missiaia (2018);
Share agrarian population	Number of employees in agriculture / total population	Italy and Spain from Cappelli & Quiroga (2021): France from from Mouvement de la population, 1800-1925 Données de la SGF; and Sweden from; Sweden from Enflo & Missiaia (2018);

Male literacy	Percentage of men who can read and write	Italy and Spain from Cappelli & Quiroga (2021): France from from Mouvement de la population, 1800-1925 Données de la SGF; and Sweden from Historisk statistik för Sverige Del 1. Befolkning Andra upplagan 1720-1967
Female literacy	Percentage of women who can read and write	Italy and Spain from Cappelli & Quiroga (2021): France from from Mouvement de la population, 1800-1925 Données de la SGF; and Sweden from Historisk statistik för Sverige Del 1. Befolkning Andra upplagan 1720-1967
Surface	Area in square kilometers	Italy and Spain from Cappelli & Quiroga (2021): France from from Mouvement de la population, 1800-1925 Données de la SGF; and Sweden from Sweden from Enflo & Missiaia (2018)
Total fertility rate	Total fertility rate per 1000 women aged 15-50	Italy and Spain from Cappelli & Quiroga (2021): France from from Mouvement de la population, 1800-1925 Données de la SGF; and Sweden from Historisk statistik för Sverige Del 1. Befolkning Andra upplagan 1720-1967
GDP	Per capita gross domestic product expressed in 1881 US dollars. All the countries are disaggregated into NUTS 3, except Italy, which is aggregated into NUTS 2 and are used as regional averages for each province of NUTS 3	Italy from Emanuelle Felice (2009; 2011); Sweden from Enflo & Missiaia (2018); Spain and France from Díez Minguela et.al (2018)