How Women and Illiterates Shaped Education Outcomes in 20th Century Latin America

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Abstract:

Is there a direct relationship between the characteristics of the electoral franchise and outcomes in education? This paper examines how voting institutions affect school enrollment in 20th century Latin America. We find that higher levels of political competition and electoral participation engender a positive effect on total education enrollment, albeit with quiet varied results for different levels of enrollment. But not all participation is created equal. While women's suffrage increases tertiary and secondary enrollment, the enfranchisement of illiterate populations increases primary enrollment.

Keywords: Political participation, political competition, voting institutions, women's suffrage, literacy restrictions, education.

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1. Introduction

An abundant and expanding body of research has sought to identify the relationship between democracy in Latin America and policy outcomes such as government spending, social welfare, education and health (Haggard and Kaufman 2008; Huber, Mustillo, and Stephens 2004; McClintock and Lebovic 2008; Altman and Castiglioni 2009).[3] Results have been built on one of the central inquiries in political science and political economics over the last half century, how regime structure affects economic development.[4]

Most scholarship has adopted a binary conception of democracy, in which countries are defined, categorized, and considered at either ends of one continuum, labeled either of a democratic or autocratic nature (Brown 1999; Avelino, Brown, and Hunter 2005).[5] Some works have countered that research on democracy and policy should attempt to build more multidimensional measurements of democracy (Mainwaring, Brinks, and Pérez-Liñán 2001; Aidt and Eterovic 2010) with concern for more nuanced levels of democratic structure (Moon et al. 2006). Other works have responded in fervent defense of a minimalist, dichotomous measure of democracy (Cheibub, Ghandi, and Vreeland 2010). Measurements of democracy have become so plentiful that in a new approach, authors draw from the ten leading approaches to create a cumulative or "unified" index, resulting in a purported super-measurement of previous measurements (Pemstein, Meserve, and Melton 2010).

One of the key motivations for a clear conception of democracy is the ability to examine its impact on policy. In this paper, we concur that examining the relationship between democratic institutions and indicators fundamental to human development is an important endeavor, and we seek to take current debates a step further by introducing an empirical model which focuses on two essential dimensions of democracy—political participation and political competition—by examining their effect on outcomes in education policy in Latin America. Though democracy has long been considered a multi-dimensional concept (Dahl 1971), empirical work in political science

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[3] Some parallel work has been done in other regions. Stasavange (2005), for example, investigates the role of electoral competition in Africa, (using the democratic and autocratic regime switch) and finds that democracy even in a "weak" institutional environment, has positive effects on primary education spending.

[4] A parallel stream of literature has also emerged investigating the relationship between regime nature and foreign policy, with some positing that regime switches toward democracy provoke a positive realignment in foreign policies toward the United States, regardless of the United States' involvement in, or support for the switch (Ratner 2009).

[5] A good example of this is Deacon's (2008) work arguing that public good provisions are higher under democracy than dictatorships.

has provoked a highly contested, continuing debate regarding how to measure varying levels of democracy of democratic quality.

We do not aim to end the debate on nomenclature, or expand on current definitions of democracy. This paper asks instead how two specific institutional changes affected education. Building a database of 18 Latin American countries over a period of 80 years, from 1920-2000, we assess the impact of political competition and political participation on educational outcomes, focusing on school enrollment. We delve deeper into the effects of political participation on educational outcomes by taking into account two different restrictions on the voting franchise employed in Latin America during the period we analyze, gender restrictions and literacy requirements.

Focusing our study on the region of Latin America provides multiple advantages compared to a wider "world sample" comparative study. Despite its diversity, Latin America's shared colonial history grants us greater cultural similarities, making the strict homogeneity restrictions needed to perform a panel estimation more likely to be fulfilled. Moreover, Latin America has a rich history of political transitions back and forth both in political competition and political participation during the 20th century. Finally, Latin American political elites implemented multiple restrictions on the electoral franchise, making the continent rich terrain for our research question.

While there is great discord regarding how to achieve great educational outcomes, there is almost universal agreement as to the importance of education for human and economic development.[6] Traversing geography, historical period, and level of economic development, a large body of evidence indicates that education plays a central role in spurring improvements in health (Caldwell 1979; Schuller et al. 2004)[7], capital accumulation (Boldrin 2005; Lucas 1988), technological advancement and productivity (Nelson and Phelps 1966; Colclough 1982) and overall economic output (Hanushek and Woessmann 2007; Johnes 2006; World Bank 1991; Psacharopoulos and Patrinos 2004).[8] Our increasing understanding of the critical role education

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[6] Moreover, politicians often view education policy as part of a larger economic development strategy. Prime Minister Tony Blair famously declared in 1998 that "education is the best economic policy we have."

[7] Although the effect of, for example, maternal health on child welfare is well established, one of the challenges for empirical work on education and health outcomes is the inconvenient fact that education frequently serves "as a proxy for the socioeconomic status of the family and geographic area of residence" (Desai and Alva 1998).

[8] While there is broad consensus on the aggregate correlation of education and growth, debate is rife regarding which variables are most important, be they improvements in primary and secondary education or at the tertiary level (Loening 2005), or more pointedly on levels of "quality" of education versus expanded access and participation in the educational system across all levels (Solomon 1985; Bedi 1997; Hanushek and Wossmann 2008).

plays in economic development has made more urgent the study of how political institutions may promote or impede improvements in educational outcomes.

Our overarching hypothesis in this paper is that the underlying components of voting institutions affect policy outcomes in general and educational outcomes in particular, in very distinct manners. Our results corroborate this assertion. The main findings we present can be summarized as follows: (1) In terms of educational enrollment, increases in political competition and political participation engender overall positive effects, with quite varied results for different levels of enrollment. Higher levels of political competition result in an increase in primary school enrollment and decrease secondary and tertiary education enrollment. In contrast, an increase in political participation is likely to have a positive effect on higher education and no effect on primary education. (2) Our specific results on voting rights indicate that women's enfranchisement had a positive impact for overall educational enrollment. On the other hand, we find that granting the right to vote to illiterate populations resulted in slightly negative (although not statistically significant) outcomes for overall enrollment. Women's inclusion in the democratic process reduced enrollment in primary schooling, while increasing enrollment in higher education (secondary and tertiary). The granting of voting rights to illiterate populations rendered contrasting results at different levels of school enrollment, with positive outcomes for enrollment in primary education and negative outcomes for enrollment in higher education.

Our results have implications for current theory because they show how important constituent elements are in the examination of the relationship between regime structure and outcomes in public policy and the allocation of state resources. In addition to the empirical results of our model, our paper contributes to current literatures by deepening work on democracy, which often claims to include gender in analysis of democracy, but falls short in operationalizing the impact of women's voting rights in comparative political analysis (Paxton 2000; Beer 2009; Caraway 2010). By showing how levels of competition and participation can have contrary effects on school enrollment, we deepen our understanding of how constituent dimensions of democratic systems affect public policy outcomes.

The paper proceeds in the following structure: In the second section we review the debate on regime type and social outcomes. Our third section more fully introduces our definitions of political competition and political participation as well as our main variables and hypotheses. In the fourth

section, we present our model. The fifth section describes our results and in the sixth section we reflect on how these results contribute to the current empirical debate.

2. Debates on Regime Type

Definition of democracy is an ancient and complex endeavor.[9] In modern political science, a "minimal but complete" conception of a democratic regime, as pioneered by Dahl (1971) has come to comprise four classic components: 1) The head of government and legislature should be selected through fair competitive elections offering the possibility of an altercation in power; 2) Voting rights should be enjoyed by the great majority of the voting population; 3) Democracies must protect political rights and civil liberties; and 4) Those elected must have veritable power to govern.[10] The ability of a regime to realize its "potential" has been understood as democratic quality (Altman and Pérez-Liñán 2002).

Over the last decade, research in the field of political science has grappled with the problems of defining and categorizing political regimes. Some have expressed comfort with a binary definition, locating regimes at opposite ends of a democracy-dictatorship continuum (Alvarez et al. 1996; Cheibub, Ghandi, and Vreeland 2010), while other have argued that such polarized conceptions fail to "capture intermediate regime types" (Mainwaring, Brinks, and Pérez-Liñán 2001).[11] According to the later argument, pinning countries at opposite ends of a political continuum risks the creation of a false dichotomy which may cloud our understanding of underlying democratic mechanisms at work. In a seminal paper on the classification of political regimes in Latin America, Mainwaring, Brinks and Pérez-Liñán (2001), offer an alternative to the continuum approach, introducing "trichotomous classification," which they suggest provides an alternative to reductionist and "procedural" definitions of democracy.

