Democracy and Education: Evidence from the Southern African Development Community

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Abstract

I test the hypothesis that democracy in the Southern African Development Community (SADC) has had a positive effect on primary and secondary education during the 1980-2009 period. The results, based on panel time-series data and analysis, suggest that democracy, and the more representative governance that is associated with it, has played a positive role on quantity of education, and to a lesser extent on quality of education as well. The results are significant not only because democracy is in its infancy in the continent and to make it work is an aim in itself in Africa, but because education is an important characteristic of growing economies as the SADC's.

Keywords: Democracy, education, Africa.

JEL Classification: H52, I25, O11, O55.

"To put the hypothesis simply, educated people make good innovators, so that education speeds the process of technological diffusion." Richard Nelson and Edmund Phelps

I. Introduction

As well put by Nelson and Phelps (1966), an educated population have the ability of creating new technologies, which according to growth theory, Solow (1956) and Romer (1990), is a crucial determinant of economic growth and development. In addition, Becker, Hornung and Woessmann (2011) suggest that education was an important determinant of factory employment in the early phases of the German industrial revolution. Taking into account the recent economic growth spurt that the African continent has been experiencing, Pinkovskiy and Sala-i-Martin (2014), it cannot be emphasized enough the importance of understanding what determines education—a variable that is important for the creation of technologies and which facilitates diffusion of technologies and consequently technological catch up—to keep the recent African growth going.

Bearing the above in mind, I study the role of those (mostly young) democratic regimes in determining education in the Southern African Development Community (SADC), a community of countries created in 1980 that advocates the importance of "regional integration and democratic principles" as tools to "enhance the standard and quality of life" and to "achieve development and economic growth". Although with common goals, this community includes a diverse set of countries, *eg* with Angola and Mozambique presenting positive growth rates since the 1990s and with some double figures from 2004 onwards, with Botswana and Mauritius presenting positive growth since the 1980s, with South Africa presenting positive growth, although modest, since the end of the Apartheid in 1994, and with a country like Zimbabwe which presented negative growth rates from 1999 to 2009. More specifically, I use data from all fifteen SADC countries between 1980 and 2009, and panel time-series analysis (I use the Fixed Effects estimator to account for statistical endogeneity and het-

erogeneity and Fixed Effects with Instrumental Variables, *ie* globalisation and the end of the cold war provide contemporaneous external sources of variation to democracy, López-Córdova and Meissner (2008), Liu and Ornelas (2014), Dunning (2004) and Bates, Block, Fayad and Hoeffler (2012), to deal with reverse causality in thin panels) to study whether democracy played any role on education in the community.

In terms of the expected role played by democracy on education, on one hand one would argue that democracy, given its internal rationale of political competition and turnover, combined with the fact that southern Africa is a relatively poor region, would work as a redistributive device towards the median voter, Meltzer and Richard (1981). In this case, the political coalitions in power would try to buy out voters by provision of public goods—and education, for capturing the interests of workers and capitalists alike, tends to be a popular choice—Galor and Moav (2006).

On the other hand, others would argue that authoritarian regimes, *eg* the former Soviet Union and some of its satellites, China, and even South Africa during the Apartheid, have also invested in education over the years, presumably for ideological indoctrination, Lott (1999). Hence, it is not obviously true that democracies would invest in education more than other political regimes. However, bearing in mind the objectives of the SADC—"integration and democratic principles", "standard and quality of life" and "development and economic growth"—the importance of better understanding the role of democracy on education in a community of countries experiencing a growth spurt cannot be understated.

The results suggest that democracy has been a robust determinant of primary completion rates and also of secondary enrolment in the community (or quantity of education). Moreover, although less clear cut, the results suggest a positive relationship between democracy and the number of teachers per 100 pupils in secondary education (or quality of education). Furthermore, the results which take into account the external shocks affecting the community, *ie* globalisation and the end of the cold war, suggest that globalisation has played a significant role in making those young democracies of the SADC more responsive

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in increasing quantity of education and the end of the cold war has had the effect of making those democracies more efficient in terms of investing in quality of education as well.

All the same, it is fair to say that the internal incentive mechanisms of democracy, which in this case would work towards redistribution to the median voter, and in southern Africa the median voter is located towards the bottom of the income distribution, Acemoglu and Robinson (2000), are working reasonably well—in terms of provision of education—in the community. More practically, investing in education is a laudable redistributive aim in itself and also of economic importance since education is a characteristic of important objectives of the SADC, *ie* "development and economic growth", Galor and Moav (2006) and Becker, Hornung and Woessmann (2011), which can keep the current growth in the community going. In fact, Young (2012) argues that sub-Saharan Africa has witnessed since the mid 1990s a considerable increase in consumption of vital durables such as schooling, health and housing, which is on par with other developing regions and Pinkovskiy and Sala-i-Martin (2014) categorically state that "Africa is on time" in terms of achieving the Millennium Development Goal of reducing poverty.

In addition, the importance of acquiring a better understanding of the role of democracy on education is because democracy in Africa is in its infancy and there are a number of examples in history that suggest that young democracies can behave rather badly (in terms of macroeconomic performance), *eg* Germany in the 1920s, Sargent (1982), parts of sub-Saharan Africa in the 1960s, Bates, Coatsworth and Williamson (2007), and the South American democracies in the 1980s, Bittencourt (2012). Therefore, it cannot be emphasized enough the importance of better understanding the causes of democracy, Lipset (1959), and more importantly the role of democracy to a variable like education in a community of countries that emphasize the role of "regional integration and democratic principles" on "development and economic growth".

