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DEMOCRACY AND HUMAN CAPITAL FORMATION

Education Spending in Latin America, 1980 to 1997

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This article examines the relationship between democratic representation and spending on education in Latin America. The authors assess the impact that democracy has on the distribution of resources between different levels of schooling and on total spending on education. Specifically, they test whether democratic governments allocate a greater share of resources to primary education, the level that benefits the largest segment of the electorate and that is most critical for human capital formation in developing countries. Using time-series cross-sectional analysis, the authors find that democracies devote a higher percentage of their educational resources to primary education and that they maintain higher absolute spending levels on education in the aggregate, thereby enhancing the prospects of human capital formation.

Keywords: democracy; human capital; development; Latin America

A substantial and growing body of literature suggests the centrality of human capital formation for economic growth, poverty alleviation, and social mobility in developing countries.¹ Even small increments of education can yield large benefits for the economic productivity, income, and health

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1. Economists have traditionally regarded physical capital, human capital, and technological change as three distinct sources of growth.

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of households (Psacharopoulos, 1995; Schultz, 1963; World Bank, 1991, 1993). Beyond exerting a direct impact on production, education influences development in indirect ways as well, through such paths as the lowering of fertility rates and the adoption of preventative health care measures on the part of the population. Given the association between education and these positive welfare outcomes, are democratic regimes more likely than authoritarian regimes to enhance the educational prospects of large numbers of people? With the exceptions noted below, however, there are few studies that investigate the relationship between the characteristics of political systems and education outputs or outcomes. This is surprising given education's relevance for both economic growth and distribution. This article seeks to help fill that gap by examining the relationship between democracy and education spending patterns in 17 Latin American countries between 1980 and 1997.

Allocating substantial sums to education greatly enhances the prospects of human capital formation. For less developed countries, it is especially imperative to devote the lion's share of the education budget to basic schooling, for which the public returns are high relative to spending on other levels of education (Tanzi & Schuknecht, 2000, pp. 184-185).² Even 1 or 2 additional years of early education can contribute critically to a person's economic productivity (World Bank, 1991, p. 57). Basic schooling is thought to be the single area in which public policy can make the largest impact on reducing inequality (Inter-American Development Bank, 1998, p. 129). Poor people, a significant slice of the population in most Latin American countries, are the most direct beneficiaries of investments made at this level (Tanzi & Schuknecht, 2000). The sixth grade is the highest level of schooling that many Latin American children ever complete.³ Middle- and upper-class children almost always attend private institutions for primary and secondary schooling (Puryear, 1997, p. 8).

The percentage of Latin Americans fortunate enough to attend universities is small⁴ and heavily biased toward the middle and upper classes.⁵ In the

2. As countries develop and consolidate achievements in primary education, it then makes sense to start putting more resources into secondary and higher education.

3. As recently as the early 1990s, the average Latin American older than 25 years of age had only 4.8 years of education (Inter-American Development Bank, 1998, p. 45). As early as the 5th year of education, only about 63% of the children from households defined as poor (those in the lower 40% in terms of consumption and standard of living) in South American countries and approximately 32% in those of Central America and the Caribbean remain in school systems. During the 9th year of school, these figures decline to 15% and 6%, respectively (pp. 48-49).

4. The ratio of enrollment in primary schools to university-level institutions was approximately 10:1 in 1995 (Lloyd-Sherlock, 2000, p. 105).

5. It is estimated that in the middle-income countries of Latin America, approximately 85% to 90% of public university students have middle-class origins.

vast majority of Latin American countries, public university students pay only nominal fees,⁶ even when they are predominantly middle class and could easily afford to pay more. In this context, allocating a large share of the education budget to higher education tends to be equity impeding rather than equity enhancing. It is especially questionable if the absolute resources available for education are in tight supply to begin with.

Political dynamics have often contributed to drawing money toward higher education. Education economists have widely criticized governments for having followed such an investment strategy (e.g., Birdsall, Londoño, & O'Connell, 1998; González Rozada & Menéndez, n.d.; Paul & Wolff, 1996). Yet the higher education lobby, composed mainly of middle- and upper-class students and faculty members, has tended historically to be more politically organized and articulate than the constituencies for primary education, namely, the parents of public grade school children and their teachers.

Against this background, the central question this article poses concerns whether and to what extent the existence of democratic regimes influences countries to dedicate larger shares of their education budgets to primary schooling. Do democratically elected politicians respond more than their authoritarian counterparts to the interests of the less fortunate but more numerous segments of voters (i.e., those who should be concerned with improvements in primary education)? Do they respond equally, or perhaps even less? The focus on expenditures is intended to serve mainly as an indicator of political commitment to education and its different levels. We do not assume that expenditures automatically lead to improved education, yet greater resources certainly heighten the potential for improvements in schooling (Corrales, 1999; Program to Promote Educational Reform in Latin America and the Caribbean, 1998, p. 5).

EXPECTATIONS BASED ON THEORY AND HISTORY

What effect, if any, does democracy have on the relative priority that governments give to basic schooling? As Przeworski, Alvarez, Cheibub, and Limongi (2000) are quick to acknowledge, "Political regimes, however one thinks about them, are complex. They combine many institutional features that can have emergent effects and that may work at cross-purposes" (p. 1).

