

**Electoral Competition and Public Spending on Education:
Evidence from African Countries**

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Electoral competition can have a significant influence on government decisions regarding public spending. In this paper I examine whether the move to multiparty elections in many African countries in the last ten years has been associated with a clear change in priorities for public spending on education. In particular, I argue that the need to obtain an electoral majority may have prompted governments to devote greater resources to primary schools. I test this hypothesis using panel data on electoral competition and education spending in thirty-five African countries over the period 1980-1999. The results strongly support the hypothesis and are robust to controls for both unobserved country effects and other determinants of spending.

1. Introduction

The political economy of education spending in developing countries is a subject that has received scant attention from researchers in recent years despite its obvious importance. This paper is a preliminary attempt to investigate how one particular feature of a country's political system, the extent of electoral competition, may influence decisions regarding public spending on education. In particular, I ask whether increased electoral competition in some African countries during the 1990s may have prompted governments to spend more on education relative to other expenditures. Electoral competition may have prompted politicians to devote greater resources to primary schooling in particular. Recent African experience provides us with a natural experiment for testing this hypothesis; if during the 1980s free elections were almost absent in Africa, during the 1990s a number of African countries have moved towards a system where elections are more free and more open to participation of multiple political parties or candidates. There is also good anecdotal evidence to suggest that in several cases electoral competition has prompted sitting governments to devote greater budgetary resources to primary education. The Ugandan President's decision in 1995 to establish free universal primary education was made in the middle of an election campaign.¹ In Tanzania a similar political context has prompted the country's President to announce a move to free universal primary education.²

The logic underlying my hypothesis is that contested elections may have prompted African governments to be more responsive to the demands of rural groups in particular, and rural groups are likely to be more concerned with spending on primary education relative to secondary and tertiary education when compared with urban groups in African countries. I develop this proposition by drawing implications from literature on the politics of economic policy in African countries under authoritarian rule (and in particular the classic work by Bates, 1981), compared with observations about the possible effects of electoral competition on

¹ For a recent review of electoral competition in Uganda see Furley (2000).

² This was announced in a presidential address in April 2001. I thank Simon Appleton for bringing this example to my attention.

political participation in Africa. I also acknowledge that there are plausible alternative arguments about democratization and education spending in African countries. Given that many of the initial democracy movements after 1989 were triggered by demonstrations led by university students, one might actually expect political liberalization to result in greater resources being devoted to tertiary education. One might also hypothesize that increased electoral competition would have no impact on education spending if African voters have little means of subsequently holding their elected representatives accountable for the actions they take.

I test the hypothesis about electoral competition and education spending using cross-section time-series data covering 35 African countries over the period 1980-1998. The results show that when they are subject to multiparty competition, African governments have tended to spend more on education, and more on primary education in particular. These results are statistically significant in OLS estimates, in fixed effect estimates which control for unobserved country effects, and in instrumental variables estimates which account for the possibility that one or more of the explanatory variables may be endogenous. My results with regard to political competition and education spending are robust to the inclusion of a number of control variables.

My estimates also attempt to control for possible external influences on education, in particular by donors. To the extent that donors see education spending (and more specifically primary education spending) as a priority for governments, then one might expect to observe that countries which receive more aid will tend to spend more heavily on education spending (and more on primary education in particular). Surprisingly, the statistical results presented here suggest the opposite. Countries which receive more aid as a share of their GDP tend to spend less on education and less on primary education in particular. This result is robust to controls for unobserved country effects and for outlier observations. The same result is also observed when using net flows from the World Bank alone, rather than all overseas development assistance. This negative correlation between aid and education spending holds even when one instruments for aid to take account of the

possibility that aid is itself endogenous to education spending. With this said, interpretations of this result may be complicated by the fact that data on education spending for some countries may not include donor-financed expenditures.

In the remainder of the paper I first proceed in section 2 by considering theoretical arguments about the link between electoral competition and public spending. Sections 3 and 4 present data on education expenditures and political competition. Section 5 presents panel data estimates. Section 6 considers alternative specifications, omitted variables, and other robustness issues.

2. Electoral competition and education spending

Governments in political systems with competitive elections face fundamentally different threats to their rule when compared with autocratic governments. In an autocracy, the principal risk for a leader is that he will be overthrown by force, perhaps as a result of a military coup, due to street demonstrations, or following a general strike. In countries where there are free elections contested by multiple candidates, rulers may still fear losing office through a coup, but they also need to anticipate the possibility that they might be thrown out of office by the electorate. This basic difference can imply that leaders in autocratic and democratic systems face fundamentally different incentives with respect to public policy. In an autocracy, leaders need to pursue policies that will satisfy those groups which can credibly threaten to use force to obtain what they want. When there are competitive elections, in contrast, rulers are more likely to face incentives to pursue policies which satisfy a majority among the electorate.³

In African countries where governments are not obliged to compete in free elections, it is commonly argued that urban groups find it easier to organize and protest against government policies than do those who live in rural areas. In a seminal contribution, Bates (1981) argued that rural groups in Africa face greater costs of collective action because they tend to be distant from a country's capital,

³ For a review of discussions of political competition and policy choice in democracies see Przeworski, Stokes, and Manin (1999).

they are geographically separated, and they are frequently divided by language and/or ethnicity. Urban groups in contrast, have the advantage of being more geographically concentrated. According to Bates, differential costs of collective action between urban and rural groups helped explain why the economic policies adopted by African governments during the 1960s and 1970s tended to exhibit an “urban bias”. So, for example, governments tended to tax agriculture while subsidizing imported food items consumed largely by urban groups.