II. Some Background

The literature on the role of democracy on education has attracted the attention of economists and political scientists alike. Firstly, Brown (1999) uses a sample of poor countries, which includes some sub-Saharan African countries, between 1960 and 1987 to report that changes in democracy have a positive effect on primary school enrolment. In similar vein, Lake and Baum (2001) make use of a sample of 62 countries covering the period 1975-1993 to report that increases in democracy, taking place in young democracies, have increased secondary school enrolment.

On a slightly different vein, Acemoglu and Robinson (2000) advance a model which predicts that the extension of the democratic franchise taking place in Europe in the 19th century was an attempt at avoiding revolution. More importantly to my purposes, for them democracy is redistributive by nature, *ie* democracy has lead to an "extension of education to the masses", particularly in the UK and France. Following that lead, Tavares and Wacziarg (2001) use a sample of 65 countries between 1970 and 1989 to report that democracy plays a positive role on secondary education as well as Gallego (2010) who uses the number of native cultures before colonisation as a historical instrument for political decentralisation to report that democracy plays a positive role on primary education in a panel of former colonies.

On the other hand, Mulligan, Gil and Sala-i-Martin (2004) do not find evidence that democracy affects education spending in their sample of 142 countries between 1960 and 1990 nor do Aghion, Persson and Rouzet (2014) who find no evidence that democratic transitions play any role on primary education in their panel of countries. In addition, Galor and Moav (2006) argue that education in 19th-century England was extended to the masses before the extension of the democratic franchise, and Murtin and Wacziarg (2014) use a historical dataset (1870-2000) to suggest that the role of democracy on education is not conclusive.

Some case studies have been conducted on the subject, particularly on Latin America. Firstly, Kaufman and Segura-Ubiergo (2001) use a sample of 14 countries covering the period 1973-1997 to report that the democratic transition experienced by the region has had the

effect of increasing spending on education. In similar vein, Brown and Hunter (2004) use a panel of 17 countries between 1980 and 1997 to report that democracy has had a positive effect on preprimary and primary education spending in Latin America as well as Avelino, Brown and Hunter (2005) who use a sample of 19 countries between 1980 and 1999 to report similar results.

The literature on Africa is relatively thin and it comes mostly from political science and it includes Stasavage (2005) who uses a sample of 44 African democracies between 1980 and 1996 to report that those young democracies increased spending on primary education, and Harding and Stasavage (2014) who suggest that school attendance is higher in democracies than in non-democracies and they suggest that the abolition of school fees in democratic states plays an important role in increasing attendance.

In essence, although Acemoglu, Naidu, Restrepo and Robinson (2014) in their survey of the literature provide further evidence of a positive role of democracy on secondary education in a panel of 184 countries between 1960 and 2010, this (non-exhaustive) literature review suggests that there is no clear verdict about the role of democracy on education. Nevertheless, in a continent like Africa—where the median voter is located to the bottom of the income distribution—democracy, and the incentive mechanism and better governance that comes with it, has the potential of increasing provision of education, which is important for its own laudable redistributive sake and also because education is a variable, one way or another, associated with economic growth and development.

Hence, it is fair to say that this paper is a natural development of the previous literature on the subject. I conduct, to the best of my knowledge for the first time, a study of an important community of African countries—which share particular characteristics and common goals, *ie* development, economic growth, regional integration and democracy, and which also present their own institutional and developmental idiosyncrasies—that attempts to pinpoint in more detail the effects of democracy on education. I do that by taking advantage of more data and by dealing with particular econometric issues, statistical endogeneity, heterogeneity

and reverse causality (I take into account external contemporaneous shocks that southern Africa has experienced as sources of external variation to democracy, *ie* globalisation and the end of the cold war), which enables me to provide informative estimates and also to avoid unwarranted (pessimistic) generalisations about contemporaneous African development so that our knowledge of an idiosyncratic, and also diverse within, southern Africa is furthered.

III.   Empirical Analysis

A.   A Look at the Data

The dataset covers the period 1980-2009, and fifteen sub-Saharan African countries, namely Angola, Botswana, the Democratic Republic of the Congo, Lesotho, Madagascar, Mozambique, Mauritius, Malawi, Namibia, South Africa, Swaziland, Seychelles, Tanzania, Zambia and Zimbabwe. To illustrate the importance of these countries in the continental context, these fifteen countries accounted for approximately 52% of the total GDP in sub-Saharan Africa in 2009.

The first variable for education, $PRIMARY$, is defined as primary completion rates as percentage of the relevant age group and the data are provided by the World Bank. I also use secondary school enrolment as percentage of the relevant age group, $SECONDARY$, and the data are provided by the World Bank as well. Both variables account for different sets of skills needed by growing economies such as the SADC's, *eg* workers with primary education to work in services and hospitality and relatively more skilled workers with secondary education to operate more sophisticated technologies in services and manufacturing. Both variables also lead to higher productivity and to a general increase in the pool of educated workers in those economies, Galor and Moav (2006). In addition, I use the number of teachers per 100 pupils in secondary education, $TEACHERS$, which, as imperfectly as it is, captures quality of education and the data are also provided by the World Bank.