6. The only predominant exception includes Chile, where fees for those who can afford to pay are sizable. The national universities in Colombia and the state universities in Mexico constitute a partial exception.

This sentiment falls in line with that expressed by others (e.g., Geddes, 1995; Remmer, 1990; Schmitter, 1992), namely, that regime type is too aggregated a variable to have a consistent and systematic relationship to important economic and social outcomes. Do democratic and authoritarian regimes in fact have discernibly different priorities in education? Or are other features that exist alongside or across regime types sufficiently powerful to override their effects?

We begin by laying out the theoretical basis of the expectation that democratic regimes might favor primary education more than authoritarian regimes. It is reasonable to think that democratically elected politicians would be especially likely to direct resources to the primary level, because such an approach would benefit the largest number of potential voters. The existence of a free press, which can publicize human needs and criticize authorities who have failed to address those needs, is another factor that would seem to enhance the prospects for basic education under democratic governments (Frey & Al-Roumi, 1999).⁷ Beyond using the education budget in legitimate ways to win the support of the parents of grade school children, Latin American politicians are well known for using education resources as political patronage (Plank, 1996). The construction of school infrastructure and the appointment of teachers, principals, and staff members have long been used throughout the region to grease the wheels of clientelism.

Moreover, teachers' unions, which typically operate at fuller force in democratic than authoritarian contexts, might be expected to draw resources to lower levels of schooling as well. Teachers' unions in Latin America, which are often linked to leftist political parties, tend to be quite militant. Because education expenditures in the region are weighted toward salaries,⁸ political systems that provide unions with more latitude for protest could conceivably result in higher spending on the levels of education at which teachers are most numerous.

Developments in the region indicate that elected officials in systems as different politically as Peru under Alberto Fujimori (1990 to 2000) and Brazil under Fernando Henrique Cardoso (1995 to 2002) make strategic use of basic education resources to reap electoral dividends. President Fujimori's highly publicized school-building extravaganza across Peru between 1992 and 1998 dramatized this practice. Evidence suggests that the program served

7. Our personal observation is that the number of articles in Latin American newspapers dedicated to discussing the failings of the public education system has soared in recent years.

8. For example, in 15 of the 21 countries that the Inter-American Development Bank (1998, p. 219) examined, salaries accounted for 90% of the total education budget. Heyneman (1997, p. 517) confirms the existence of this phenomenon for a broader group of developing countries.

its intended political goal of winning support for the government.⁹ In Brazil, improving basic education constituted President Cardoso's top social priority.¹⁰ Political motivations played a part in shaping how the government dealt with education reforms and financing.¹¹ In Mexico, promises of major improvements in basic education were prominent in Vicente Fox's successful campaign for president (Dillon, 2000).

However, there are other reasons for thinking that democratic governments might not confer greater advantage on basic schooling than their authoritarian counterparts. Although the availability and quality of public elementary education are comparatively more important to lower strata, people from this group typically do not vote as regularly as higher income earners. And when they do, many lack adequate information and/or are heavily influenced by the manipulations of demagogic politicians. In this connection, the link between class-related demographic variables and policy preferences is not as strong as a representational approach might assume (Moon, 1991, p. 135).

Democratic governments do not always treat unions in a privileged fashion. Although harsh authoritarian regimes can be expected to subject teachers' unions to coercion—as happened during the Argentine *proceso* (1976 to 1983) and in Chile under General Augusto Pinochet (1973 to 1990)—it is less clear that milder forms of autocratic rule do so. For example, from roughly 1960 to 2000, the Mexican Partido Revolucionario Institucional (PRI) tried to maintain favorable relations with teachers' unions. By meeting many of their demands, PRI sought to stem the defection of teachers, a sizable and important urban middle-class actor (Corrales, 1999, p. 8). A study by María Victoria Murillo (1999) on relations between teachers' unions and governments in the 1990s, which depicts teachers' unions in Mexico as being more powerful than in more democratic Argentina, raises further questions about the influence of regime type.

Furthermore, even if democracies give rise to certain processes that favor increased expenditures for basic schooling, competing pressures exist. Although numerically small, the middle- and upper-class groups interested in

9. See Schady (2000) for a discussion of the program and Graham and Kane (1998) for details on the political dividends it paid to President Fujimori.

10. On some of the programs instituted to improve public education during Cardoso's tenure, see Brazil Ministry of Education (2000) and Castro (2000).

11. An ambitious social development package comprising roughly \$32.8 billion in spending (a large portion of which was dedicated to health and education programs) was instituted during Cardoso's final 2 years in office. One of the ulterior motives of this program was to strengthen political support for José Serra, a member of the president's party who was trying to succeed him.

securing university funding typically have levels of knowledge, organization, and resources superior to those of the constituencies that lobby for basic schooling. Some of these assets can be put to use most effectively in democratic contexts. University students have been a constant and vocal source of pressure on Latin American governments to expand the resources available to institutions of higher learning. Faculty members, who seek salary increases and research funds, often reinforce students' demands. The internal politics of the region's universities constitute an additional factor promoting funding for higher education. In most Latin American democracies, faculty members and students elect university rectors.¹² In an effort to win votes, candidates for rectorships have tended to shy away from endorsing the unpopular proposal of charging tuition to supplement state resources. Thus it is conceivable that universities fare better under democratic regimes and at the expense of primary schooling.