While Bates (1981) did not directly consider education spending, his theory has clear predictions for this area of government policy. To the extent that urban groups in Africa tend, on average, to have more years of schooling than their rural counterparts, they are more likely to be concerned about government spending on secondary schools and universities, as well as primary schools. Rural groups, on the other hand, may place greater weight on primary school spending. Likewise, university students in African countries have historically been one of the groups which has been most willing to demonstrate publicly against governments whose policies they oppose, while the same can hardly be said for primary school students. These factors suggest that education spending in autocratic African countries should be biased against primary education. Evidence of skewed education policies in African countries is provided by statistical evidence which shows that during the 1980s the ratio between public education spending per university student and spending per primary school student was significantly higher in Sub-Saharan Africa than in other regions.⁴ Existing evidence also suggests that there is a significant urban-rural gap with regard to levels of primary school enrollment in African countries, as enrollment rates in capital cities frequently reach 90% even in the poorest countries while less than 20% of children in rural areas may attend primary school. This too suggests that rural groups have been at a disadvantage in terms of obtaining public resources for education.⁵

⁴ Pradhan (1996) shows that this ratio stood at 65.3 for the average African country in 1980 and 44.1 in 1990. In Latin America the relevant figures were 8.0 and 7.4 for 1980 and 1990 respectively. In South Asia the relevant figures were 30.8 and 14.1 for 1980 and 1990 respectively.

⁵ A recent World Bank report on education in Africa (World Bank, 2000) draws this conclusion based on data from Niger, Ethiopia, and Mali.

In the last fifteen years a number of African countries have moved away from autocracy and towards a system of selecting governments through elections. As reviewed by Bratton and van de Walle (1997) if, on average, African governments have become more democratic, there has nonetheless been considerable variation from country to country. In some cases democratization has meant truly competitive elections while in other cases it has meant elections that are rigged in favor of a sitting government. In subsequent work van de Walle (2001) has argued that democratization in Africa has not yet resulted in a fundamental shift in the types of political pressures which African leaders face, but that it may nonetheless have initiated more long-term changes in the politics of economic decision making.

While increased electoral competition in many African countries has clearly not led to a wholesale reorientation of economic policy making, it does seem plausible, based on the recent examples of Uganda and Tanzania, to suggest that electoral pressures have pushed politicians into paying more attention to the demands of groups which heretofore had little political influence. Given that the majority of electors in almost all African countries live in rural areas, if we follow the above arguments, then one would expect politicians to become more responsive to the demands of rural groups when they are subject to electoral competition. This could include increased primary education spending. To the extent that demands for primary education are met by increasing expenditures rather than reallocating priorities within the education budget, one would expect to observe an increase overall education spending as well.

One crucial assumption in the above argument is that levels of participation are higher the more competitive the election. While it has been a common observation about elections in advanced industrial countries that more competitive elections tend to have higher rates of voter turnout, some analysts have suggested that African voters might not respond in a similar manner. Bratton and van de Walle (1997) criticize this view and provide quantitative evidence to demonstrate that African electors are in fact no different in this regard; they are more likely to vote the more competitive the election. Using the winner's share of total votes cast as a proxy for the competitiveness of the election, they find, based on a sample of 29

African elections over the period 1990-94, that there was a positive and statistically significant correlation between the competitiveness of the election and total voter turnout.⁶ To the extent that a higher voter turnout implies that a higher percentage of rural electors vote, this supports the proposition that increased electoral competition is more likely to prompt African candidates to devote greater resources to primary education.

3. Data on education spending

In order to attempt to test the hypotheses laid out above, it would be useful to have data on total government spending on education, as well as government spending on primary education. While the coverage is uneven, data on the different components of education spending has been compiled by UNESCO for a number of African countries.⁷ These data are also reported in the World Bank's *World Development Indicators*. Given that there is little if any African education data available for the years before 1980, in this study I have concentrated on the period 1980-98. I have compiled data on total education spending for 35 countries listed for which the average number of annual observations available over the period is 10.⁸ Likewise, data on primary education expenditures is available for 33 countries with an average of 6 annual observations over the period.⁹

Figures 1 and 2 present African averages for overall public spending on education as a share of GDP, in addition to public spending on primary education as a share of GDP. As can be seen, after a decline during the 1980s, in the early 1990s African governments increased their outlays for education and for primary education in particular. While Figures 1 and 2 are useful for presenting cross-

⁶ They justify this proxy by suggesting that uncompetitive elections are more likely to generate a lopsided result with one candidate receiving a large majority of the votes. The result does not depend on this particular measure, however.