For democracy I use the popular and normalised, so that it ranges from zero to one, polity2 variable (POL) from the Polity IV database. The POL variable is the difference

between the $DEMOC$ and $AUTOC$ indicators and these indicators contain information on the competitiveness and openness of executive recruitment, competitiveness of political participation and constraints on the executive. The POL variable captures the fact that some of the countries in the community transitioned from dictatorship to democracy more than once in their recent history, and also that some countries presented hybrid regime characteristics, *eg* South Africa during the Apartheid, which precludes the use of dichotomous regime classifications *à la* Papaioannou and Siourounis (2008).

Given data availability, the control variables used are standard in the literature and they include real income (GDP), which is provided by the World Bank, and it is expected that higher income leads to more education, Gallego (2010) and Murtin and Wacziarg (2014). Secondly, a proxy for government, the ratio of final government consumption expenditure to GDP (GOV), which come from the World Bank and IMF files. Government expenditure might be channeled towards education and increase completion rates, secondary enrolment and number of teachers per pupils, Kaufman and Segura-Ubiergo (2001).

Furthermore, I include a variable for foreign aid, the official development assistance to GDP (AID), which is provided by the World Bank. It is expected that aid can play a positive effect on education, Dreher, Nunnenkamp and Thiele (2008). Lastly, I use a measure of financial development, the ratio of the liquid liabilities to GDP ($M2$), from the World Bank and it is expected that more access to finance might facilitate access to education, Galor and Zeira (1993).

In Figure One I plot the averaged-data of education and democracy and it depicts the reduction in primary completion rates and in the number of teachers per 100 pupils in secondary education in the 1980s (first and third panels), but it also depicts a consistent increase in secondary enrolment (second panel). In addition, in the 1980s democracy was at its lowest (fourth panel). However, from the 1990s onwards the primary completion rates, secondary enrolment and number of teachers per pupils saw an increase, from 60% primary completion rates and less than 30% secondary enrolment to approximately 80% completion

rates and 55% of the corresponding population age group enrolled in secondary school, which were matched by a sharp increase in democracy in the community.
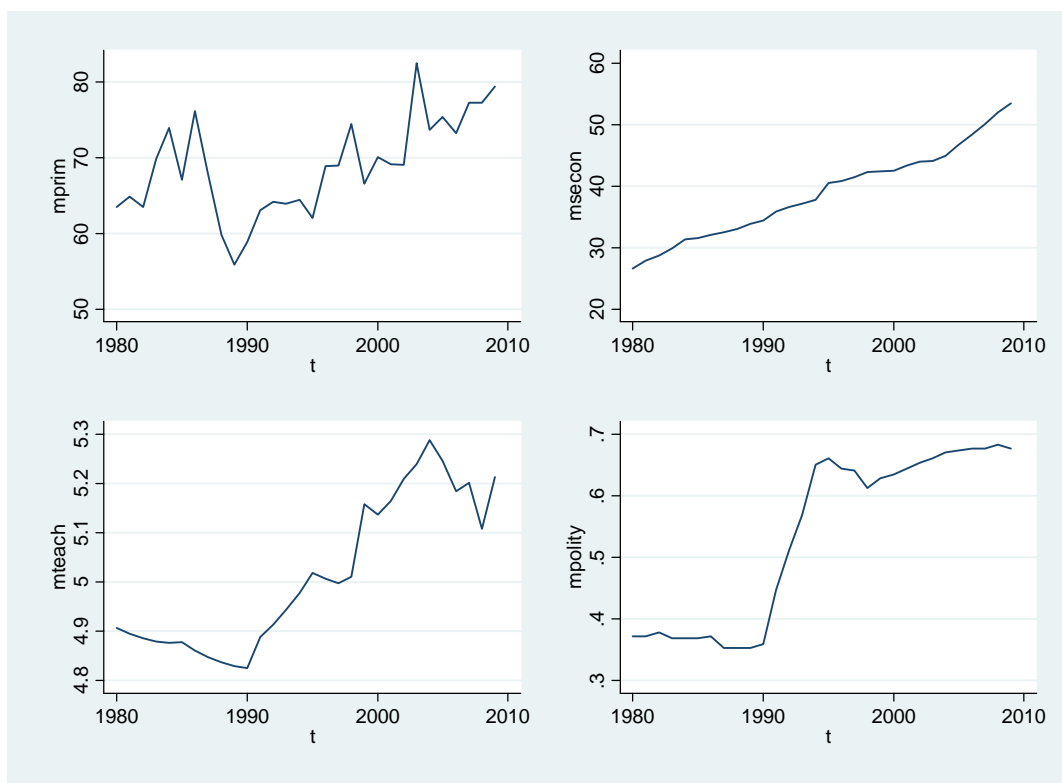

Figure 1: Education and Democracy, SADC, 1980-2009. Sources: World Bank and Polity IV.

Table One presents the descriptive statistics and in the second panel the correlation matrix of the variables used (in logs). Some notable features: the countries faring badly in terms of education provision in the SADC are Mozambique ($PRIMARY$ and $TEACHERS$) and Tanzania ($SECONDARY$). In addition, Mozambique scores low in the democracy index as well. On the other hand, Seychelles is the country doing best in all education variables and it scores high in the democracy index as well. Furthermore, all variables for education are positively correlated with democracy and statistically significant at the 5% level. Some of the control variables present the expected signs too, *ie* government consumption and the liquid liabilities are positively and mostly significantly correlated with democracy. On the other hand, income presents mostly negative and not significant correlations with democracy

and the foreign aid correlations are negative.