The political logic and spending priorities of authoritarian systems can be complex as well. Authoritarian leaders of various ideological leanings may have a marked interest in improving basic schooling. Even in the absence of overt electoral challenges, conservative autocrats may want to enhance primary education for developmental reasons as well as to maintain as much legitimacy as possible among the popular sectors (Ames, 1987, p. 42). This was true of the first and last governments of the Brazilian military regime (1964 to 1967 and 1979 to 1985; p. 64) and the Mexican PRI in the 1990s. Even the highly repressive dictatorship of General Pinochet in Chile instituted some social-sector policies aimed at garnering lower-class support (Castañeda, 1992). Moreover, if authoritarian regimes are singularly committed to improving basic schooling—as in Bismarck's Prussia, Soviet Russia, Communist China, South Korea, and Taiwan before their recent transitions to democracy—it is not unreasonable to expect that they might have more capacity to carry out this goal. Such a case in Latin America is Castro's Cuba. The most outstanding remaining case of authoritarianism in the region, the Cuban regime is well known also for its dedication to improving basic schooling. In a recent international test, Cuban students scored well above those of 12 other Latin American countries in both language and mathematics skills (Rivero, 2000, pp. 232-236).

At the same time, even those authoritarian governments that might want to make basic schooling a priority cannot easily ignore demands from constituencies associated with higher education. Many governments otherwise known for their coercive tendencies have shown restraint when it comes to

12. The president of the country typically appoints them during authoritarian periods.

university students, a middle-class element important to public opinion formation and to social stability. A classic case in point is the Brazilian military regime (1964 to 1985), which sought to demobilize leftist student groups and buy middle-class support by enlarging the university system (Ames, 1987). More dramatically, following the 1968 student massacre in Mexico, the government launched an expansion of the National Autonomous University of Mexico and created new institutions of higher education (Corrales, 1999, p. 8).

In sum, the above discussion suggests the complexity of the phenomenon at hand. Despite some obvious differences, the budgetary decisions of democratic and authoritarian leaders are subject to some of the same political incentives and constraints. Yet we are interested in knowing whether there is a systematic overall effect of regime type on spending patterns in the crucial area of education. Before using statistical analysis to address the central issues at hand, we turn to the literature for possible insights on this issue.

PREVIOUS EMPIRICAL WORK

Although the relationships among regime type, economic growth, and income distribution are extensively explored in the literature, there is little work devoted to investigating the impact of political system characteristics on human capital formation. Also, the work that explores the linkage between regime type and social spending patterns frequently does not disaggregate the broad category of "social expenditures" (e.g., Brown & Hunter, 1999). Or if it does consider separate categories for health, education, social security, and the like, it often does not distinguish between levels of education or kinds of health spending, such as a curative versus a preventative orientation (e.g., Kaufman & Segura-Ubiergo, 2001).

Does previous research show a positive linkage between democracy and education expenditures? In a study by Barry Ames (1987), heightened electoral competition (not necessarily democracy *per se*) generated real increases in social expenditures, including education, in 17 Latin American countries between 1945 and 1980. According to Ames, total education spending, as well as its internal distribution, reflected the political priorities of governments during this period. If spending on basic schooling was part of a strategy to draw massive electoral support from lower-class and intermediate groups (namely, the parents of children in public primary schools and their teachers), expenditures on higher education were used to appease the urban middle and upper classes.

A study by David Brown (1999) examines the relationship between democracy and primary school enrollments in the developing regions of Central and South America, the Middle East, South and East Asia, and sub-Saharan Africa between 1960 and 1987. Comparing enrollment data is arguably more straightforward than comparing spending data, for which different accounting techniques are sometimes used. Brown's analysis demonstrates the existence of a strong relationship between democracy and primary school enrollment. Yet democracy's impact is not uniform; it is most pronounced among the poorest countries of the world and seems to diminish with economic development.¹³ David Lake and Matthew Baum (2001) found that secondary school gross enrollment rates also increased with increases in democracy across the developing world, "particularly among regimes that have experienced large changes in democracy" (p. 613).

Yet calling into question the positive effects of democratic government on educational opportunities in the Latin American region is a study by John Sloan and Kent L. Tedin (1987), which investigates the relationship between regime type and outputs in five areas of public policy, including education, for 20 Latin American countries between 1960 and 1980. Their analysis concludes that the achievements of the democratic countries were unremarkable on four measures: elementary school enrollments, secondary school enrollments, college enrollments, and literacy rates.