⁷ UNESCO *Statistical Yearbook*.

⁸ 8 or more annual observations are available for 27 of these countries. The remaining countries are Angola (4), Benin (1), Chad (2), Equatorial Guinea (2), Guinea-Bissau (1), and Mauritania (5).

⁹ 5 or more annual observations are available for 25 of the 33 countries. The remaining 8 are Angola (2), Benin (1), Central African Republic (4), Chad (2), Democratic Republic of the Congo (1), Mozambique (2), Nigeria (1), Sudan (3).

country trends, they mask the fact that there has also been considerable variation in patterns of education spending across countries. Table 1 presents summary statistics for four variables: (1) total public spending on education in %GDP (2) public spending on primary education in %GDP, (3) public spending on education as a share of total spending, and (4) public spending on primary education as a share of total spending. For each of these three variables, between-country variation is quite significant.

Cross-country data on education statistics may be subject to a number of potential biases and collection errors. Behrman and Rosenszweig (1994) have argued this for enrollment data collected by UNESCO. In order to consider this possibility, I compared the UNESCO data for overall public spending on education with that reported by the IMF in its *Government Finance Statistics* publication, as well as with data collected by Mingat and Suchaut (2000) for African countries. The UNESCO data are in fact very highly correlated with data from both of these other sources, and there are almost all no cases of large discrepancies.¹⁰ While the IMF and Mingat and Suchaut (2000) do not report statistics for primary education spending, given that primary education spending (in %GDP) is very highly correlated with overall public spending on education, this result should also increase confidence in the UNESCO primary education data.

One final data issue concerns donor financing. The UNESCO data on education spending is based on a questionnaire distributed to governments on an annual basis. Until very recently the questionnaire has not asked governments to distinguish between education spending which is financed by revenues and education spending financed by donors. For the majority of African countries in the sample this may not pose an issue, as a recent World Bank report (2001) has suggested that "official development assistance represents only 3-4 percent of total expenditure on education in Africa". For some countries, however, and notably post-conflict states, donor-financed education expenditures may represent up to half of all public expenditures on education. If in filling out their UNESCO

questionnaires governments such as these did not include donor-financed education spending in their calculations, it would introduce a degree of measurement error.

4. Measuring electoral competition

Researchers in recent years have compiled a number of different cross-country indices of democracy, political rights, and political competition. It has become increasingly frequent for economists and political scientists to include these political variables in cross-country regressions on subjects such as the determinants of economic growth. Two of the most frequently used indices of this sort are the Gastil indices of political and civil liberties. However, as emphasized by Bates (1995), the Gastil index remains a very uncertain tool for quantitative research, because the methodology used to compile it is not made public. As a result, while the index is scaled from 1 to 7, one has no way of knowing what exact political context a value of “2” or “4” on the index corresponds to. Another problem is that the Gastil indices and other indices, such as the Polity III measure of democracy, appear to measure very broad features of a country’s political system (democracy vs. authoritarianism). As a result, they can be crude tools if one intends to test a more specific hypothesis about the effects of particular political institutions

Fortunately for the purposes of this study, a Harvard-based group of researchers has compiled specific data on the openness of recruitment of chief executives and legislators in African countries over time.¹¹ For executive recruitment they asked five questions relevant to the degree of competitiveness:

1. Is there a chief executive?
2. Was the executive elected?
3. Was the executive the only candidate in the election?
4. Were multiple political parties allowed to contest the election?

¹⁰ The simple correlation coefficient between the UNESCO data and the Mingat and Suchaut data was 0.92, while the correlation coefficient with the IMF data was 0.82.

¹¹ See Bates (1995), Ferree and Singh (1999).

5. Did candidates from more than one party contest the election?

The Harvard team of researchers has arranged the responses to these questions to fit a Guttman scale, that is a scale where a positive response on one level of the scale implies a positive response to all lower levels (Guttman, 1950). In practice, in the 35 country sample used in this study there are three groups of countries in terms of levels of electoral competition. In roughly 28% of country-years there is no electoral competition, meaning that the country had an executive but the executive was not elected. In a further 37% of country-years there was an executive who was elected, but only a single candidate contested the election, or in a handful of cases multiple candidates from the same political party contested the election. Finally, in a further 35% of country-years the executive was elected and candidates from multiple political parties stood in the election. Given this distribution, I have created three dummy variables to indicate the level of electoral competition: “no electoral competition”, “single-party competition”, and “multiparty competition”. It is important for purposes of interpretation to note that these variables are coded so that a country where the executive is elected in a multiparty contest is given a value of 1 for the variable "multiparty competition" but a value of 0 for the variable "single-party competition". This ensures that the two variables are uncorrelated when entered into the regression. As can be seen in Figure 3, the percentage of African countries with multiparty competition increased very significantly during the 1990s.