Table 1: Descriptive Statistics and the Correlation Matrix: SADC, 1980-2009.

Variables	Obs	Ave	Std Dev	Min	Max	Source
PRIMARY	291	69.23	25.73	14.02	127.47	World Bank
SECONDARY	450	38.86	28.00	3.04	117.85	World Bank
TEACHERS	450	5.01	1.17	2.64	7.96	World Bank
POL	450	.534	.334	0	.952	Polity IV
GDP	433	7.31	2.03	1.46	1.48	World Bank
GOV	450	19.85	9.48	2.12	55.39	World Bank
AID	421	10.13	11.33	-.25	95.48	World Bank
M2	405	32.53	21.14	.46	120.46	World Bank

	PRIMARY	SECONDARY	TEACHERS	POL	GDP	GOV	AID	M2
PRIMARY	1							
SECONDARY	0.68*	1						
TEACHERS	0.53*	0.27*	1					
POL	0.40*	0.40*	0.17*	1				
GDP	0.07	-0.00	-0.28*	0.18*	1			
GOV	0.40*	0.20*	0.24*	0.06	0.20*	1		
AID	-0.57*	-0.52*	-0.13*	-0.18*	-0.01	-0.23*	1	
M2	0.53*	0.50*	0.02	0.32*	0.44*	0.33*	-0.45*	1

* represents significance at the 5% level.

Figure Two depicts the simple OLS regression lines between democracy and the education variables. The relationships are all positive and statistically significant, which suggest that there is an economic relationship between democracy and education in the panel, or that democracy is playing a redistributive role towards widening access to and in improving quality of education in the community.
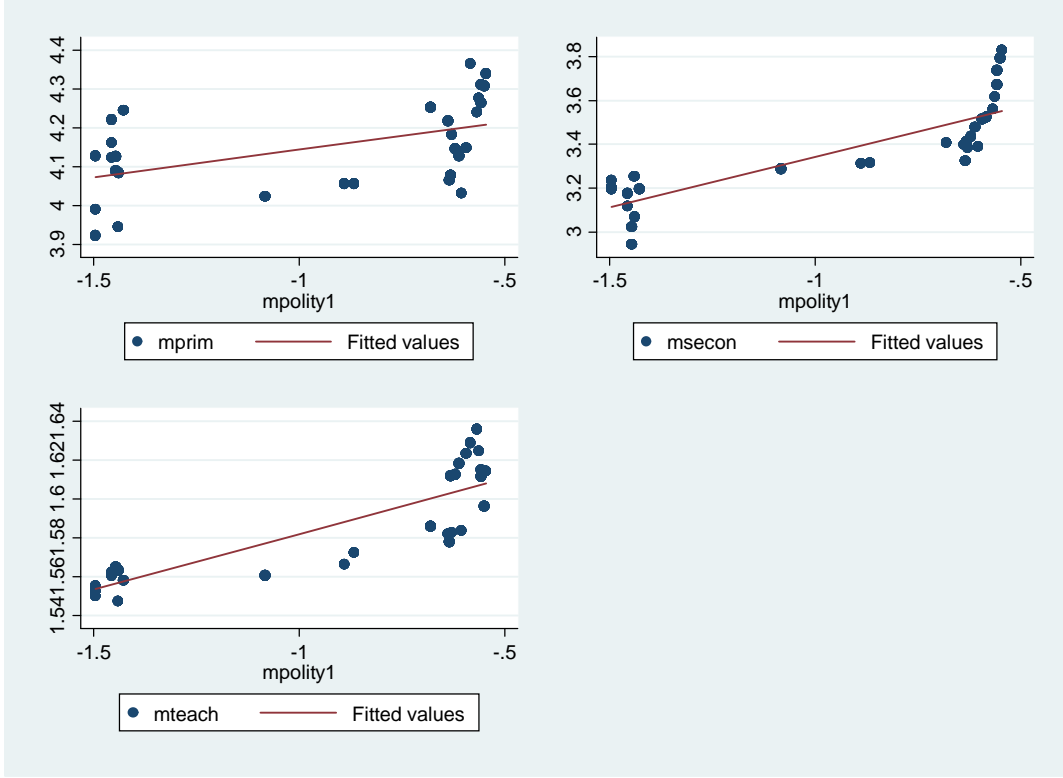
Figure 2: Simple OLS Regression Lines, Democracy and Education, SADC, 1980-2009. Sources: World Bank and Polity IV.

B. Empirical Strategy

I estimate equations with different pooled estimators, the baseline Pooled OLS (POLS), the one- and two-way Fixed Effects (FE) and Fixed Effects with Instrumental Variables (FE-IV), so that different econometric issues are dealt with and informative estimates provided. The two-way dynamic FE estimated equation is as follows,

$$(1)\quad EDUC_{it} = \alpha_i + \lambda_t + \beta POL_{it-1} + \gamma GDP_{it} + \delta GOV_{it} + \epsilon AID_{it} + \varepsilon M2_{it} + \zeta EDUC_{it-1} + \upsilon_{it}$$

where $EDUC$ is either primary completion or secondary enrolment rates or number of teachers per 100 pupils in secondary education, POL is the political regime variable, GDP is real income, GOV is the share of final government consumption to GDP, AID is foreign aid to

GDP, $M2$ is the liquid liabilities to GDP and $EDUC_{it-1}$ is the lagged-dependent variable.