Our study of education spending investigates a more recent time period (1980 to 1997) than the studies reviewed above. We hope thereby to shed light on the politics of education since the latest wave of democratization in Latin America. Compared with previous democratic experiences in the region, current-day Latin American democracies contain features that might well shape the decision-making processes of politicians in directions conducive to improving social services, including public education. These features include more active media coverage, a broader definition of the electorate (e.g., the enfranchisement of illiterates in many countries),¹⁴ and greater protection against electoral fraud. These developments might well bear on which level of schooling politicians target for privileged treatment.

13. This resonates with Brown and Hunter (1999), who found that the difference democracy makes with respect to social expenditures is especially notable under conditions of economic adversity.

14. Literature in economics (e.g., Lott & Kenny, 1990) concludes that the expansion of suffrage to women in the United States had a notable impact on the size and scope of social spending.

RESEARCH DESIGN AND MODEL SPECIFICATION

DEMOCRACY AND THE DISTRIBUTION OF EDUCATION SPENDING

To test which levels of schooling are particularly advantaged by democracy, we used data from the United Nations Educational, Scientific and Cultural Organization (1999) that breaks down education spending into current expenditures on preprimary, primary, secondary, and university education for our 17 Latin American countries.¹⁵ These countries—Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Ecuador, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru, Venezuela, and Uruguay—represent a cross-section of Latin America and account for over 90% of its gross domestic product (GDP; 1992 figures).¹⁶ The spending figures refer to current expenditures (salaries, services, and upkeep), the vast majority of total spending (often more than 95%). The data for spending by level of education represent an unbalanced data set available on an annual basis from 1980 to 1996. Using these data, we calculated the percentage of current education spending devoted to basic education (the preprimary and primary school levels). The dependent variable used in equation 1 below is the percentage of current education spending distributed to the preprimary and primary school levels.¹⁷

The time-series cross-sectional (TSCS) structure of the data forced us to make important decisions regarding the homogeneity of the data across units (Baltagi, 1995; Beck & Katz, 2001; Hsiao, 1986; Sayrs, 1989). To pool data

15. The data represent current expenditure on education by level as a percentage of the total current expenditure on education. The data compiled by the United Nations Educational, Scientific and Cultural Organization on education expenditure include all levels of government, including every entity responsible for disbursing resources.

16. Because Cuba provides a very interesting counterfactual case for our results (a low democracy score and a vast majority of the budget going to primary schooling), we tested whether its inclusion in the regressions had any effect on our results. Including Cuba in the regression on primary school spending did not significantly alter the estimates or the conclusions we draw from them. Unfortunately, we could not conduct the same test on the aggregate spending regressions, because data on per capita education spending were not available for Cuba.

17. Five cases from Argentina were excluded from the Latin America sample (1985 to 1990) because the figures show such an extreme degree of change within the country series. We consulted additional sources from the United Nations Educational, Scientific and Cultural Organization (2003) and found, for example, an estimate for 1990 that was consistent with the rest of the series. Substituting the low figures with the country mean had no impact on our results. To maintain consistency over all the regressions, we eliminated wildly fluctuating series from the sample: 5 countries out of a possible 115 (Australia, Argentina, Djibouti, Denmark, and Switzerland). Their exclusion from the regressions had no impact on the estimates.

cross-sectionally, one must assume that the regression parameters take values common to all cross-sectional units. If this assumption is not valid, the pooled estimates may lead to false inferences (Hsiao, 1986). To establish whether the data should be pooled cross-sectionally, we conducted the recommended battery of tests (analysis of covariance) to establish whether assumptions regarding common slopes or common intercepts for each cross-sectional unit were reasonable.¹⁸ The resulting F tests recommended strongly against pooling the data. Although indicating that the slopes were homogeneous across the cross-sectional units, our tests detected the presence of significant heterogeneity among the units' intercepts. The appropriate solution when there are homogeneous slope coefficients but heterogeneous intercepts is to include dummy variables for each cross-sectional unit: the least squares dummy variable (LSDV) model (Baltagi, 1995; Greene, 1993; Hsiao, 1986; Sayrs, 1989).

To address the serial correlation of the errors in the TSCS framework, we followed the standard practice of transforming the data (Beck & Katz, 1995). We used the Prais-Winsten transformation, which assumes that there is a first-order autocorrelation process, AR(1), and that the coefficient of the autocorrelation process is common to every panel (Greene, 1993, p. 456). Once the data were transformed using the Prais-Winsten transformation, we followed Beck and Katz's (1995, 1996) recommendation by using panel-corrected standard errors to calculate the standard errors. Although in some cases, introducing a lagged dependent variable is appropriate to account for the autocorrelation process, the number of observations for each country (t) is sufficiently small to warrant avoiding its use here (Achen, 2000). For completeness, we tested the stability of our estimates by adding the lagged dependent variable on the right-hand side of each regression equation reported below. The use of the lagged model did not significantly change the results or the conclusion we draw from them.