5. Panel estimates of the determinants of education spending

In order to explore the relationship between electoral competition and education spending, I estimated a series of cross-section time-series regressions for the African countries for which relevant data is available for the period 1980-1998. These involved data concerning both public spending on education in general and public spending on primary education in particular. The regressions in Tables 2 and 4 use spending in percent of GDP as a dependent variable. This would seem to be

an appropriate indicator of the resources devoted by government to a particular activity. However, there may be several problems with this method of measurement. First, it ignores the fact that for exogenous reasons, some governments may have access to lower levels of revenue than others. Under these circumstances, spending 5% of GDP in education in a country where revenues amount to 15% of GDP may represent greater prioritization of education than spending 5% of GDP on education when a government collects revenues equivalent to 25% of GDP. Second, when spending variables are expressed relative GDP, then changes in relative prices in the economy (between the non-tradeables and tradeables sectors) may lead to apparent changes in spending without a government actually altering its budgetary priorities. Given that there were significant shifts in relative prices in a number of African economies during the sample period), this may be a real concern. To take account of both of these possibilities the regressions in Table 3 and Table 5 consider determinants of spending when education spending is expressed as a share of total government spending.

As a first step in the inquiry, Figure 3 reports average levels of education spending across different types of political regimes, distinguishing between those without electoral competition, those with one-party competition, and those with multiparty competition. The differences are quite striking as higher levels of electoral competition are associated with high levels of government spending on education, and higher levels of spending on primary schools. Figure 4 shows that this correlation between spending and electoral competition also appears to hold for changes in regime, as those countries which shifted to multiparty competition in the 1990s on average saw an increase in overall education spending and in spending on primary education.

While the results in Figure 3 and 4 may be visually striking, it remains to be demonstrated that the apparent relationship between electoral competition and education spending is robust to controls for other determinants. In the regressions in Tables 2-5, each of the spending variables is estimated as a function of several independent variables, including indicator variables for “single-party” political competition, “multiparty” political competition, and dummy variables for elections

in the previous, current, and following year. Since the base group here is countries without electoral competition, the “single-party” and “multiparty” variables then capture estimated differences relative to this group. The inclusion of the electoral dummies is intended to test the common argument that during electoral periods governments will face increased pressures to spend. While the number of obvious control variables to use in these regressions is limited, I also included the log of per capita GDP as an independent variable, based on the conjecture that governments in richer countries may tend to spend a greater share of their national income on education, while governments in richer countries are also likely to devote a smaller share of their total education spending to primary schools.

I also include total overseas aid as a control, based on the fact that when negotiating structural adjustment packages, donors in recent years have frequently suggested that governments should privilege expenditures on key services like education, and in particular primary education. Rather than arguing that aid is directly allocated to education expenditures, given the earlier observation that direct donor financing of public education in Africa remains limited in most countries, the argument here is that an increased reliance on donor financing should prompt a government to pursue expenditure objectives advocated by donors. The variable “overseas aid” represents total overseas development assistance in % GDP.

Table 2 estimates total government spending on education in %GDP using three different methods. Regression (1) is a pooled OLS regression which shows that both single-party and multiparty political competition are positively and significantly correlated with total government spending on education. The coefficient on “multiparty competition” is larger than that for single-party political competition, however, as a move to multiparty competition is estimated to result in an increase of total education spending by 1.4% of GDP. Spending on education does not seem to be significantly different during electoral periods according to these estimates, however. A set of dummy variables for unobserved year effects was not jointly significant in this specification, and so it was excluded.¹²

¹² The same was true for all other regressions in the study.

Regression (2) is a fixed effects model which controls for unobserved country-specific effects. The coefficients on both electoral competition variables remain highly significant, although the coefficient on "multiparty competition" is now small smaller in magnitude than in the OLS regressions. The coefficient on "single-party" competition is now actually larger than in the OLS estimates. The election variables remain insignificant and the coefficient on overseas aid is actually negative and highly significant.

According to regression 2, somewhat surprisingly, countries where executives are elected in multiparty competition are not actually estimated to have higher levels of education spending than are countries where executives are elected in single-candidate competitions. Further observation suggests that there is a clear reason for the difference between the OLS and fixed effects estimates in regression 2; the country mean values for education spending which are subtracted out in the fixed effects model are positively and significantly correlated with the "multiparty competition" variable 0.37 $p < 0.01$, and negatively correlated with the "single-party competition" variable -0.33 $p < 0.01$. The same is true for all other fixed effects regressions in this paper. Given that the OLS results strongly suggest that "multiparty competition" has a larger effect on spending than does a move to "single-party competition", however, this fixed effects result should not be taken as demonstrating that the effects of the two types of competition are equivalent.¹³ The results should be read instead as suggesting that the data allow us to reject the hypothesis that the observed distinction between countries with elected executives and countries with unelected executives is attributable to unobserved country effects, but that we cannot reject the hypothesis that the observed difference in the coefficients for "multiparty competition" and "single-party" competition in the OLS regressions is attributable to unobserved country effects. This is attributable in part to the fact that four countries in the sample have had multi-party competition throughout the period considered (Botswana, Namibia, Senegal, and Zimbabwe). If

¹³ Random effects estimates also led to a similar conclusion, though they were rejected based on the results of a Hausman test for correlation between the random error component and the explanatory variables.

one excludes these four countries, then the correlation between the country means from the fixed effects regression and the variable "multiparty competition" drops to 0.13. The coefficient on "multiparty competition" in the OLS estimates remains positive and highly significant after excluding these four countries, though it is somewhat smaller in magnitude (0.70). The same holds true for the regressions in Tables 3-5.