Firstly, although some of the variables are either indices or ratios and bounded within closed intervals, *eg* the democracy and education variables, I also evoke Phillips and Moon (1999) result which suggests that the issue of spurious regressions is less of a problem in panels because of the averaging taking place in panel estimators, which reduces the noise coming from such regressions.

Secondly, the issue of statistical endogeneity, which might arise because the unobserved individual effects which are nested in the error term might be correlated to the regressors, and heterogeneity of intercepts, are dealt with by the one- and two-way FE with clustered robust standard errors estimator, which provides consistent estimates in models when $T \to \infty$, Smith and Fuertes (2010). In addition, Judson and Owen (1999) argue that when $T = 30$, the case here, the Nickell bias present in short T dynamic panels approaches zero, which further justifies the use of the FE estimator in this context.

Essentially, although those countries shared some political and economic transitions in their recent history, which makes the homogeneity of slopes plausible, the heterogeneous intercepts of the FE estimator account for the fact that some of those countries present different levels of economic and political development, *eg* Botswana, Mauritius and South Africa are relatively richer and more politically stable than most other countries in the community, and the time fixed effects account for unexpected events affecting education in some of the countries of the community over time.

Thirdly, some would argue that reverse causality is a possibility or that education might determine democracy, Glaeser, Ponzetto and Shleifer (2007), and Murtin and Wacziarg (2014). I therefore use the FE-IV two-stage Least Squares estimator and the estimates provided by this estimator are asymptotically consistent and efficient as $T \to \infty$, and it retains the time series consistency even if the instrument set is only predetermined, Arellano (2003).

With the assumption that deeper lags of democracy are uncorrelated with the error

term ($E(democ_{it-n}v_{it} = 0)$) but correlated with contemporaneous democracy in mind, Anderson and Hsiao (1981), I use the second lag of democracy as a baseline internal identifying instrument for contemporaneous democracy. Then I make use of a variable for economic globalisation, $GLOBAL$, provided by Dreher (2006), which takes into account trade to GDP and, *eg* foreign direct and portfolio investment, income payments to foreign nationals, import barriers, tariff rates, taxes on international trade and capital account restrictions. Lastly, I use a dummy for the end of the cold war, $COLD$, from 1990 onwards, with zeros elsewhere to account for the end of the ideological conflict between the West and the former Soviet Union. In essence, differently from Gallego (2010) who uses a historical instrument for democracy, I use contemporaneous external shocks that the community has experienced from the 1990s onwards as external sources of variation to democracy.

What is expected of these instruments? Firstly, democracy tends to be persistent over time and a positive effect of lagged democracy on contemporaneous democracy is expected, Barro (1999). Secondly, it is expected that globalisation, or more competition in goods and services, plays a positive role on democracy either by strengthening the idea of competition, but in the political system, López-Córdova and Meissner (2008), or by reducing protectionist rents which are usually appropriated by dictators and consequently by reducing the survival rates of dictatorships, Liu and Ornelas (2014). Thirdly, it is expected that the end of the cold war is positively associated with democracy, *ie* with the collapse of the Soviet Union and the end of ideological (and military) conflict funded by either side, so common in Africa after independence, democracy would stabilise and mature in the community. To put it another way, with the end of the cold war Western countries have more say, or "credible commitment", in terms of imposing democratic reforms, and even democratic transitions on former socialist countries, since, with the collapse of the Soviet Union, those developing countries have less room for bargaining with different ideological sides, Dunning (2004).

In addition, with respect to exclusion restrictions of my instruments, globalisation and the end of the cold war affect education through the political regime characteristics, in this