In a number of contexts and facing a number of research questions, it makes sense to construct composite indicators of democracy that combine aspects of participation with aspects of

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[9] Conceptions of Athenian democracy reflect the abiding puzzle of democratic nomenclature. Was Athens democratic? Athens is heralded as the political headwaters of modern democracy and yet, it was a society ruled by a select few, in which membership was significantly restricted. We understand Athens as a limited democracy (Held 2006: 20) and yet a number of modern democracies which also had significant restrictions on membership to the voting class are considered more wholly democratic .

[10] For a discussion of evolving definitions of democracy, see Mainwaring, Brinks and Pérez-Liñán (2001: 39-41).

[11] Early binary regime classification in Alvarez et al. (1996) was extended by (Przeworski et al. 2000) to create the popular "democracy and development" or DD measure.

competition into one overall regime type indicator.[12] Yet, such indicators, even when properly constructed, may conceal important insights; constituent components can have vexingly offsetting effects. We focus on two elements which have transversal effects on all procedural dimensions of democracy, political participation and political competition. Political competition describes the extent to which political power is freely contested by political parties, pressure groups or other organized factions within a defined political structure. Political participation, in contrast, describes the rights of individual citizens to participate in the selection of their government through elections and referenda, and the extent to which they exercise this right.[13] A number of authors have identified the importance of including political participation in a measurement of democracy and the risks of its exclusion;

> "The omission of an adequate measure of participation undermines the practical
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> basis for claims of democratic superiority and may distort the empirical
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> relationship of democracy and its postulated outcomes" (Moon et al. 2006: 4).

Indeed, an emerging school of quantitative research has worked to build testable measurements of democracy which account for participation (Vanhanen 2000; Moon et al. 2006; Holmes and Gutiérrez de Piñeres 2006). At the same time, those in the binary camp present concerns about alternatives to dichotomous measures, arguing that "alternatives are based on vague and arbitrary operational rules" (Cheibub, Ghandi, and Vreeland 2010: 68) On either sides of the debate there are growing calls for clarity—conceptual and operational—in terms of which instrument is to be used (Reiter and Tillman 2002; Treier and Jackman 2008).

While the clarion call for a singular, easily comparative measurement of democracy is attractive, the persistent problems of understanding democracy without accounting for levels of participation is further muddied by the fact that most popular measures of democracy do not address the exclusion of women and illiterate populations from voting systems. Even with a more nuanced approach to gauging political regimes, Mainwaring, Brinks and Pérez-Liñán. (2001) fall short of including the voting rights of women and illiterates, vast swaths of a voting-age population, in their classification of a democratic regime:

> "…we overlooked the disenfranchisement of women and the illiterate for the early
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> part of the time period under consideration. These earlier exclusions were cultural

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[12] The strongest argument for a composite or "minimalist measure of democracy" can be found in Cheibub et al. (2010).
[13] For our discussion on how we operationalize these elements, see section 3, "Definitions, Data and Variables."

artifacts of a time past; this criterion of democracy has changed over time"

(Mainwaring, Brinks, and Pérez-Liñán 2001: 47).

The problem of defining what is essentially a *male* democracy, as full democracy, has been articulately described by Paxton, who observes that the leading scholars of democratic theory frequently include women's suffrage in their conceptual definition of democracy, yet fail abysmally to operationalize restrictions on female franchise in their models. According to Paxton (2000), the inclusion of gender in political science's analysis of democracy would change the date of "democratic transition" across a number of countries, sometimes by more than a half a century (Paxton 2000: 105). How and if women are included in the electoral process is of great importance in understanding what impact democracy may have on policy outcomes.

At the same time, there are significant problems with the laxity with which political science has applied the term "democracy" to political systems which have excluded vast proportions of the population due to literacy restrictions. In Latin America, literacy restrictions were a popular mechanism for maintaining elite control. These restrictions were not inconsequential. In Argentina, for example, in 1912, almost 40 percent of the population could not read, rendering any interpretation of this system as democratic as shallow. Restrictions in the region persevered far into modern times, Chile, for example, abolished literacy restrictions only in 1970, Brazil, in 1985.

In this paper, we do not attempt to define or quantify the broad effects of democracy on policy outcomes, nor do we expect to end the debate on definitions of democracy. We do believe that some of the constituent elements of democracy have been overlooked in recent literatures, as have veritable attempts to account for the impact of the inclusion of women and illiterate populations on specific social policies. As a result, in this paper, we work to quantify the separated effects of political participation and competition on educational outcomes. We believe the recent debates on measurements of regimes veer dangerously close to generating heat, but scant light on the relationship between regimes and specific outcomes. As we look forward in a post-authoritarian period in Latin America, analysis of these constituent elements will gain increasing importance. How is the vote exercised? What are the levels of participation and how are they secured? The democracy versus authoritarian debate is, we hope, archaic, with the future, both in politics and in its study, is in exploring different systems of democratic design.[14] A first step in that direction is a

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[14] A recent work by Altman (2011), sets us forth in this direction, exploring how instruments of direct democracy can be used to strengthen accountability, and co-exist with representative systems.

clear understanding of how the different elements of democratic systems can have contrasting effects.

The Effects of Voting Institutions on Social Outcomes

Varied and contradictory definitions of democratic indicators are matched by a diversity of results analyzing the impact of regime type on social outcomes. While a large body of evidence indicates that democracies disburse higher levels of public services than authoritarian regimes (Avelino, Brown, and Hunter 2005; Brown and Hunter 1999), some researchers question if higher spending levels translate into enhanced social development and "actually reach the poor" or "produce better social outcomes" (Ross 2006: 860). There is little debate regarding the theory that democracies respond to the electorate and therefore attune their policies to pressures for disbursement. But to whom exactly are democracies responding? Ross examines the impact of democracy on two indicators of human development, infant and child mortality and argues that there is no correlation with improvements in health and changes in regime type. He explains this disjuncture by arguing that democracies respond to particular social groups, leaving out the most marginalized:

> "Perhaps democracies subsidize the budgets of middle- and upper-income groups
> who can afford to buy food and health services privately, but not the poor, who
> find food and health services unaffordable." (Ross 2006: 861).

Contrary results can be found in Altman and Castiglioni (2009) who show that from 1972-2000, democratic regimes in Latin America faired better than authoritarian in terms of outcomes in human development. They argue that beyond the classic debate of democracy vs. dictatorship, the degree of democratic quality renders a tangible impact on human development.[15] Bringing empirical work from the regional to the national and sub-national analysis, a recent work on Argentina finds that, "political factors"[16] are insignificant across a gamut of health output and input measures, including infant mortality (McGuire 2010).[17]

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[15] Altman and Castiglioni analyze human development through three indicators: infant mortality, illiteracy rates and life expectancy.

[16] Political factors in this work are measured through five categories; 1) ratings of democracy in each province, 2) electoral participation, 3) electoral competition, 4) partisanship, and 5) level of women in politics.

[17] Though interestingly, one counter-effect was found, the introduction of a gender quota in the lower house of an Argentinean provincial legislature is shown to have a statistically significant positive impact on infant mortality rates.

Previous literatures on the affects of voting institutions—specifically, the enfranchisement of women and illiterate populations—government spending, offer mixed global evidence. Lott and Kenny (1999) show that the inclusion of women in the electoral process increased total spending across US states during the 1860-1940 period. Aidt, Dutta and Loukoianova (2006) find the opposite in a sample of 12 Western European countries. In their eighty-year sample of Latin America, Aidt and Eterovic (2010), find that women's suffrage laws have no impact on government spending. Lindert (1994) and Aidt and Dallal (2006) find the women's enfranchisement contributed to the rise of social spending and increased the share of direct taxes. In a smaller one-country study, Abrams and Settle (1999) find a large positive impact on social welfare spending in Switzerland after voting rights were granted to women in 1971. In contrast, Stutzer and Kienast (2004), also working on Switzerland, explore differences in the timing of the introduction of women's suffrage, find little association between women's suffrage and social spending at the local level.