The model we used to estimate democracy's impact on the allocation of spending on primary education is as follows:

18. We followed the procedure outlined by Hsiao (pp. 12-15). First, we tested the hypothesis that both the slope and intercept coefficients are the same across cross-sectional units. An F test of that hypothesis generated a significant F ratio, $F(80, 170) = 34.8, f = .001$, indicating that there is nonhomogeneity that can be attributed to either heterogeneous slopes or heterogeneous intercepts. We then tested the hypothesis that there are heterogeneous intercepts but homogeneous slopes. The resulting F test statistic was significant as well, $F(80, 170) = 8.1, f = .001$, indicating that we can assume that the intercepts vary significantly, whereas the slopes do not. The F tests therefore indicate using fixed effects with country dummy variables.

$$\begin{aligned} \text{Share of Spending on Primary}_t = & \alpha + \beta_1(\ln \text{ GDP per Capita}_t) \\ & + \beta_2(\text{Growth}_t) + \beta_3(\% \text{ Age 0 to 14}_t) + \beta_4(\text{Democracy}_t) \\ & + \beta_5(\text{Country Dummies}) + \varepsilon. \end{aligned} \quad (1)$$

The measure of democracy we used is derived from Gurr's Polity IV data.¹⁹ Gurr's measure of democracy is based on three interdependent elements: (a) the competitiveness of political participation, (b) the openness and competitiveness of executive recruitment, and (c) the level of constraints on the chief executive.²⁰ To construct a continuous measure, we followed the work of Londregan and Poole (1996) by subtracting Gurr's AUTO score from the DEMOC score (what we call the D-A score), producing a measure of democracy with a range from -10 to 10 (10 being the most "democratic" score). In addition to the democracy variable, GDP per capita (logged),²¹ economic growth, participation in an International Monetary Fund (IMF) standby agreement, and the size of the primary school-age population (the percentage of the population aged 0 to 14 years) were included in the regressions (World Bank, 2000).

We included GDP per capita in the model because poorer countries—those with relatively small stocks of human capital—may be required to devote larger shares of their education budgets to primary education. The GDP per capita data were taken from the World Development Indicators data set, which bases its estimates of output on purchasing power parities (World Bank, 2000). So that linear methods of estimation can be applied to the data, we used a logarithmic transformation of the GDP per capita variable.

Growth in GDP per capita was included in the model because countries undergoing severe economic stress may face less demand for primary schooling as children from poor families are forced into the informal economy to earn extra money. The growth variable was obtained from the World Development Indicators data set (World Bank, 2000).

For the Latin American cases, we included a dummy variable that indicates whether in a given year a country was under an IMF standby agreement.²² The IMF and other multilateral lenders have been under increasing pressure to blunt the effects of stabilization and structural adjustment policies on the resources allocated to basic education. We found that participation in

19. See Marshall (2003). For the theoretical framework on which Gurr's measure is based, see Gurr and Eckstein (1975).

20. For an interesting and useful discussion of some of the strengths and weaknesses of various indices of democracy, see Munck and Verkuilen (2002).

21. Because of its extended coverage (through 1996), we used the GDP per capita data (on the basis of purchasing power parities) from the World Bank (2000).

22. We obtained the IMF data from the IMF's Web site (<http://www.imf.org>).

an IMF standby agreement had no association with spending on basic education, nor did its inclusion affect the other coefficients. For presentation purposes, the IMF variable was excluded from the models reported below.

Finally, the percentage of the population aged 0 to 14 years was included because the size of the primary school-age population may well affect funding for primary education. Even though children aged 0 to 14 years cannot vote, their parents are more likely to press for educational opportunity at the primary level as the population becomes younger. The demographic data were taken from the World Development Indicators data set (World Bank, 2000).

DEMOCRACY AND AGGREGATE SPENDING

In addition to determining whether democracies allocate larger shares of their education budgets to primary schooling, we want to know whether they set aside more absolute resources as well. Analyzing real resources is important because it is conceivable that a government would award primary education a greater share of the budget but decrease the actual money available at its disposal. The government of General Pinochet in Chile (1973 to 1990) did just that, assigning a greater relative share to basic schooling but shrinking expenditures at all levels of education, especially in the 1980s (Vergara, 1994, p. 242).

We analyzed education expenditures in the aggregate (all levels of schooling combined) for our countries between 1980 and 1997. Given the structure of the data, we used the same methodology used when examining democracy's impact on the share of the education budget allocated to primary education. Moreover, we used the same analysis of covariance tests described previously to justify the use of the LSDV model.

To determine the priority that governments place on the education sector overall, we used data that represent central government²³ spending per capita in 1990 dollars.²⁴ These data were compiled by Comisión Económica Para América Latina y el Caribe (2001), which took special care to correct for the different accounting measures used by each government agency (Cominetti

23. Central expenditures are a valid measure of the majority of expenditures reaching the population for the period we analyze. Education revenues have long been decentralized in Brazil. But using federal spending or total government spending (federal, state, and local) had no effect on our results.

24. In the Comisión Económica Para América Latina y el Caribe reports cited, the figures for per capita spending were calculated indirectly by taking social spending as a percentage of GDP and then expressing it in dollar terms using World Bank estimates of countries' GDPs expressed in 1990 dollars (Cominetti, 1996; Cominetti & Ruiz, 1998; Comisión Económica Para América Latina y el Caribe, 2001).