One potential concern with regressions (1) and (2) is that foreign aid in particular might not be pre-determined. Foreign aid might be endogenous to education spending to the extent that countries which spend more on education might subsequently have less need for foreign aid if they enjoy high rates of growth. Likewise, foreign aid might be endogenous if donors give higher levels of assistance to governments that have a track record of prioritizing education. To deal with this issue I also estimated a fixed-effects model where I instrumented for overseas aid using lagged differences of the aid variable. By instrumenting for aid with lagged differences I am ensuring that my instruments are not themselves correlated with country fixed effects.¹⁴ Regression (3) shows that the result with regard to political competition remains essentially unchanged. In addition, the coefficient on foreign aid remains statistically significant and it is actually more negative than in the fixed effects model without instruments.

Table 3 estimates government spending on education in percent of total government spending using OLS, fixed effects, and fixed effects with instrumental variables. The results are quite similar to the Table 2 estimates. Both "single-party" political competition and "multiparty" political competition are positively correlated with education spending, though in the fixed effects estimates the coefficient on "multiparty" competition is somewhat smaller than in the OLS regression, while the

¹⁴ I also considered using a GMM estimator of the type proposed for panel data by Arellano and Bond (1991), but given that this estimator relies upon a first-difference transformation to deal with unobserved country effects, it was less appropriate for the data in this study which exhibit a high degree of persistence over time. A system GMM estimator which uses information from both a levels equation with lagged differences as instruments and a first-differences equation with lagged levels as instruments would not have been likely to produce significantly more efficient estimates either. This is because in practice lagged levels of education spending in the sample are poor predictors of future changes in education spending.

coefficient on “single-party” competition is somewhat larger. The coefficient on overseas aid is negative and significant at at least the 10% level in all three regressions here.

Table 4 uses the same specifications as in Tables 2 and 4 but to investigate the determinants of spending on primary education (in %GDP). The coefficient on both electoral competition variables are again positive and statistically significant in the OLS estimates. Based on this regression, establishing multiparty competition would be associated with an increase in primary education spending by 0.8% GDP. In the fixed effects regressions the coefficients for both “single-party” and “multiparty” competition are smaller in magnitude than in regression 1. Finally, the coefficient on overseas aid is again negative and highly significant in all three regressions.

Table 5 reports estimates of the determinants of primary education spending, when outlays are measured as a percentage of total government spending. The results here are again quite similar to those reported in Table 4. Both “single-party” and “multiparty” political competition are associated with higher expenditures on primary education.

6. Alternative specifications and robustness

There are a number of issues concerning measurement of my different variables as well as potentially omitted variables, and this section considers each in turn. One possible oversight may involve the effect of national wage decisions. Wages for teachers are the largest single spending item for education ministries in Africa and in particular for primary schools. Given that decisions regarding civil service wages in African countries are typically made in a centralized manner, it may be the case that education expenditures depend more on the overall remuneration policy of a government than on the priority it gives to education. To consider this possibility I re-estimated the regressions while including an additional variable that represents the average civil servant wage as a multiple of per capita GDP. Data were only available for the period after 1986 (from Leinert and Modi, 1997), resulting in the loss of a number of observations in the sample. The coefficients on the electoral

competition variables remained significant in the OLS regressions and the fixed effects regressions, though they did not remain significant in the fixed effects regressions after including the wage variable. It should be noted, however, that this loss of significance is most likely due to the fact that the sample was reduced to half its original size in these re-estimated regressions.

A second potential specification issue concerns my foreign aid variable. Different donors may attach different priorities to education expenditures, yet the variable used in Tables 2-5 aggregates aid from all different donors. As a result, it may cloud the effects which individual donors have on education policies. To consider this possibility I re-estimated the regressions while substituting net aid flows from the World Bank for the overall aid variable. This is based on the fact that the World Bank has been particularly active in attempting to push governments towards prioritizing education expenditures. Interestingly, the coefficient on the World Bank aid variable was always negative and significant in the OLS regressions and negative and generally significant in the fixed effects regressions. This suggests that the results with regard to aid and education spending cannot be attributed to the fact that I have aggregated aid from different sources.

I also investigated the possibility that the results presented above were influenced by outliers. To do this I re-estimated each regression and computed the $dfbeta$ statistic for the two electoral competition variables and for the aid variable. The $dfbeta$ statistic captures the influence which each individual point has on the estimation of the regression coefficient in question. Following common practice, I repeated each of these regressions while excluding observations for which the $abs(dfbeta) > 2/\sqrt{N}$ where N is the number of observations. In the OLS estimates the only significant change involved the coefficient on the "single-party" political competition variable which in regression 1 from Table 2 and 1 from Table 3 became smaller in magnitude and less significant. The coefficients on the "multiparty" political competition variable were significant and unchanged in magnitude in all cases. The coefficients on the aid variable were also largely unchanged. The results of the fixed effects estimates also remained largely unchanged with the following exceptions. In regression 2 from Table 3 the coefficient on the "multiparty" political

competition variable became less significant ($p=0.24$). In regression 2 from Table 5 neither of the competition variables nor the aid variable remained significant. On the whole, then, this exercise suggests that neither my general result that political competition is associated with higher public education spending and higher spending on primary education in particular, nor my results with regard to aid flows and education spending can be attributed to outliers.