Overall, most studies examining policy and human development outcomes classify democracy in a binary way and do not include the effects of participation, or the exclusion of women and illiterates in their classifications. On the other hand, the emergence of work on the impact of women's suffrage has, to the best of our knowledge, focused exclusively on the relationship between of voting institutions on government social spending. This paper works to fill the current gap in the literature by examining outcomes in education, where enrollment serves as an indicator not only of expanded state resources, but improved social outcomes.

3. Definitions, Data and Variables

Our two independent variables are political competition and political participation. We define political competition as the extent to which political power is freely contested by political parties, pressure groups or other organized factions within a defined political structure. We define political participation as related to the rights of individual citizens to participate in the selection of their government through elections and referenda and the extent to which they exercise this right.

Dependent Variable: Educational Outcomes

To study the effects of political competition and political participation on educational outcomes we focus on school enrollment at different levels. Specifically, we use total education enrollments (*ToEn*), primary (*PEn*), secondary (*SEn*) and tertiary enrollment (*TEn*) as a percentage

of the country's population under 15 years old of age. The data on school enrollment comes from OXLAD and the population under 15 years old of age is from Mitchell (2003). Our data on education enrollment covers most of the 20th century, spanning from 1920 to 2000. Since most countries in Latin America lifted voting restrictions on female and illiterate populations during the period covered in our database, we can examine the impact of female and literate suffrage on school enrollment.

From our database, we observe that trends in education outcomes in Latin America have undergone significant transformations over the last eight decades. Enrollment in the region for primary education has systematically increased from less than 18 percent of the population under 15 years old during the 1920s to more than 46 percent during the 1990s. Also impressive are the increases in secondary and tertiary enrollment which rose from around 1 percent of the population under 15 years during the 1920s to more than 21 percent during the 1990s.

With almost universal access to primary education, the key remaining challenge to education outcomes in Latin America is continued enrollment (UNESCO 2004). Therefore, both from a political economy and policy perspective, a greater understanding of the institutional mechanisms which fomented school enrollment in the first place could have profound policy implications for the quality improvement of the current enrollment.

We acknowledge that using the levels of enrollment as indicators of educational outcomes is not problem free, but these indicators remain one of the most central prisms through which to analyze trends in education (OECD 2010). Using enrollment rates as a proxy for government provision of education is not perfect, since the data do not distinguish between enrollment in public and private schools, a number that varies widely across countries. An alternative indicator would be to use government expenditure on education; lamentably, this data also presents a number of problems. In this study we opted for using enrollments as proxy for educational outcomes for three reasons. First, when using government expenditure on education it is difficult to establish and control for the varying degrees of state, local, and federal responsibility for spending on education and to control for the varying methods used to budget and account in each country (Brown 1999). Second, to the best of our knowledge, data on government spending on education is only available since 1970, which makes impossible for us to test our hypothesis of the effects of women and illiterate suffrage on educational politicians. Finally, a number of other studies, e.g. Barro (1997), Lake and Baum (2003) and Brown (1999), use enrollments figures as their proxy for education.

Independent Variable 1: Political Competition

Our first hypothesis addresses the relationship between levels of political competition and outcomes in education. We argue that *political competition increases school enrollment*. Two models that help us conceptualize the effect of political competition on policy choices are spatial voting models (Downs 1957; Lindbeck and Weibull 1987) and pressure group models (Becker 1983). In these models, two-party competition produces a strong pull towards the median position in simple Downsian models. Becker (1983), argues that competition among pressure groups for and against redistribution leads to efficient methods of taxation because political pressure in favor of tax instruments with high deadweight costs is relatively low, while opposition is strong. Using a political agency model, Ferejohn (1986) points to the fact that political competition constrains the ability of politicians to extract rents. In-line with these theories, we can make the argument that higher political competition is positively correlated to governments which respond more efficiently to the demands of their constituents. Therefore, since political competition tends to promote more efficient policies, increases in political competition are likely to encourage public investment in policies with the highest social return.[18] Where returns on investment education are higher, it is more likely that we will find a relationship between political competition and education outcomes. This seems particularly true in regional contexts where different policies may have different marginal returns; for example, in a global study comprising 98 countries, Psacharopoulos and Patrinos (2004) find that average returns to schooling are the highest in Latin American and the Caribbean region.

To measure our independent variable—political competition—we use the Polity IV index developed by Marshall and Jaggers (2007). The Polity IV index has become a popular tool among political scientists and economists for its use as a general indicator of "democracy", as a way to classify political regimes (democracy versus autocracy), or as an instrument to define episodes of democratization (Avelino, Brown, and Hunter 2005; Rodrik and Wacziarg 2004; Mulligan, Gil, and Sala-i-Martin 2004; Persson 2005; Altman and Pérez-Liñán 2002) among others). As discussed earlier, debate is rife regarding the best approach for measuring regimes and the Polity IV index would be considered a dichotomous, minimalist measurement of democracy, given its inability to take into account the level of participation of vast swaths of the population in the political process.

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[18] Among the plethora of understandings for efficiency, we define the term here to be consistent with social efficiency (as opposed to allocative, productive, or scale-driven efficiency, to name a few): meaning when the marginal social cost of production is equivalent to the marginal social benefit.

Yet, though it excludes dimensions central to political participation, such as suffrage reforms, Aidt and Eterovic (2010) argue that the Polity IV index is a better indicator of political competition than of democracy as a whole. Like Vanhanen (2000), we believe the limitations of the Polity IV index do not render it useless; the index does shine light on levels of political competition, even if it falls short of giving us a holistic reflection of democracy.

The five underlying authority characteristics on which the POLITY IV index is based are: i) Competitiveness of executive recruitment: the extent that prevailing modes of advancement give subordinates equal opportunities to become superordinates. ii) Openness of executive recruitment: recruitment of the chief executive is "open" to the extent that all the politically active population has an opportunity, in principle, to attain the position through a regularized process. iii) Executive constraints: the extent of institutionalized constraints on the decision making powers of chief executives, whether individuals or collectivities. iv) Regulation of participation: the extent that there are binding rules on when, whether, and how political preferences are expressed. v) Competitiveness of participation: the extent to which alternative preferences for policy and leadership can be pursued in the political arena.

The first three characteristics relate to how easy it is to contest political power or to place constraints on the executive. The last two characteristics refer more specifically to "participation" and the regulation of elections. However, the coding of these variables by the Polity project is in many important ways, limited. The Index does not relay information regarding the extension of the franchise or actual election turnouts. One example from the Latin American region which illustrates how problematic exclusion of franchise in the Polity IV Index is Costa Rica.

An "emblematic" country, which a long history of successive, stable democratic regimes, Costa Rica's political system has been consistently scored by the Polity project as a 10—the highest possible ranking of a democratic system-- since the 1900s. And yet the Index does not take into account the country's voting institutions—including—restrictions on gender and class which were present throughout the first half of the century. While there may have been high levels of political competition, the exclusion of women and illiterates from voting in Costa Rica renders its score of 10 vacuous when it comes to understanding the real levels of political participation in the democratic process. We understand therefore, that the Polity IV Index, limited thought it is in assessing levels of participation, can serve as a useful measurement of the impact of political competition. We define a dummy variable -- competition dummy -- that takes the value of 1 when

the Polity IV index is positive and the value of 0 when the index is negative.[19] This variable, therefore, measures the impact of political competition vis-a-vis a counterfactual of "restricted political competition"

A number of approaches to measuring political competition are inappropriate for our study as they start from the presumption that some basic democratic structures are in place. [20] This is not the case in our study, which traverses episodes of both autocracy and democracy. The Polity IV index however, is well suited to measure competitiveness in a context of restricted participation, due to its primary focus on competition for executive power.

Independent Variable 2: Political Participation

Our second hypothesis explores the impact of participation on educational outcomes. We argue that *political participation increases school enrollment*. We analyze the effect of political participation on the fiscal system drawing from probabilistic voting models (Hettich and Winer 1988, 1999). In these models, the equilibrium fiscal structure reflects a trade-off between the loss and gain of political support from groups of voters. By lifting property or income restrictions on the right to vote, individuals with lower incomes or less wealth are granted political voice, and the constituency of government is expanded with new voters who are poor relative to the average taxpayer. The Representation Theorem, then, predicts that an extension of the franchise increases the demand for redistribution (Tridimas and Winer 2005). Moreover, political parties are less likely to attach the same weight to groups of voters who normally do not show up to vote as they do to voters with a more predictable turnout pattern. There is substantial evidence from many different countries that richer and better educated citizens are more likely to exercise their right to vote than their poorer and uneducated counterparts.