& Di Gropello, 1994; Cominetti, 1996; Cominetti & Ruiz, 1998).²⁵ Although there were some remaining differences in how governments measured spending on education, the differences do not appear to vary systematically with the dependent variable or any of the independent variables. Other data are available that provide more coverage (e.g., IMF Government Statistics), but they do not track as accurately differences in accounting procedures both within and between countries.

Finally, we used a log transformation of the education spending variable, for both theoretical and data-analytic purposes. Theoretically, a \$10 per capita increase in education spending for a country such as Uruguay, Brazil, or Argentina has a very different impact than the same increase in Honduras, El Salvador, or Guatemala. For the latter group of countries, a \$10 per capita increase represents close to a 25% to 33% change in the overall education budget, whereas for the former group, the substantive change would be minimal: 2% to 5%. In terms of the data analysis, in raw form, the data are highly skewed: A few of the richest countries outspend their neighbors by a factor of 10. By taking the log, the distribution of the spending data approaches normality, eliminating a number of outlying cases.

Our model of total spending on education is specified below in equation 2. In addition to GDP per capita, Δ GDP per capita, participation in an IMF standby agreement, and democracy, included in the model are the debt service ratio, the population aged 0 to 20 years, trade openness, inflation, and the amount spent on other social spending categories. A description of the variables and a justification for their inclusion are offered below.

$$\begin{aligned} \ln \text{ Education Spending}_t \text{ (per Capita)} &= \alpha_1 \\ &+ \beta_1(\text{Health and Social Security Spending}_t) \\ &+ \beta_2(\ln \text{ GDP per Capita}_t) + \beta_3(\Delta \text{GDP per Capita}_t) \\ &+ \beta_4(\text{Debt Service Ratio}_t) + \beta_5(\% \text{ of Population Under 20}_t) \\ &+ \beta_6(\text{Trade}_t) + \beta_7(\text{Democracy}_t) + \beta_8(\text{Inflation}_t) \\ &+ \beta_9(\text{Country Dummies}) + \varepsilon. \end{aligned} \quad (2)$$

So that we can distinguish between additional resources allocated toward education and an overall increase in social spending, we include the amount spent on other social programs: health and social security. By doing this, we can verify that any relationship we identify is not simply the result of a general increase or decrease in all categories of social spending but the result of

25. A potential complication exists because some governments include some items (e.g., meal programs and sports) as part of education spending, whereas others do not. The inclusion of country dummy variables in the regressions addresses this problem.

spending targeted specifically on education. Data for spending on health and social security were obtained from CEPAL.²⁶

The GDP per capita (logged) variable controls for a country's level of economic development. Controlling for GDP per capita is crucial because it is correlated with both democracy and education spending. Relatively wealthy nations are simply able to devote greater resources to education than countries with low income levels.

We include the annual percentage growth in GDP per capita in the model because it serves as a constraint on government revenues and therefore on government expenditures. Governments witnessing periods of economic growth are generally more flush with revenue than states undergoing economic retrenchment. When a government has access to more resources, it can spend more easily on social programs.

High debt service ratios are another important financial constraint on governments. The debt service ratio is the total debt service as a fraction of the exports of goods and services (including workers' remittances). To honor external obligations, governments are often compelled to decrease spending on social programs such as education (Haggard & Kaufman, 1992, p. 10). We obtained the debt service ratio figures from the World Development Indicators data set (World Bank, 2000).

Inflation constitutes another control. To measure inflation, we use the annual consumer price index recorded from December to December. The impact that inflation can have on education spending is twofold. When inflation is high, governments come under direct pressure to curb spending. Inflation also has an indirect impact. It obscures relative prices, making it difficult to properly gauge the relative cost of a good. The same problem applies to constituents who are attempting to ascertain the real value of government spending in a highly inflationary situation. Politicians may have more room to maneuver when the electorate is unable to determine exactly where the government is allocating resources. When including inflation in every model, we found no relationship between inflation and education spending either directly or when interacted with regime type. Nor did inflation exert any impact on the coefficients of the other independent variables. For presentation purposes, inflation was not included in the estimates presented.

Spending on education is also likely to be influenced by the relative size of the population that is 20 years old or younger. Countries with relatively young populations are more likely to be compelled to provide educational

26. Given the strong correlation between spending on all three categories, we estimated the same regressions without including the health and social security spending variable on the right-hand side of the equation. Excluding the health and social security spending variable from the regression did not affect our results.

opportunities. To control for the age structure of the population and thus decrease the possibility that our results are driven primarily by demographic rather than political phenomena, we included in our analysis data from the International Data Base, which is provided by the U.S. Census Bureau (2003).²⁷

Participation in an IMF standby agreement is likely to subject politicians to important fiscal constraints. Although the IMF strives to protect education above certain other social programs, economic stabilization measures often require sizable cuts in spending. We use a dichotomous variable that records a 1 if the country is under a standby agreement in a given year. In every regression model reported below, a country's participation in an IMF standby agreement had no significant association with education spending or with any of the other independent variables. Hence for presentation purposes, we decided to drop the variable from the models we report.