As a final robustness issue, I considered whether the results reported in Tables 2-5 are affected by serial correlation of the error terms. This seems a plausible concern given that education spending is likely to change relatively gradually from year to year within a country, and my estimates do not include a lagged dependent variable. However, testing for serial correlation of the error terms in my regressions is complicated by the highly unbalanced panels that I used for the estimates. When I re-estimated the OLS regressions from Tables 2-5, including an AR1 term, the results with regard to the coefficients on “multiparty” political competition and overseas aid were largely unchanged. The coefficient on “single-party” political competition was generally less significant. When I re-estimated the fixed effects models while also including an AR1 term the results were essentially unchanged.

References

- Ake, Claude (1996), *Democracy and Development in Africa*, Brookings Institution.
- Appleton, Simon (2001), "Education and Poverty in Uganda", mimeo, University of Nottingham, UK.
- Baker, Bruce and Arnold Hughes (2000), "Democratic Outcomes in Commonwealth Africa", special issue of *Commonwealth and Comparative Politics*, vol.38, no.3, November.
- Baltagi, Badi (1995), *Econometrics of Panel Data*
- Bates, Robert (1981), *Markets and States in Tropical Africa*, University of California Press.
- Bates, Robert (1995), "Democratic Transition in Africa: A First Report on an Empirical Project", Development Discussion Paper no.514, Harvard Institute for International Development.
- Behrman, Jere and Mark Rosenzweig (1994), "Caveat Emptor: Cross-Country Data on Education and the Labor Force", *Journal of Development Economics*, vol.44, pp.147-171.
- Bratton, Michael and Nicolas van de Walle (1997), *Democratic Experiments in Africa: Regime*, Cambridge University Press.
- Devarajan, Shantayanan, Andrew Sunil Rajkumar, and Vinaya Swaroop (1999), "What Does Aid to Africa Finance", *World Bank Policy Research Working Paper*.
- Ferree, Karen and Smita Singh (1999), "Institutional Change and Economic Performance in Africa: 1970-1995".
- Furley, Oliver (2000), "Democratisation in Uganda", *Commonwealth and Comparative Politics*, vol.38, no.3.
- Lienert, Ian and Jitendra Modi (1997), "A Decade of Civil Service Reform in Sub-Saharan Africa", IMF Working Paper 97/179.
- Mingat, Alain and Bruno Suchaut (2000), *Les Systèmes Educatifs Africains: une Analyse Economique Comparative*, Edition De Boeck Université.
- Olson, Mancur (1965), *The Logic of Collective Action*, Harvard University Press.
- Pradhan, Sanjay (1996), "Evaluating Public Spending", *World Bank Discussion Papers*, no.323.
- Przeworski, Adam, Susan Stokes and Bernard Manin (1999), *Democracy, Accountability, and Representation*, Cambridge University Press.
- Reinikka, Ritva and Jakob Svensson (1997), "Do Budgets Really Matter? Evidence from Public Spending on Education and Health in Uganda", World Bank Policy Research Working Paper no.1926.
- UNESCO, *Statistical Yearbook*, Paris, various years.
- van de Walle, Nicolas (2001), *African Economies and the Politics of Permanent Crisis: 1979-1999*, Cambridge University Press.
- World Bank (2001), *A Chance to Learn: Knowledge and Finance for Education in Sub-Saharan Africa*, Washington D.C..

Table 1: Summary statistics on education spending

	Nobs	Mean	Within country stdev	Between country stdev	Min.	Max.
Government spending on education %GDP	324	4.12	0.86	1.91	0.37	10.3
Government spending on primary education % GDP	188	1.93	0.35	1.04	0.34	5.17
Govt spending on education as % of total spending	324	16.3	5.1	3.5	2.6	29.2
Govt spending on primary education as % of total spending	188	7.6	1.4	3.2	1.5	15.7

Figure 1: Trends in government spending on education
(African averages)