It is, therefore, reasonable to suppose that an expansion of actual political participation (turnout) also leads to higher redistribution demands because any increase mostly reflects an increase in participation of poorer and less educated strata of society. As noted by Gilles and Verdier (1993) for example, publicly funded education encourages accumulation of human capital and tends to produce a more even income distribution. The pressures for redistribution generated by wider political participation may, therefore, increase education spending and enrollment in schools.

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[19] We obtain essentially identical results if we entered the Polity IV index directly in the regression model.
[20] Examples include Holbrook and Van Dunk (1993), who use the "win-margin" of the incumbent governor as a measure of competition. Alternatively, Skilling and Zeckhauser (2002) focus on the length of time a party is in office.

In particular, enfranchisement of poor and illiterate citizens is likely to increase the demand for primary education, while increased participation of the middle class is likely to increase mainly the demand for secondary and tertiary education.

To measure political participation we rely on the participation index on the Vanhanen's Polyarchy database (Vanhanen 2000, 2003). The participation index is an aggregate of voter turnout in general elections and in referenda, in proportion to the total population. The index takes the value of 0 when there are no elections or referenda to participate in. While both the franchise rules and the restrictions on political competition in place at a given point in time are likely to influence public choices regarding education, Lipset (1960) and other advocates of modernization theory have pointed out that accumulation of human capital itself may be driving institutional development and cause democratization in the longer run. This suggests a possible feedback loop that may bias our estimates upwards. The possibility of a simultaneity bias should, therefore, be kept in mind when interpreting our results. We discuss the issue of causality between our political variables and educational outcomes in a following section after introducing our main results.

Women's Suffrage and Literacy Tests

In our second variable we hypothesize that political participation is positively associated with the size of education enrollment. Within this stream, we offer a more sophisticated way of analyzing this hypothesis, by delving deeper into participation and examining how particular restrictions, such as literacy tests, affect education attainment. This is important because political participation can be enhanced or hindered by variations in legal restrictions on the right to vote. During the 20th century, two of the most common restrictions employed by Latin American countries were literacy tests and exclusion of women.[21]

Virtually all the Latin American countries adopted a literacy requirement for citizenship (which included the right to vote) in their first constitution or soon thereafter. As illustrated by Table 1: The timing of women's suffrage and the abolishment of literacy tests in the 18 countries, which reports the dates at which literacy tests were abolished in each country, these persisted in some, but not all, countries for long periods of time. The extreme cases are Brazil, Chile and Peru, where these restrictions played an important role until the 1970s and the 1980s. In a few other

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[21] Literacy requirements had by the turn of the 19th century replaced wealth or income requirements as a means to keep Native Americans and other poor people from voting in most countries in the sample. For this reason, we do not attempt to identify the impact of wealth and income restrictions.

countries, e.g., Argentina and Colombia, literacy tests were never applied systematically at the national level (Engerman and Sokoloff 2001). Table 1 shows women's suffrage was granted within the time window from 1929 (Ecuador) to 1955 (Honduras, Nicaragua and Peru), so until then, voting rights, and with it the right to participate in the selection of government, were restricted to (literate and/or wealthy) men. We observe that both restrictions on participation were removed at very different times across our 18 countries in Latin America giving us enough cross-sectional and time variation to apply statistical analysis.

Table 1: The timing of women's suffrage and the abolishment of literacy tests in the 18 countries

Reforms that enfranchise women or illiterate citizens increase the potential for political participation.[22] Lott and Kenny (1999) argue that women's suffrage is associated with larger government. One reason for this is that married women who have specialized in household production, in case of break down of marriage or widowhood, may find it difficult to enter or reenter the labor market. They may, therefore, support spending on publicly provided private goods, such as health and education, which provide a form of insurance against unexpected employment and household disruptions. Another reason is that a demand for social services naturally arises as women seek to shift part of the burden of household chores, such as child care, onto the state, see, e.g., (Cavalcanti and Tavares 2006).

Literacy restrictions, on the other hand, were used systematically to exclude indigenous populations from voting. The effective disenfranchisement of a large fraction of mainly poor citizens in all likelihood, reduced the demand for redistributive public spending in general and may have discouraged elites from investing in public education in particular. In conclusion, there exist compelling theoretical reasons why both women's suffrage and franchise reforms that remove literacy tests should be associated with an increase in the size of enrollment.

To test this hypothesis, we construct an additional set of variables. We begin by coding the dummy variable, participation dummy, as 1 in year t in country i if the participation index is positive, i.e., there is some participation in either elections or referenda, and 0 otherwise. Next, we code the dummy variable, women's suffrage, as 1 in year t in country i if the participation index is

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[22] We ran a regression of electoral participation on women's and illiterate suffrage together with our control variables. We find significant evidence of a positive correlation between voter turnout and women's suffrage and enfranchisement of illiterate people.

positive at the time and women were allowed to vote. Finally, we construct the variable literacy effect in two steps. First, we code a dummy variable as 1 in year t in country i if the participation index is positive and the right to vote is unrelated to any literacy test. Second, we multiply this dummy variable with the share of the population who is illiterate. In this way, the literacy effect captures the potential political influence of the group of illiterate voters.[23]

We note that women's suffrage and literacy effect are designed to measure the impact of literacy and gender restrictions on the size of enrollment, conditional on some political participation and that the participation dummy is designed to capture the effect of having some participation among literate men.[24]

4. Our Model: The Econometric Specification

To test our hypotheses, we construct an unbalanced panel data set covering 18 Latin American countries during the period 1920-2000. Outcomes in education serve as our primary linchpins of analysis. Specifically, we use total education enrollments (*ToEn*), primary (*PEn*), secondary (*SEn*) and tertiary enrollment (*TEn*) as a percentage of the country's population under 15 years old of age. To assess the effect of regime type on educational enrollment and educational spending, we estimate the following model:

$$1)\ y_{i,t} = \alpha_i + \eta_t + \beta_1 x_{i,t}^{participation} + \beta_2 x_{i,t}^{competition} + \gamma x_{i,t}^{control} + \varepsilon_{i,t}$$

where $y_{i,t}$ is the outcome variable of interest in country i at time t and $\varepsilon_{i,t}$ is the error term with $E(\varepsilon_{i,t})=0$. The variable $x_{i,t}^{participation}$ is the participation index and $x_{i,t}^{competition}$ is political competition, both variable as introduced in the previous section.

Since educational outcomes are likely to be affected by many other factors than political participation and competition, we follow the literature on education and public spending in selecting out control variables. We include the vector $x_{i,t}^{control}$ of time-varying control variables to take some of these into account.[25] We control for the variable trade openness, which is defined as export plus import in percentage of GDP. Rodrik (1998) has argued that openness to international trade is

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[23] One could argue that we, for consistency, should multiply women's suffrage by the share of adult women. We have tried this and it makes no difference on the results.
[24] This formulation assumes that voting rights granted in the past under a spell of democratic elections do not affect policy outcomes in subsequent periods without any participation. This seems reasonable in our opinion. We have checked if it makes a difference if the two dummy variables were coded 1 after the relevant restriction were lifted irrespective of subsequent regime changes and the results are very similar.
[25] A precise definition and the source of each variable is given in the Data Appendix.

associated with larger government spending because a larger public sector reduces economic volatility and provides insurance. Second, we include an estimate of PPP adjusted GDP per capita in logarithms, GDP per capita, to control for business cycle effects and the growth rate of GDP per capita, growth, to proxy for general development trends. Third, we use the percentage of the total area of cultivated land that is owned by family farmers (Vanhanen 2003) as a proxy for income equality. Standard measures of inequality, such as the Gini-coefficient, are unavailable for most of the sample period. Fourth, we allow for scale effects by including the variable, population, which records the logarithm of the population in millions. Fifth, the variable urbanization rate measures the proportion of the population who lives in urban areas. Urbanization is highly correlated with industrialization and economic and social progress -- factors which through the processes discussed by Wagner (1883) should increase the need for public services and for regulation of economic activity. Finally, to capture the fiscal implications of wars and episodes of high inflation, we include a dummy variable to control for war (war) and we also include the annual rate of inflation for each country (inflation). [26]

All the regressions presented include country fixed effects (α_i) and year fixed effects (η_t). This specification helps us to rule out that the inference regarding the two parameters of interest (β_1 and β_2) could be contaminated by unobserved determinants of fiscal choices that are constant over time (country fixed effects) or affect all countries at a given point in time in the same way (year fixed effects). Therefore, the risk of omitted variables bias is reduced and implies that we are using "within" variation (i.e., variation in political arrangements within a given country over time) to identify the impact of political participation and competition on educational choices. In effect, we are seeking an answer to the question: if a given country experienced an increase in political participation (or competition), then, allowing for other potential determinants of the country's educational choices, what would we expect the change in education policy (regarding school enrollment) to be.