case democracy, *ie* education is a public good and public goods are provided by governments and governments behave in accordance to the political regime in place, *eg* in this case more or less of democracy[1]. Hence, it is plausible to assume that the instruments are related to education, but by their effect on democracy. To illustrate, Figure Three, first panel, depicts the evolution of economic globalisation in the community and its consistent increase, particularly from the 1990s onwards, over time. The second panel depicts the simple OLS regression line between globalisation and democracy, and it displays, as expected, a positive economic relationship between both variables.
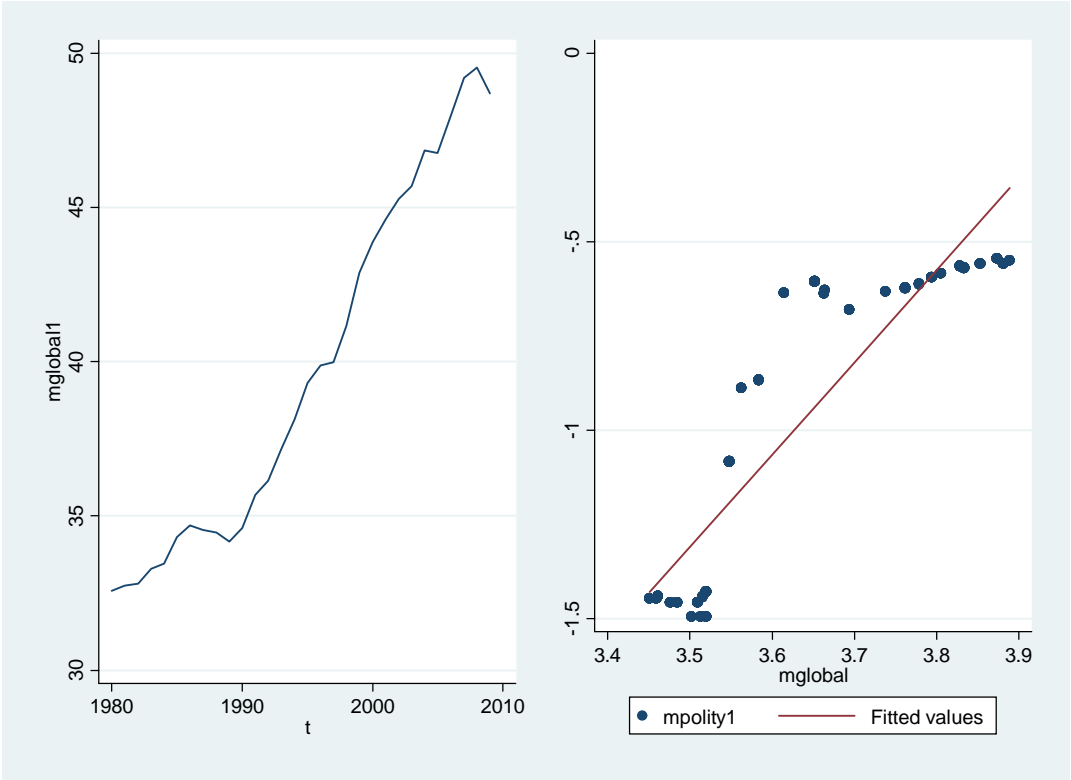

Figure 3: Globalisation and the simple OLS Regression Line between Globalisation and Democracy, SADC, 1980-2009. Sources: Dreher (2006) and Polity IV.

C. Results and Discussion

In Table 2 I report the POLS and the one- and two-way FE estimates of democracy on education. In the first panel I report baseline estimates with only democracy on the

right-hand side and in the second panel, for robustness, I report dynamic estimates which include the control variables as well.

In regressions 1, 2, 7 and 8 I use the primary completion rates and the POL estimates are positive and mostly statistically significant. In addition, in regressions 3, 4, 9 and 10 I use secondary enrolment and the POL estimates are all positive and statistically significant. In regressions 5, 6, 11 and 12 I use the number of teachers per 100 pupils in secondary education and the POL estimates, although positive and statistically significant in the first panel, do not present statistically significant estimates when I include the control variables in the second panel.

About the controls in the second panel: the GDP estimates are mostly positive, and although only two out of six are significant, they suggest a positive effect on primary and secondary education. Government consumption presents mostly positive estimates as well, however they are not wholly significant. Foreign aid and finance present estimates which are not wholly significant either.

Table 2: Pooled OLS and Fixed Effects Estimates of Democracy on Education, SADC, 1980-2009.

	(1) PRIM	(2) PRIM	(3) SEC	(4) SEC	(5) TEACH	(6) TEACH
POL	.181 (8.09)	.082 (1.21)	.354 (9.61)	.148 (3.71)	.042 (3.65)	.052 (2.35)
R^2	0.19	0.19	0.17	0.18	0.02	0.03
country effects		yes		yes		yes
SE clustered	yes	yes	yes	yes	yes	yes
	(7) PRIM	(8) PRIM	(9) SEC	(10) SEC	(11) TEACH	(12) TEACH
POL	.029 (2.28)	.162 (2.05)	.033 (2.83)	.053 (1.78)	.004 (1.39)	.026 (0.95)
GDP	.052 (1.45)	.412 (2.09)	.047 (1.28)	.700 (4.11)	.006 (0.55)	-.050 (-0.43)
GOV	.042 (2.55)	.146 (1.56)	.037 (1.12)	.142 (1.37)	-.000 (-0.09)	-.008 (-0.16)
AID	.028 (2.40)	.034 (0.71)	-.000 (-0.05)	.062 (1.29)	-.004 (-0.90)	-.002 (-0.13)
M2	.064 (4.56)	.092 (1.62)	.012 (0.66)	-.049 (-0.80)	-.000 (-0.08)	.010 (0.24)
$EDUC_{-1}$	.846 (14.78)		.893 (10.75)		.877 (31.55)	
R^2	0.62	0.01	0.82	0.00	0.91	0.07
country effects	yes	yes	yes	yes	yes	yes
time effects		yes		yes		yes
SE clustered	yes	yes	yes	yes	yes	yes

T-ratios in parentheses. Number of observations: $NT = 450$.

In Tables 3 and 4 I report the FE-IV estimates. In Table 3 POL is being instrumented by its own lag. The POL estimates are all positive and mostly significant. In Table 4 POL is being instrumented by $COLD$ and $GLOBAL$ and since I use each instrument in turn, all estimated systems are just identified. In the simple regressions in the first panel, all POL estimates are positive and significant. In the second panel, in regressions 26, 28 and 30, POL is being instrumented by $GLOBAL$ and democracy is positively and significantly associated with primary and secondary education (or quantity of education). In contrast, in regression 29, where POL is instrumented by $COLD$, democracy has a positive and significant effect on the number of teachers per pupils (or quality of education).