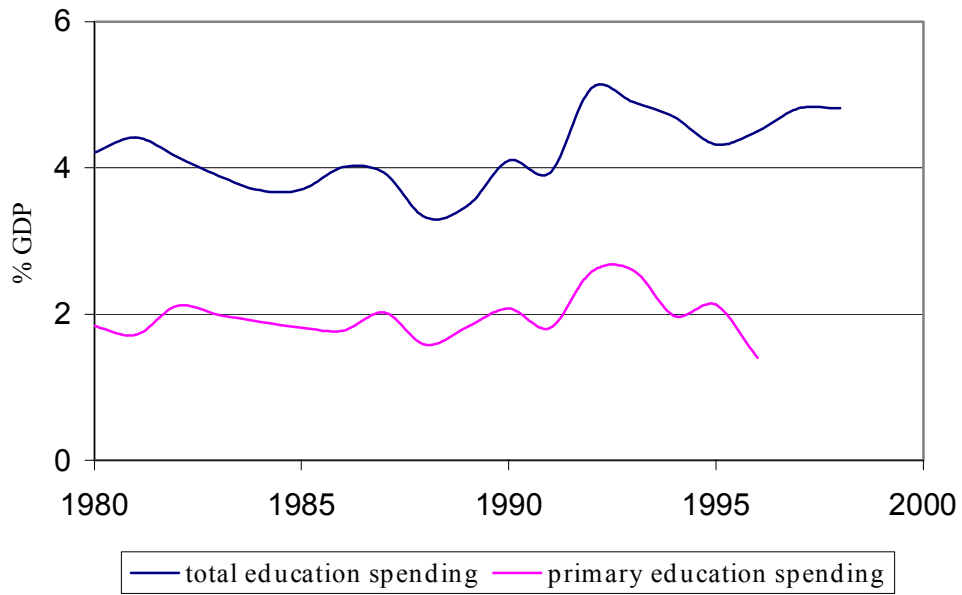
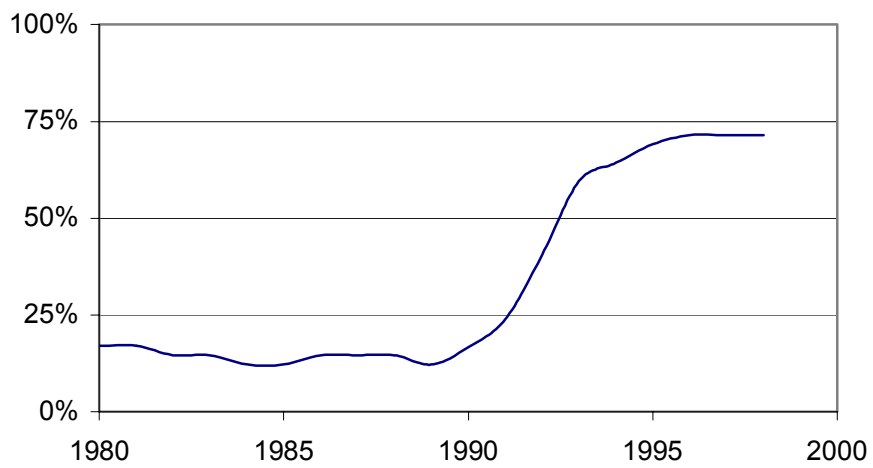


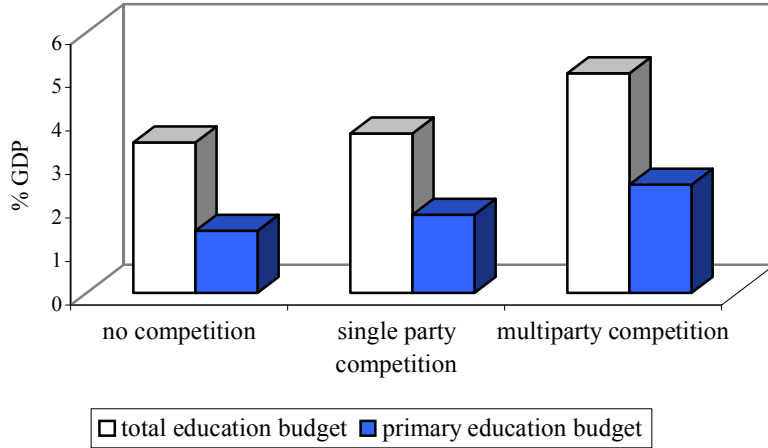
Figure 2: Trends in the openness of political competition

(Percent of countries where executive elected in multiparty competition)



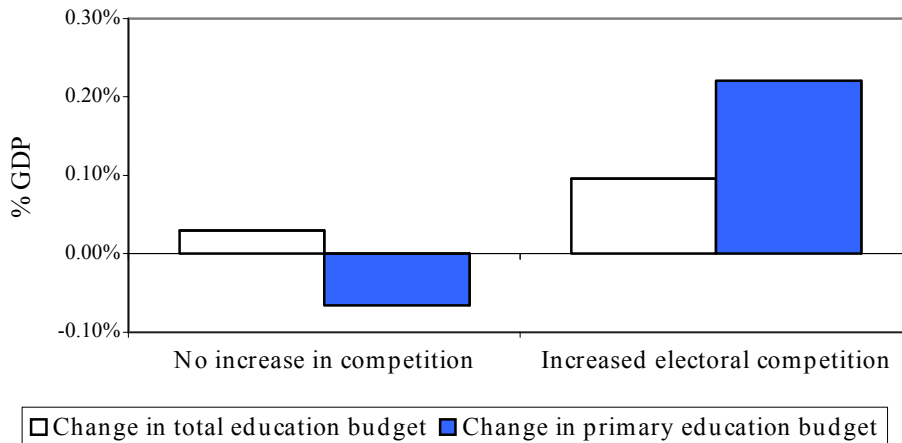
Note: Based on a sample of 42 countries

Figure 3: Electoral competition and education spending



Notes: average values based on a sample of 35 countries covering 1981-1998

Figure 4: Changes in electoral competition and changes in education spending: 1985-1991 vs. 1992-1998



Notes: median values. There were 9 countries within the sample for which electoral competition remained unchanged, 2 for which it declined, and 15 for which it increased.