As recommended by Beck and Katz (1995), we estimate the model allowing for panel-specific standard errors and correlations between panel units. We have tested the stationarity of the data using the Fisher Test for panel unit roots and can in each case reject the null hypothesis that the series are non-stationary for all panel units. However, since we do not model dynamics explicitly,

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[26] Controlling for compulsory voting regimes in our estimations does not affect our results. Results are available upon request. 13 countries in Latin America employ compulsory voting.

we are worried about autocorrelation in the residuals and correct for autocorrelation of order one in all regressions and include a deterministic time trend in each regression.

5. Results

Our empirical results reach across two levels, on one hand, we identify the impact of voting institutions on the level of school enrollment. On the other hand, we delve deeper into the issue of enrollment by disaggregating the affects across different educational levels.

Impact of democracy on trends in educational enrollment

Table 2 presents our main results on education enrollment. Our four dependent variables are total education enrollments (*ToEn*), primary (*PEn*), secondary (*SEn*) and tertiary enrollment (*TEn*) as a percentage of the country's population under 15 years old of age.

Regressions 1 and 4 provide strong support for our two hypotheses: that political competition and political participation increase total educational enrollment as a percentage of the country's population under 15 years old of age. From Regression 1, a country that experiences an increase in political competition (from low to high) would see an increase in total educational enrollment of about 1.33 percentage points. Similarly, a country that experiences an increase in political participation from a situation with no participation to a situation in which 50 percent of the population participate in the selection of their government would see an increase in educational enrollment of about 2.65 percentage points.[27] Bearing in mind that the average total education enrollment in our sample is about 48 percent, these effects are substantial.

However, even though both political competition and political participation increase total education enrollment, they affect the composition of the total enrollment in very different ways. Higher political competition raises total education enrollment by increasing enrollment in primary education. At the same time, competition leads to decreasing enrollment at tertiary and secondary education levels (although at the secondary it is not statistically significant). On the other hand, the

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[27] Regressions on specifications that do not include any of the time-varying control variables deliver similar results. These regressions are likely to suffer from omitted variables bias. However, they have the virtue that they do not include potentially endogenous regressors on the right hand side of the empirical specification.

converse is true for greater political participation, which increases total education enrollment primarily through increasing higher education enrollment while making no impact on primary enrollment.

Table 2: Political Competition, Voting Institutions and Enrollment Outcomes

Our results on total enrollment fully support our theoretical priors. However, the sub-level results, those channels through which total enrollment can be understood, are what remain most intriguing. The increase in primary enrollment by heightened political competition can be explained by the fact that at low levels of enrollment, the increase in primary enrollment is likely to have higher social returns than the increase in higher education (Psacharopoulos and Patrinos 2004). Therefore, if an increase in political competition improves the responsiveness of government policies to the voters it should also be supportive of redistribution of school enrollment from higher education to primary education levels.

In order to determine the effects of electoral participation on enrollment, using the medium voter framework, we need to know some of the characteristics of the population who actually increased participation. During the period we cover, two major reforms on the electoral franchise account for the increase in voting participation: female and illiterate voting. We now proceed to examine the effects of these shifts more specifically.

Inclusion of Women and Illiterates: An Impact on Outcomes?

To find the effects of the expansion of the voting franchise by the inclusion of women and illiterates, we estimate a panel model similar to equation (1), except that we now include four political variables, competition dummy, participation dummy, literacy effect and women's suffrage. We report the results also in Table 2, regressions (5) to (8). Political competition has a similar effect than in the previous estimations increasing total enrollment mainly by increasing primary enrollment.

Political participation has a more complex affect on enrollment rates than political competition. First, the participation dummy isolates the effect of participation of literate men. We see that participation of this group reduces total enrollment primarily through a negative effect on secondary enrollment. Since the average income of this group is likely to be greater than the total population, this result is consistent with a lower demand for redistribution, in this case through education, of this group.

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Second, we find that women's suffrage increases total educational enrollment mainly through increases in higher education enrollment (secondary and tertiary). A counter-intuitive result is that women's suffrage decreases primary educational enrollment. Finally, the enfranchisement of illiterate population, by contrast, has a positive impact on primary education enrollment. This increase is offset by a negative impact on higher education enrollment (secondary and tertiary). Taking these two effects together, we find that the inclusion of illiterates in the voting franchise has no effect on total education enrollment.

We find that women's suffrage decreases enrollment in primary education and increases enrollment in secondary and tertiary education. This result might support the idea that the enfranchisement of women did not significantly lower the income of the medium voter rising redistributionary pressures. Boix (2001) argues that electoral participation increases with the level of wealth so one possible explanation to this is that after gaining the right to vote were mainly the wealthier women who went to vote. This suggests that the enfranchisement of women mainly enhanced the voting power of the middle class.

Other possible explanation is that women may prefer the type of education that delivers them the highest return. Psacharopoulos and Patrinos (2002) find that although women receive the higher return to their schooling investment, the returns to primary education are much higher for men. Women, on the other hand, experience higher returns to secondary education.

Two studies we are aware of which investigate the effect of literacy tests on public spending are Husted and Kenny (1997) and Aidt and Eterovic (2010). Husted and Kenny report that literacy tests in (some) US states reduced welfare spending, but in contrast to the evidence presented here, the effect is relatively weak and certainly less important than the poll tax. Aidt and Eterovic (2010) argue that that reforms which remove literacy requirements from franchise laws are associated with governmental expansion. The results we present in this study are consistent with theory insofar as literacy tests excluded relatively poor voters who, when given the vote, would use their influence to support redistributive policies. This leads to the increase in the type of enrollment that benefits the poor the most: primary enrollment. In sum, our results add valuable evidence in support of the impact of restrictions on the electoral franchise on policy outcomes.

Robustness checks

We have undertaken a series of additional regressions to test the robustness of our main results.[28] Here, we restrict ourselves to a brief summary. First, to establish our results are not driven by our selection of the Polity IV index as the measure of political competition, we employ an alternative measure for this variable. We use Vanhanen's (2000) measure of competition, essentially the share of votes captured by "small" parties in parliamentarian elections. Table 3 shows that all our results can be replicated with this alternative measure of political competition.

Table 3: Vanhanen's Political Competition, Voting Institutions and the Enrollment Outcomes

Second, we tried alternative econometric specifications to judge if the estimation technique is important. In particular, we estimated the model i) without correcting for autocorrelation; ii) without including any control variables; iii) with country-specific trends; and iv) with the Tobin estimator. Our results remained robust. Third, to prove that selection of country coverage and period are not driving our results, we broke the sample into two time periods (1920–1960 and 1960–2000) and two geographical areas (South American and Central American countries). In all sub-samples, the signs of all parameters of interest remained the same, and the point estimates are significant and of approximately similar size to the full sample. Finally, to test if particular control variables were fundamental to our results, we re-estimated the specifications from Table 2, excluding one control variable each time. In sum, we are confident that our choice of control variables is not driving the main results.

Discussion on endogeneity and reverse causality: Are our results causal?

In order to identify a causal effect running from voting institutions to education outcomes, the observed variations in the institutional arrangements must be exogenous to the process that determines the education outcomes. This would not be the case if for example competition enhancing reforms and the extension of the franchise are driven by the same unobserved factors that determine educational choices. Or, if political reforms are driven by educational considerations (a case of reverse causality). Our OLS estimator would be inconsistent if there are any potential determinants of the outcome of interest which is also correlated with our political variables (Acemoglu and Robinson 2000).