Trade openness, measured by Exports + Imports / GDP, can also serve as an important factor affecting social spending (Kaufman & Segura-Ubiergo, 2001). Under increasing international pressure to become competitive, countries may cut government spending to decrease the overall costs of production (the "efficiency" hypothesis). Or, mindful of the economic hardships that globalization can produce, governments may provide citizens with an additional layer of social protection (the "compensation" hypothesis). The data for this variable came from the World Development Indicators (World Bank, 2000).

RESULTS

DEMOCRACY AND SPENDING ON PRIMARY EDUCATION

In answer to our first question, we found that democracy exerts a positive influence on the share of spending devoted to primary education.²⁸ Findings on the relationship between democracy and spending on primary schooling are presented in Table 1.

27. Although the Census Bureau's data were fairly comprehensive, there were some missing cases. In each case, a substantial amount of anterior or posterior data were available. We therefore capitalized on the available data and interpolated backward or forward depending on where the gaps were. We used the interpolation routine included in the statistical program Stata (StataCorp, 1999).

28. These results are based on current expenditures only. Bearing in mind that capital expenditures provide a host of ways by which politicians can demonstrate their service, our results may well underestimate democracy's positive influence.

Table 1
Prais-Winsten Regressions of the Percentage Share of Education Spending Going to Preprimary and Primary Education on Democracy and Control Variables

Variable	Latin America	Developing Regions	All Regions	OECD Countries
Growth in GDP per capita _t	00.031 (.066)	-0.052 (0.042)	-0.047 (0.037)	-0.008 (0.078)
GDP per capita _t (logged)	-0.264 (0.119)*	-0.014 (0.057)	-0.025 (0.049)	-0.004 (0.126)
% of population 0 to 14 years of age _t	0.507 (0.162)**	0.231 (0.174)	0.394 (0.161)*	1.183 (0.340)**
Democracy _t (D-A score)	0.003 (0.001)**	0.002 (0.001)**	0.002 (0.001)**	0.004 (0.002)*
Constant	1.581 (0.440)**	0.410 (0.270)	0.390 (0.237)	0.098 (0.575)
Observations	187	809	1099	301
R ²	.85	.81	.84	.87

Note: Figures in parentheses are panel-corrected standard errors. Country dummy variables were included in every regression but are not reported in the table for presentation purposes. OECD = Organisation for Economic Cooperation and Development. GDP = gross domestic product.
 *Significant at 5%. **Significant at 1%.

Reference to a concrete example may help illustrate the substantive importance of this relationship. Brazil rose from -3 to 8 between 1984 and 1985 in Gurr's political ranking. For countries that moved this distance, the model predicts that the percentage of the total education budget spent on primary education increases from 52% to 55%, holding the other variables constant at their means. The 3% difference is substantial and can have an important impact on shaping outcomes. For example, Brazil's total current expenditure on education in 1995 was roughly \$30 billion (United Nations Educational, Scientific and Cultural Organization, 2000). Approximately one third of that went to primary education. A 3% change—roughly \$900 million—can seriously affect the type and quality of programs offered. To put that amount in perspective, it is roughly \$100 million more than Brazil's annual budget for its school lunch program (Brazil Ministry of Education, 2000). Countries that managed to undergo transitions from the most repressive form of government (-10) to the most democratic (10) realized changes in the percentage allocated to primary school from 50% (95% confidence interval [CI], 48 to 53) to 56% (95% CI, 53 to 57), twice the amount of change predicted for Brazil.²⁹

To test whether the relationship observed among the countries in Latin America is unique to that region, we ran the same regression model for all non-Organisation for Economic Cooperation and Development (OECD) countries and for the entire sample of countries in the world. The resulting estimates (see Table 1) very closely mirrored the pattern observed among the Latin American cases. In addition to showing that these estimates describe a clear pattern for Latin America, the developing world, and the entire sample that includes countries from all regions, the results hold even when focusing exclusively on the OECD nations. In a regression that reports results for 22 of the 29 country members of the OECD, we find that countries that score higher on the Polity measure allocate relatively larger percentages of their education budgets to preprimary and primary education (see Table 1). Although the variance in the Polity measure is less among the OECD nations (the D-A score is relatively high), there is evidence that the same relationship that exists elsewhere in the world pertains to the wealthiest nations of the world.

To further test the stability of the results, we performed a modified jackknife on the Latin American cases (Sayrs, 1989) by removing each cross-sectional unit from the regression and reestimating the model. We also tested whether our estimates were generated by the unique time period under exam-

29. The R^2 statistics reported in Table 1 are relatively high and stem largely from the inclusion of the country dummy variables in the regression.

ination. Because Latin America underwent extensive economic difficulties in the 1980s, we created a dummy variable to indicate whether the observation was from the 1990s or the 1980s. Neither test altered our results.

Although the difference between the democratic and authoritarian governments in the amounts they appropriate to primary schooling is significant, it is important to recognize that our sample includes many cases of Latin American democracies in the early postauthoritarian stages. It is indeed possible that the strengthening and growing competitiveness of the region's new democracies will generate even greater differences over time, as ordinary citizens recognize the positive substantive results that their participation can yield.