These different effects on different variables, depending on which instrumented is used, suggest that with the end of the cold war, the young democracies of the SADC had to behave more responsibly and started investing more in quality of education ($TEACHERS$), instead of only in quantity ($PRIMARY$ and $SECONDARY$), Dunning (2004). To put it another way, when democracy is instrumented with globalisation, democracy plays a positive role on quantity of education, but when it is instrumented by the end of the cold war, then democracy plays a positive role in providing quality of education, which suggests that with the end of the cold war those young democracies had less room for ideological bargaining with different sides (there was no Soviet Union anymore) and had to become more efficient in terms of investing in quality of education as well.

About the controls: there is some evidence suggesting an income effect on primary and secondary education, but the evidence is not strong. The effect of GOV is positive and sometimes significant on primary and secondary education, but overall the evidence is not strong either. The same with $M2$, positive estimates on primary and secondary education, but not strong. AID presents even less convincing estimates.

Lastly, the instruments are consistent with prior expectations (reported at the bottom of all panels), *ie* lagged democracy (by being persistent), globalisation (by strengthening the idea of competition in the political system or by reducing the survival rates of dictatorships), and the end of the cold war (either by allowing those young democracies to mature or by forcing those countries aligned with the former Soviet Union to transition to democracy) present positive and significant effects on democracy. The F test in the first-stage regressions are all statistically significant as well, which minimise the issue of weak instruments (the complete first-stage regressions are available on request).

Table 3: Fixed Effects with Instrumental Variables Estimates, SADC, 1980-2009.

	PRIM (13)	PRIM (14)	SEC (15)	SEC (16)	TEACH (17)	TEACH (18)
POL	.090 (4.86)	.026 (1.84)	.164 (7.98)	.028 (4.54)	.054 (7.83)	.003 (0.77)
GDP		.068 (1.94)		.021 (0.92)		.005 (0.54)
GOV		.042 (1.47)		.033 (2.06)		-.001 (-0.12)
AID		.032 (2.39)		.003 (0.48)		-.004 (-1.04)
M2		.058 (1.82)		.020 (1.67)		-.001 (-0.22)
$EDUC_{-1}$		.849 (20.80)		.951 (45.37)		.882 (34.60)
R^2	0.20	0.52	0.17	0.95	0.02	0.93
IV (POL_{-2})	.943 (46.27)	.917 (24.59)	.930 (54.90)	.904 (41.72)	.930 (54.90)	.886 (38.82)
F test$_{iv}$	2140	212.40	3013	400.40	3013	401.72

T-ratios in parentheses. Number of observations: $NT = 450$.

Table 4: Fixed Effects with Instrumental Variables Estimates, SADC, 1980-2009.

	PRIM (19)	PRIM (20)	SEC (21)	SEC (22)	TEACH (23)	TEACH (24)
POL	.078 (3.01)	.156 (5.08)	.343 (10.05)	.470 (9.41)	.050 (4.88)	.045 (3.58)
R^2	0.19	0.19	0.17	0.17	0.02	0.02
IV (COLD)	1.07 (14.23)		.955 (16.24)		.955 (16.24)	
IV (GLOBAL)		2.78 (11.42)		2.32 (11.38)		2.32 (11.38)
F test$_{iv}$	202.41	130.35	263.73	129.58	263.73	129.58
	PRIM (25)	PRIM (26)	SEC (27)	SEC (28)	TEACH (29)	TEACH (30)
POL	.007 (0.31)	.074 (1.83)	-.005 (-0.54)	.051 (2.95)	.016 (2.30)	-.006 (-0.59)
GDP	.093 (2.20)	.004 (0.08)	.049 (1.97)	.002 (0.08)	-.007 (-0.57)	.015 (1.05)
GOV	.038 (1.32)	.051 (1.70)	.014 (0.83)	.043 (2.35)	.003 (0.36)	-.005 (-0.47)
AID	.036 (2.57)	.021 (1.35)	.011 (1.42)	-.001 (-0.21)	-.007 (-1.54)	-.002 (-0.56)
M2	.035 (0.91)	.117 (2.07)	-.001 (-0.10)	.035 (2.20)	.007 (0.84)	-.007 (-0.78)
EDUC$_{-1}$	.865 (19.77)	.808 (15.36)	.968 (43.16)	.941 (41.17)	.850 (28.80)	.905 (24.66)
R^2	0.37	0.91	0.83	0.98	0.93	0.77
IV (COLD)	.957 (8.99)		1.07 (12.90)		.967 (11.26)	
IV (GLOBAL)		1.79 (4.56)		2.11 (6.55)		1.95 (6.40)
F test$_{iv}$	51.36	32.91	54.17	26.98	58.47	37.09

T-ratios in parentheses. Number of observations: $NT = 450$.

In a nutshell, democracy in the SADC has been positively associated with primary completion and secondary enrolment rates, and also with the number of teachers per pupils, Gallego (2010). To put the above estimates in perspective: the normalised index for democracy in the Democratic Republic of the Congo in 1992 was .476 and .714 in 2009, a 50% change in a matter of 17 years. Using the estimate in Table 4, regression 26, second panel, for every 10% increase in democracy, which is a rather conservative assumption given the example of the DRC, there is a .74% increase in primary completion rates in the community. These results, in a community where the median voter is located to the bottom of

the income distribution, provide encouraging news for the redistributive role of democracy, the political competition that is usually associated with it and the better governance that it tends to accompany it, Acemoglu and Robinson (2000), and also because human capital (at all levels) is an important characteristic of economic growth and development in general and specifically in growing economies such as SADC's[2], Tavares and Wacziarg (2001), Galor and Moav (2006) and Becker, Hornung and Woessmann (2011).