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[28] Details available upon request.

In the regression analysis, we take a number of empirical strategies in order to decrease the likelihood of the problems mentioned above. To account for potential presence of reverse causality and omitted variables, all regressions control for country and year fixed effects. This specification rules out that inference regarding the parameters of interest are contaminated by unobserved determinants that are constant over time (country fixed effects) or affect all countries at a given point in time in the same way (year fixed effects). This technique is called difference in difference estimates and has been used in a number of empirical studies (Persson and Tabellini 2006; Persson 2005) as a way to decrease the potential endogeneity and omitted variable problems. The use of difference in difference estimation reduces, but not eliminates completely, the risk of omitted variables. In particular, omitted variables that vary over time within country and that are correlated with our two political variables and the economic policy variable. In addition, as pointed out by Acemoglu (2005), in our OLS empirical strategy, controlling for the right set of observables is of primary importance. In comparison to most empirical studies with panels with long time series, in our estimations we use a relatively large number of controls, both economic and demographic to decrease the possibility of omitted variables. For example, the power of the elite can be captured by our variable "Income Equality". The more equal the society we expect the elites to have less power than middle classes. Other control variables that can guage the power of the elite is Population (larger populations are more difficult to control) and Urbanization (a more urban society tends to have larger middle classes).

Furthermore, we run a set of regressions with our political variables lagged 3 and 5 years, obtaining relatively similar results to the ones reported in the paper. We also collapse our database into 5 year average and re-run all our main regressions. Our results remain robust.[29] Finally, we analyze the sources of variability in our political variables to look for signs of potential reverse causality. The variability presented in our participation index can be attributed in large degree to two distinct issues: First, large jumps in voters' participation are always related to structural increases of the voting franchise. As we can derive from historical accounts, we have reason to believe that these increases in the franchise were not driven by our policy outcomes. A second source of variability for the participation index are changes in voter's turnout for a given electoral franchise. Enfranchised voters might decide to turn out to vote at elections influenced by higher government spending on education or higher enrollment in education. Then, reverse causality may

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[29] Results of these estimations are available upon request.

bias our results. However, we believe that the first variation, the enlargement of the voting franchise, is what is important in affecting policy outcomes. To measure political competition, we use the Polity IV index. Since the values of the Polity IV are concentrated in the extremes (-10 and 10) more than in the middle (0), the use of binary indicator of political competition will capture predominantly large reforms of the political system which are, in our view, less likely to be influenced by our policy outcomes.

We are not the first to use political institutions as an explanatory variable for economic policy outcomes. The theoretical justification draws from Acemoglu, Johnson and Robinson's (2005) hierarchy of institutions hypotheses. They argue that economic institutions influence policy outcomes and that this relationship presents reverse causality. For this reason, a suitable instrument for economic institutions is needed. Acemoglu, Johnson and Robinon (2005) argue that the political rules set the stage for economic institutions. Political institutions influence the equilibrium economic institutions, which then determine economic outcomes. In this way, the hierarchy of institutions hypothesis validates the use of political institutions as instruments for economic institutions. Some of the studies that provide empirical validation for this hypothesis are Persson (2005), Eicher and Leukert (2009) and Acemoglu, Johnson and Robinson (2005).

6. Conclusion

The enlargement of the electoral franchise has a profound impact on public policy outcomes. In this paper, we show how the inclusion of marginalized populations in the democratic process has a significant empirical relationship to a key indicator of economic development—education. Current popular measurements of democracy have failed to include women and other marginalized populations in their study of the effects of voting institutions on policy outcomes. In contrast, we illustrate how who votes and how is crucial to understanding trends in 20th century social policies.

The findings of our paper force us to reconsider measurements of voting institutions which exclude participation and provide evidence of how the constituent elements of democracy can have varying affects on social outcomes. Our specific conclusions, that the enfranchisement of women led to increases in enrollment in higher education while the enfranchisement of illiterates led increased primary education enrollment provides support for the theory that voters demand the type of educational policies that benefit them the most. These conclusions have clear ramification for democratic structure in Latin America, where a number of countries are currently considering

alternations to their voting systems. More broadly, our results suggest that an efficient way to improve the quality of life for vulnerable and marginalized groups is designing policies that encourage their electoral participation.

7. Bibliography

Abrams, B.A., and R.F. Setttle. 1999. Women's suffrage and the growth of the welfare state. *Public Choice* 100:289-300.

Acemoglu, D., S. Johnson, and J.A. Robinson. 2005. The Rise of Europe: Atlantic Trade, Institutional Change and Economic Growth. *American Economic Review* 95 (3):546-579.

Acemoglu, D., and J.A. Robinson. 2000. Why did the West extend the franchise? Democracy, inequality, and growth in historical perspective. *Quarterly Journal of Economics* 115 (4):1167-1199.

Aidt, T., and B. Dallal. 2006. Female voting power: The contribution of women's suffrage to the growth of social spending in Western Europe, 1869-1960. *Mimeo, Faculty of Economics, University of Cambridge*.

Aidt, T., J. Dutta, and E. Loukoianova. 2006. Democracy comes to Europe: Franchise extension and fiscal outcomes 1830-1938. *European Economic Review* 50 (2):249-283.

Aidt, T., and D. Eterovic. 2010. Political Competition, Participation and Public Finance in 20th Century Latin America. *European Journal of Political Economy* Forthcoming (Also at Cambridge Working Papers in Economics 0714).

Altman, D. 2011. *Direct Democracy Worldwide*. New York: Cambridge University Press.

Altman, D., and R. Castiglioni. 2009. Democratic Quality and Human Development in Latin America: 1972-2001. *Canadian Journal of Political Science* 42 (02):297-319.

Altman, D., and A. Pérez-Liñán. 2002. Assessing the Quality of Democracy: Freedom, Competitiveness and Participation in 18 Latin American Countries *Democratization* 9 (2):85-100.

Alvarez, M., J.A. Cheibub, F. Limongi, and A. Przeworski. 1996. Classifying political regimes. *Studies in Comparative International Development* 31 (2):3-36.

Avelino, G., D. Brown, and W. Hunter. 2005. The Effects of Capital Mobility, Trade Openness and Democracy on Social Spending in Latin America, 1980-1999. *American Journal of Political Science* 49 (3):625-641.

Barro, R. 1997. *Determinants of Economic Growth*. Cambridge, MA: MIT Press.

Baum, M., and D. Lake. 2003. The Political Economy of Growth: Democracy and Human Capital. *American Journal of Political Science* 47 (2):333-347.

Beck, N., and J.N. Katz. 1995. What to do (and not to do) with time-series cross-section data. *American Political Science Review* 89 (3):634-647.

Becker, G. S. 1983. A theory among pressure groups for political influence. *The Quarterly Journal of Economics* 98 (3):371-400.

Bedi, A.S. 1997. The importance of school quality as a determinant of earnings in a developing country: Evidence from Honduras. *International Journal of Educational Development* 17 (4):427-437.

Beer, C. 2009. Democracy and Gender Equality. *Studies in Comparative International Development* 44:212-227.

Boix, C. 2001. Democracy, development, and the public sector. *American Journal of Political Science* 45 (1):1-17.

Boldrin, M. 2005. Public education and capital accumulation. *Research in Economics* 59 (2):85-109.

Brown, D. 1999. Reading, Writing and Regime Type: Democracy's Impact on Primary School Enrollment. *Political Research Quarterly* 52 (4):681-707.

Brown, D., and W. Hunter. 1999. Democracy and Social Spending in Latin America, 1980-92. *American Political Science Review* 93 (4):779-790.

Caldwell, J.C. 1979. Education as a Factor in Mortality Decline. *Population Studies* 33:395-413.

Caraway, T. 2010. Gendering Comparative Politics. *Perspectives on Politics* 8 (1):169-175.

Cavalcanti, T., and J. Tavares. 2006. Women prefer larger governments: Female labor supply and public spending. *CEPR Discussion Paper No. 5667*.

Cheibub, J.A., J. Ghandi, and J. R. Vreeland. 2010. Democracy and dictatorship revisited. *Public Choice* 143 (1-2):67-101.