Table 2: Electoral competition and the education budget I
 (Dependent variable: govt spending on education, % GDP)

	OLS	Fixed effects	IV- fixed effects
	(1)	(2)	(3)
Single-party competition	.286 (.250)	.789 (.216)	.781 (.204)
Multiparty competition	1.42 (.265)	.645 (.192)	.683 (.188)
Election year	-.179 (.184)	.076 (.097)	.068 (.092)
Election previous year	-.243 (.170)	-.043 (.096)	-.041 (.091)
Election next year	-.128 (.173)	.101 (.090)	.106 (.086)
Per capita GDP (log)	.903 (.223)	.211 (.149)	.201 (.141)
Aid (%GDP)	-.013 (.011)	-.025 (.009)	-.035 (.015)
Constant	-1.64 (1.48)	2.60 (0.91)	2.77 (0.89)
N=	324	324	324
R²	0.31	0.13	0.13
H₀:single-party=multiparty	p<0.01	p=0.46	p=0.61
overidentifying restrictions			p=0.38

Standard errors in parentheses. Regression (3) instruments for Aid using first four lagged differences.

Table 3: Electoral competition and the education budget II

(Dependent variable: % of total govt spending to education)

	OLS	Fixed effects	IV-fixed effects
	(1)	(2)	(3)
Single-party competition	1.14 (0.82)	3.20 (1.30)	3.19 (1.23)
Multiparty competition	4.73 (1.11)	3.84 (1.85)	3.89 (1.12)
Election year	-0.657 (.591)	-0.259 (.584)	-0.270 (.555)
Election previous year	-0.640 (.541)	-0.456 (.581)	-0.453 (.548)
Election next year	-0.490 (.522)	-0.118 (.541)	-0.111 (.512)
Per capita GDP (log)	1.11 (.380)	1.97 (0.89)	1.96 (0.84)
Aid (%GDP)	-0.188 (.032)	-0.102 (.055)	-0.116 (.088)
Constant	10.4 (2.63)	3.33 (5.50)	3.56 (5.34)
N=	324	324	324
R²	0.23	0.18	0.19
H₀:single-party=multiparty	p<0.01	p=0.59	p=0.54
overidentifying restrictions			p=0.89

Standard errors in parentheses. Regression (3) instruments for Aid using first four lagged differences.

Table 4: Electoral competition and primary education I

(Dependent variable: govt spending on primary education %GDP)

	OLS	Fixed effects	IV-fixed effects
	(1)	(2)	(3)
Single-party competition	.427 (.140)	.297 (.134)	.283 (.124)
Multiparty competition	.837 (.191)	.254 (.131)	.315 (.127)
Election year	-.006 (.123)	-.008 (.059)	-.023 (.055)
Election previous year	.176 (.119)	.005 (.056)	.007 (.052)
Election next year	.170 (.102)	.096 (.057)	.113 (.054)
Per capita GDP (log)	.450 (.096)	-.067 (.164)	-.079 (.152)
Aid (%GDP)	-.026 (.007)	-.011 (.005)	-.021 (.008)
Constant	-.973 (0.60)	2.25 (1.00)	2.44 (0.94)
N=	188	188	188
R²	0.39	0.09	0.17
H₀:single-party=multiparty	p=0.01	p=0.74	p=0.81
overidentifying restrictions			p=0.09

Standard errors in parentheses. Regression (3) instruments for Aid using first four lagged differences.

Table 5: Electoral competition and primary education II

(Dependent variable: % of total govt spending to primary schools)

	OLS	Fixed effects	IV-fixed effects
	(1)	(2)	(3)
Single-party competition	1.22 (0.52)	.901 (.522)	.857 (.482)
Multiparty competition	2.14 (0.54)	.714 (.512)	.905 (.493)
Election year	.031 (.409)	.036 (.228)	-.010 (.213)
Election previous year	.801 (.388)	.159 (.220)	.164 (.202)
Election next year	1.06 (0.35)	.378 (.222)	.431 (.208)
Per capita GDP (log)	.317 (.330)	-.741 (.641)	-.780 (.591)
Aid (%GDP)	-.171 (.029)	-.036 (.020)	-.069 (.031)
Constant	6.20 (2.21)	11.8 (3.91)	12.3 (3.63)
N=	188	188	188
R²	0.38	0.02	0.13
H₀:single-party=multiparty	p=0.07	p=0.72	p=0.92
Overidentifying restrictions			p=0.44

Standard errors in parentheses. Regression (3) instruments for Aid using first four lagged differences.