DEMOCRACY AND AGGREGATE EDUCATION SPENDING

With respect to our second question—whether democracy affects aggregate spending on education—an interesting pattern from the regression results emerged. The strongest and most consistent estimates show that democracy is highly correlated with real spending on the education sector overall. Not surprisingly, given the inclusion of country dummy variables, the economic control variables contributed little in explaining the variance of spending on education. Only the variables recording spending on health and social security along with the percentage of the population between the ages of 0 and 20 years show any correlation at acceptable levels of confidence (Table 2).

Does democracy matter in a substantive sense? Holding all other variables constant at their mean values, countries that scored -8 on the Gurr scale (e.g., Argentina in 1982 and 1983 and Panama in 1988) were predicted to spend on average \$47 (95% CI, \$44 to \$50). Countries that scored 10 on the Gurr scale (e.g., Costa Rica from 1980 to 1997) spent \$65 per capita (95% CI, \$63 to \$67). The resulting difference between the two kinds of regimes is significant: roughly \$18 per capita. The following countries spent the least per capita on education: Bolivia (\$21), El Salvador (\$25), Honduras (\$40), and Nicaragua (\$52). For Bolivia, the lowest spender of the group, \$18 represents 86% of all education spending. For Nicaragua, the biggest spender, \$18 represents 35% of all annual spending on education. The results were extremely stable, standing up to every test performed on the regressions in Table 1.

In sum, democracy appears to matter for the internal distribution of the education budget, as well as for how much absolute total money is spent on education. Under democratic governments, politicians dedicated higher percentages of education resources to primary schooling and larger real amounts

Table 2
Prais-Winsten Regression of per Capita Education Spending (logged) on Democracy and Control Variables (Latin American cases)

Variable	Value
Democracy _t (D-A score)	0.017 (0.006)**
Health and social security spending per capita _t	0.002 (0.000)**
GDP per capita _t (logged)	0.16 (0.249)
Growth in GDP per capita _t	-0.253 (0.206)
% of population aged 0 to 20 years _t	1.863 (2.101)
Exports + Imports / GDP _t	-0.001 (0.002)
Debt service ratio _t	-0.001 (0.001)
Constant	1.189 (2.818)
Observations	257
R ²	.89

Note: Figures in parentheses are panel-corrected standard errors. Country dummy variables were included in every regression but are not reported in the table for presentation purposes. GDP = gross domestic product.

*Significant at 5%. **Significant at 1%.

to the education sector overall. Democracy, therefore, conferred both relative and absolute benefits on primary education.

CONCLUSION

This study suggests that democratic practices and institutions elevate the potential for human development by effectively directing more resources toward education, especially to primary schooling. Higher levels of political competitiveness and openness, embodied in elections and a free press, apparently motivate politicians to distribute public resources to segments of the electorate that have numbers but not economic privilege on their side. The greater activism of teachers' unions in democratic contexts may well reinforce the expansionary effects of elections on education budgets. Until more and better data on union strength and activism are available, however, we cannot determine with certainty the casual mechanisms behind our results.

Our findings suggest the promise that democratic government holds for greater human capital formation through the additional resources granted to education. They do not, however, claim that these resources have been effectively applied toward learning and income-producing results. For instance, have expenditures been allocated toward cost-effective measures that enhance knowledge and skills but that often yield few political dividends (e.g., better textbooks and teacher training) or more toward ends that are highly

visible and conducive to political credit claiming but that frequently do not yield high educational returns (e.g., constructing impressive school buildings)? Similarly, have test scores and other measures of achievement improved as a result of additional spending?³⁰ More research will need to be conducted—and complex causal relationships carefully thought through and discerned—to respond to such questions. In any event, answering them is critical to establishing a more definitive link between democracy and human capital formation.

If future research shows that the additional resources that democracies direct toward primary education result in greater learning and improved income levels among the poor, such a finding would serve as a counterpoint to Amartya Sen's (1999) doubts about democracy's capacity to rectify persistent yet undramatic aspects of poverty. It would also call into question Huntington and Nelson's (1976) claim that greater opportunities for participation at lower levels of socioeconomic development (characterizing a good many of the Latin American countries in our sample) favor more privileged groups and thereby tend to diminish the possibilities for achieving greater socioeconomic equality. Only at higher levels of development, they argue, do poor people become mobilized and do political elites feel compelled to respond to their needs. Their argument is consistent with the notion that democracy takes on true relevance only when it is accompanied by significant changes in the overall distribution of power and resources in society. Recent criticisms of Latin American democracies that follow this line of thinking would not anticipate much substantive change in public policy outcomes. Our results offer evidence to the contrary. In short, they imply that the fundamental mechanisms of democracies, however imperfect they are in the region, may indeed yield positive results for human and economic development.

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30. See van de Walle (1998) for a discussion of some of the tricky issues that arise when trying to assess the welfare effects of public spending. See Lloyd-Sherlock (2000) for specific examples of ways in which budgets for primary schooling in Latin America are frequently used in ways that do not optimize human welfare.

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