Colclough, C. 1982. The impact of primary schooling on economic development: a review of the evidence. *World Development* 10 (3):167-185.

Dahl, R.A. 1971. *Polyarchy: Participation and Opposition*. New Haven: Yale University Press.

Deacon, R. 2008. Public good provision under dictatorship and democracy. *Public Choice* 139 (1-2):241-262.

Desai, S., and S. Alva. 1998. Maternal Education and Child Health: Is There a Strong Causal Relationship? *Demography* 35 (1):71-81.

Downs, A. 1957. *An Economic Theory of Democracy*. New York: Harper and Row.

Eicher, T., and A. Leukert. 2009. Institutions and Economic Performance: Endogeneity and Parameter Heterogeneity. *Journal of Money, Credit and Banking* 41 (1):197-219.

Engerman, S.L., and K.L. Sokoloff. 2001. The evolution of suffrage institutions in the new world. *NBER working paper series* 8512.

Ferejohn, J.A. 1986. Incumbent performance and electoral control. *Public Choice* 50:5-26.

Gilles, S.P. , and T. Verdier. 1993. Education, democracy and growth. *Journal of Development Economics* 42 (2):399-407.

Haggard, S., and R. Kaufman. 2008. *Development, Democracy and Welfare States*. Princeton: Princeton University Press.

Hanushek, E., and L. Woessmann. 2007. The Role of Education Quality for Economic Growth. *World Bank Policy Research Working Paper* 4122 (February).

Hanushek, E., and L. Wossmann. 2008. Education and Economic Growth. In *International Encyclopedia of Education*.

Held, D. 2006. *Models of Democracy*. Cambridge: Polity Press.

Hettich, W., and S. Winer. 1988. Economic and political foundations of tax structure. *American Economic Review* 78:701-12.

———. 1999. *Democratic Choice and Taxation: A Theoretical and Empirical Analysis*. Cambridge, UK: Cambridge University Press.

Holbrook, T. M., and E. Van Dunk. 1993. Electoral competition in the American states. *The American Political Science Review* 87 (4):955-62.

Holmes, J., and S.A. Gutiérrez de Piñeres. 2006. Democratic Development: A Comprehensive Concept of Comparative Assessment. *International Journal of Social Economics* 33 (1):54-76.

Huber, E., T. Mustillo, and J. D. Stephens. 2004. Determinants of Social Spending in Latin America. *Prepared for the meetings of the Society from the Advancement of Socio-Economics* (July).

Johnes, G. 2006. Education and Economic Growth. *Available at SSRN: http://ssrn.com/abstract=893021* March.

Lindbeck, A., and J. Weibull. 1987. Balanced budget redistribution as the outcome of political competition. *Public Choice* 52:273-297.

Lipset, S.M. 1960. *The Political Man: The Social Basis of Modern Politics*. New York: Doubleday.

Loening, J. L. 2005. Effects of Primary, Secondary and Tertiary Education on Economic Growth. *World Bank Policy Research Working Paper* 3610 (May).

Lott, J., and L. Kenny. 1999. Did Women's Suffrage Change the Size and Scope of Government? *Journal of Political Economy* 1999 (6).

Lucas, R. 1988. On the mechanics of economic development. *Journal of Monetary Economics* 22:3-42.

Mainwaring, S., D. Brinks, and A. Pérez-Liñán. 2001. Classifying Political Regimes in Latin America, 1945-1999. *Studies in Comparative International Development* 36 (1):37-65.

Marshall, M.G., and K. Jaggers. 2007. Polity IV project. Data set users manual. *Center for International Development and Conflict Management, University of Maryland* www.bsos.umd.edu/cidcm/inscr/polity.

McClintock, C., and J. H. Lebovic. 2008. Correlates of Levels of Democracy in Latin America During the 1990s. *Latin American Politics and Society* 48 (2):29-59.

McGuire, J. W. 2010. Political Factors and Health Outcomes: Insight from Argentina's Provinces. *United Nations Development Programme: Human Development Reports* 25 (September).

Mitchell, B.R. 2003. *International Historical Statistics: The Americas 1750-2000*. London: Palgrave Macmillan.

Moon, B. E., J. Birdsalll, S. Ciesluk, L. M. Garlett, J. J. Hermias, E. Mendenhall, P. D. Schmid, and W. H. Wong. 2006. Voting Counts: Participation in the Measurement of Democracy. *Studies in Comparative International Development* 41 (2):3-32.

Mulligan, C.B., R. Gil, and X. Sala-i-Martin. 2004. Do democracies have different public policies than nondemocracies? *Journal of Economic Perspective* 18 (1):51-74.

Nelson, R., and E. Phelps. 1966. Investment in Humans, Technological Diffusion, and Economic Growth. *American Economic Review* 56 (2).

OECD. 2010. *Education at a Glance*. Paris: OECD.

Paxton, P. 2000. Women's Suffrage in the Measurement of Democracy: Problems of Operationalization. *Studies in Comparative International Development* 35 (3):92-111.

Pemstein, D., S. Meserve, and J. Melton. 2010. Democratic Compromise: A Latent Variable Analysis of Ten Measures of Regime Type. *Political Analysis* 18 (426-449).

Persson, T. 2005. Forms of democracy, policy and economic development. *Working Paper, International Economic Studies, Stockholm University*.

Persson, T., and G. Tabellini. 2006. Democracy and development: The devil in the details. *American Economic Review* 96 (Papers and Proceedings):319-324.

Przeworski, A., M. Alvarez, J.A. Cheibub, and F. Limongi. 2000. *Democracy and development: political institutions and well-being in the world, `1950-1990*. Cambridge: Cambridge University Press.

Psacharopoulos, G., and H. Patrinos. 2004. Human capital and rates of return. In *International Handbook on the Economics of Education*, edited by G. Johnes and J. Johnes. Cheltenham: Edward Elgar.

Ratner, E. 2009. Reaping what you sow: Democratic transitions and foreign policy realignment. *Journal of Conflict Resolution* 53 (3):390-418.

Reiter, D., and E. Tillman. 2002. Public, legislative and executive constraints on the democratic initiation of conflict. *Journal of Politics* 64 (3):810-826.

Rodrik, D., and R. Wacziarg. 2004. Do democratic transitions produce bad economic outcomes? *American Economic Review* 95 (2):50-55.

Ross, M. 2006. Is Democracy Good for the Poor? *American Journal of Political Science* 50 (4):860-874.

Schuller, T., J. Preston, C. Hammond, A. Brassett-Grundy, and J. Bynner. 2004. *The Benefits of Learning: The impact of education on health, family life and social capital*. London: Routledge.

Skilling, D., and K. J. Zeckhauser. 2002. Political competition and debt trajectories in Japan and the OECD. *Japan and the World Economy* 14:121-35.

Solomon, L. C. 1985. Quality of education and economic growth. *Economics of Education Review* 4 (4):273-290.

Stasavange, D. 2005. Democracy and Education Spending in Africa. *American Journal of Political Science* 49 (2):343-358.

Stutzer, A., and L. Kienast. 2004. Demokratische beteiligung und staatsausgaben: Die auswirkungen des frauenstimmrechts. *Working Paper Series* 1424-0459.

Treier, S., and S. Jackman. 2008. Democracy as a latent variable. *American Journal of Political Science* 52 (1):201-217.

Tridimas, G., and S.L. Winer. 2005. The political economy of government size. *European Journal of Political Economy* 21:643-666.

UNESCO. 2004. Global Education Digest: Comparing Educational Statistics Across the World. *Unesco Institute for Statistics*.

Vanhanen, T. 2000. A new Dataset for Measuring Democracy, 1810-1998. *Journal of Peace Research* 37 (2):251-265.

———. 2003. Democratization and power resources 1850-200. *University of Tampere. (Department of Political Science and International Relations). Tampere : Finnish Social Science Data Archive.*

———. 2003. *Democratization: A comparative analysis of 170 countries*: Routledge.

Wagner, A. 1883. Three extracts on public finance. In *Classics in the Theory of Public Finance*, edited by R. A. Musgrave and A. T. Peacock. London: Macmillan.

World Bank. 1991. *World development report 1991: The challenge of development*. New York: Oxford University Press.