In addition, democracy, better governance, education and development are objectives that the SADC aim to achieve, so, the results presented above bode well with its own objectives. Furthermore, the results, although not comparable, are more in line with the "African Growth Miracle", Young (2012), and with the "Africa is on Time", Pinkovskiy and Sala-i-Martin (2014), than with more pessimistic readings of contemporaneous sub-Saharan African development that suggest that Africa "remain mired in a Malthusian crisis of high mortality, high fertility, and rapid population growth", Conley, McCord, and Sachs (2007).

About the controls: overall the control variables do not present wholly coherent estimates. However, when looking at the GOV estimates in detail, one can argue that there is some evidence, from regressions (16) and (28), suggesting some positive effect of GOV on secondary education. Perhaps one way of interpreting these not conclusive GOV estimates is that the variable democracy itself is the one capturing provision of education in the community. The variable for financial development displays, when using the FE-IV estimator and $GLOBAL$ as the instrument, estimates that suggest that access to finance might play a role in facilitating access to primary and secondary education, Galor and Zeira (1993). Although not entirely comparable, these not conclusive estimates are not in contrast to Avelino, Brown and Hunter (2005) who use a variable for financial openness to report no significant effect of finance on education in Latin America either. A more thorough study on the role of financial development with data on credit to the private sector on education would be a natural extension to this paper.

In contrast to Gallego (2010) and Murtin and Wacziarg (2014) the control GDP does

not present wholly coherent estimates at this stage of development in the community. Although the community have countries with fairly developed services and industrial sectors, *eg* Botswana, Mauritius and South Africa, the non-result for income might be because some of the countries in the sample are still relatively poor and with incipient modern economic sectors, *eg* the Democratic Republic of the Congo, and it is plausible that income is going into other more pressing activities. Moreover, AID does not present coherent estimates either, which is in contrast to Dreher, Nunnenkamp and Thiele (2008). However, Stasavage (2005) does not report positive AID effects on primary education in Africa either. The subject of foreign aid is also of interest to some countries in the community and it deserves more attention.

The first-stage estimates highlight the positive roles of globalisation (or economic liberalisation) and the end of the cold war on democracy and indirectly on education in the community, López-Córdova and Meissner (2008) and Dunning (2004). In fact, the SADC, created in 1980 to foster regional integration, preceded in ten years the latest wave of democratisation in the community, Liu and Ornelas (2014), which starts in the 1990s. The globalisation effect on democracy is also consistent with Giavazzi and Tabellini (2005) who suggest that countries that liberalise their economies first tend to become more efficient democracies (in terms of policies) and with Dunning (2004) who suggest that the end of the cold war has had the effect of making democracies more efficient, in this case in terms of investing on quality of education. Needless to say that the first-stage estimates do not in any way invalidate the importance of historical factors affecting the development of Africa, but rather highlight the combined role played by contemporaneous external shocks such as the economic liberalisation taking place since the 1990s and the end of the cold war to an important variable such as political liberalisation and its effect on education in the community.

IV. Final Remarks

Using a dataset covering the period 1980-2009, I have studied the role of democracy in determining primary completion rates, secondary school enrolment and the number of teachers per 100 pupils in secondary schools in a panel of sub-Saharan African countries. The results suggest that democracy has had a positive and significant effect on quantity of education, and to a lesser extent on quality of education as well, in the SADC. More specifically, democracy proved to be a robust determinant of education, which highlights its redistributive role and, to a lesser extent, also its indirect role in determining economic prosperity in the community.

The quality of the evidence is to a certain extent boosted because I deal with important empirical issues, such as statistical endogeneity and heterogeneity bias, and also because I make use of contemporaneous external shocks, *ie* globalisation and the end of the cold war, affecting the community to deal with reverse causality in relatively thin panels. All in all, the evidence suggests that, when combined, the latest wave of globalisation and the end of the cold war have played, by their effect on democracy, an important role on education.

To conclude, the SADC experience is informative firstly because it encapsulates a number of countries, which no doubt share important characteristics and goals, but which also have their own idiosyncrasies. Secondly, democracy in the community is in its infancy and since there are never-ending waves of democratisation affecting different regions of the world—some of which are successful, some of which are not, *eg* the first wave of democratisation in sub-Saharan Africa in the 1960s—the study of how young democracies behave is of particular importance. Finally, understanding what affects education is important because education is a laudable aim in its own and also because, as well put by Nelson and Phelps (1966), education is an important determinant of growth, development and consequently prosperity in a globalised world.

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Notes

[1] Alternatively, Rodrik (1998) argues that more open economies tend to have larger governments, in terms of government expenditure in education to GDP, because governments provide insurance against external risk. However, his regressions with a sub-Saharan Africa dummy variable are not wholly significant, which do not invalidate the predictions by López-Córdova and Meissner (2008) and Liu and Ornelas (2014) of the importance of globalisation on democracy instead.

[2] I have also tried different specifications, *eg* with deeper lags for democracy on the right-hand side. The results are similar to the ones reported above. Moreover, I tested for a non-linear relationship, however at this stage there is no evidence that those young democracies of the SADC are to reach a plateau (as more mature societies have) in terms of investment in education. Results are available on request.