Appendix

List of explanatory variables

-**Competition dummy** is a dummy variable that takes the value of 0 when the Polity IV index is equal or less than zero and takes a value of 1 when the Polity IV index is positive. **-Participation index** is the voter turnout in each election as percentage of the total population. In case of indirect elections, only votes cast in the final election are taken into account. If electors have not been elected by citizens, only the number of actual electors is taken into account, which means that participation drops to 0. If an election to choose electors has been held, participation is calculated from the number and distribution of votes in that election. National referendums increase the variable value by five percent and state (regional) referendums by one percent for the year they are held. Referendums can add to the degree of participation at most by 30 percent in a given year. Combined participation cannot be higher than 70 per cent, even in cases where the sum of participation and referendums would be higher than 70 per cent. **-Participation dummy** is a dummy variable that takes the value of 1 when the participation index is positive and is 0 otherwise. **-Women's suffrage** is a dummy variable that takes the value of one after women were granted the right to vote in societies with positive political participation (participation index>0). **-Literacy effect** is a dummy variable that takes the value of 1 after the literacy restrictions on the right to vote were lifted in societies with positive political participation (participation index>0) multiplied by the illiteracy rate (the total number of illiterate adults divided by the total population). **-Economic Crisis** is a dummy variable that takes the value of 1 in a country every time a major economic crisis happens. As proxy of economic crisis, we use the dates when a currency change takes place, specifically the dummy is coded 1 two years before a major currency change and one year after. **-GDP per capita** is the logarithm of real GDP, PPP adjusted, divided by the total population of the country. **-Growth** is the yearly growth rate of GDP per capita. **-Inflation** is the percentage change in the consumer price index divided by 100. **-Income equality** is proxied by family farms as a percentage of the total cultivated area or the total area of farm holdings. **-Population** is the natural logarithm of the total population of the country. **-Population under 15** is the percentage of the total population aged 15 or less. **-Urbanization rate** is the percentage of the total population living in urban areas. **-Trade openness** is exports plus imports as a percentage of GDP. **-War** is a dummy variable that takes the value of 0 when there is no war or civil war and takes a value of 1 in the

presence of a war or a civil war. In the sample, the dummy war takes the value 1 for Nicaragua from 1978 to 1989 (Sandinistas' revolution) and for El Salvador from 1982 to 1991 (civil war).

Data sources

Consolidated central government expenditures (G), total population, real and nominal GDP, inflation and Illiteracy rate, are from the data web site of Department of Latin American studies, Oxford University, UK. The participation index is from Vanhanen (2000, 2003b). Family Farms (Income equality) and urban population out of total population (Urbanization rate) are from Vanhanen (2003a). The source for the extension of the female franchise and the literacy restrictions are CEPAL (1999), Nohlen (1993), and Engerman and Sokoloff (2001). Public education spending out of GDP is from the "Social Policy in Latin America and the Caribbean Dataset, 1960-2006", Beta version, February 2008.

Table 1: The Timing of Women's Suffrage and the Abolishment of Literacy Tests in the 18 Countries.

Country	Women's suffrage introduced	Literacy tests abolished
Argentina	1947	1912[a]
Bolivia	1952	1952
Brazil	1932	1985
Chile	1949	1970
Colombia	1954	1936[a]
Ecuador	1929	1978
Paraguay	1961	1870
Peru	1955	1979
Uruguay	1932	1918
Venezuela	1946	1947
Costa Rica	1949	1913
Dominican Republic	1942	1865
El Salvador	1950	1945
Guatemala	1946	1946
Honduras	1955	1894
Mexico	1953	1857
Nicaragua	1955	1893
Panama	1945	1904

Notes: a=restrictions applied on a subset of regions.
Source: Aidt and Eterovic (2010).

Table 2: Political Competition, Electoral Participation and the Enrollment Outcomes since 1920								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	ToEn	PEn	SEn	TEn	ToEn	PEn	SEn	TEn
Competition dummy	1.331	0.894	-0.155	-0.154	1.58	1.097	-0.021	0.028
	(0.233)***	(0.262)***	-0.103	(0.046)***	(0.240)***	(0.288)***	-0.113	-0.044
Participation index	0.053	0.003	0.025	0.015				
	(0.008)***	-0.007	(0.003)***	(0.002)***				
Participation dummy					-1.441	-0.434	-0.54	-0.014
					(0.405)***	-0.687	(0.194)***	-0.085
Women's suffrage					3.003	-0.997	1.484	0.441
					(0.353)***	(0.435)**	(0.141)***	(0.077)***
Literacy effect					-0.009	0.052	-0.022	-0.016
					-0.007	(0.011)***	(0.003)***	(0.001)***
Trade Openness	-0.012	-0.039	0.078	-0.007	-0.022	-0.04	0.077	-0.011
	-0.008	(0.010)***	(0.004)***	(0.002)***	(0.008)**	(0.010)***	(0.004)***	(0.002)***
GDP per Capita	4.583	5.499	1.314	-0.109	5.132	5.435	1.552	0.041
	(0.426)***	(0.727)***	(0.177)***	-0.091	(0.435)***	(0.731)***	(0.183)***	-0.085
Growth	-3.595	-3.282	-1.811	-0.253	-4.698	-3.558	-1.954	0.044
	(1.529)**	(1.558)**	(0.678)***	-0.301	(1.525)***	(1.633)**	(0.673)***	-0.282
Income Equality	14.816	-4.821	18.116	5.603	14.616	-0.86	16.992	4.986
	(1.829)***	(1.794)***	(0.949)***	(0.375)***	(1.898)***	-1.661	(0.959)***	(0.350)***
Population	4.673	15.313	-8.605	-7.457	2.866	16.438	-9.315	-8.54
	(1.073)***	(0.577)***	(0.510)***	(0.233)***	(1.216)**	(0.670)***	(0.540)***	(0.244)***
Urbanization rate	0.552	0.24	0.173	0.074	0.558	0.234	0.175	0.08
	(0.019)***	(0.016)***	(0.006)***	(0.004)***	(0.019)***	(0.017)***	(0.007)***	(0.003)***
Inflation	0.002	0.002	0	0	0.003	0.002	0	0
	(0.001)**	(0.001)**	0	0	(0.001)***	(0.001)**	0	(0.000)*
War	2.733	2.646	-0.709	0.655	2.528	3.22	-1.064	0.484
	(0.671)***	(0.435)***	(0.242)***	(0.105)***	(0.676)***	(0.474)***	(0.226)***	(0.075)***
Trend	0.064	-0.166	0.206	0.171	0.072	-0.171	0.203	0.185
	(0.033)**	(0.037)***	(0.015)***	(0.006)***	(0.035)**	(0.037)***	(0.015)***	(0.006)***
Observations	663	988	968	667	663	988	968	667
# of countries	18	18	18	18	18	18	18	18

Notes: Robust standard errors in parentheses; * significant at 10%; ** significant at 5%; *** significant at 1%. All regressions include country and year fixed effects and we correct for autocorrelation of order 1.

Table 3: Political Competition, Participation, Literacy Tests, Women's Suffrage and the Educational Outcomes using Competition from Vanhanen

	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
	ToEn	PEn	SEn	TEn	ToEn	PEn	SEn	TEn
Competition Vanhanen	0.013	0.002	-0.008	-0.007	0.018	0.009	-0.008	-0.001
	(0.004)***	(0.005)	(0.002)***	(0.001)***	(0.006)***	(0.007)	(0.002)***	(0.001)
Participation index	0.056	0.011	0.031	0.020				
	(0.009)***	(0.007)	(0.003)***	(0.002)***				
Participation dummy					-1.237	-0.098	-0.305	0.043
					(0.382)***	(0.724)	(0.196)	(0.089)
Women's suffrage					2.821	-1.120	1.606	0.448
					(0.338)***	(0.439)**	(0.148)***	(0.080)***
Literacy effect					-0.014	0.049	-0.024	-0.016
					(0.007)**	(0.011)***	(0.003)***	(0.001)***
Observations	663	988	968	667	663	988	968	667
# of countries	18	18	18	18	18	18	18	18

Notes: Robust standard errors in parentheses; * significant at 10%; ** significant at 5%; *** significant at 1%. All regressions include control variables, country and year fixed effects and we correct for autocorrelation of order 1.