



The Impact of Political Competition on Economic Growth: Evidence from Municipalities in South Africa

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The Impact of Political Competition on Economic Growth: Evidence from Municipalities in South Africa

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Abstract

This paper examines the impact of political competition on economic growth. Using results from the 1994 and 1999 elections I show that municipalities with a decisive vote either for or against the dominant national party have grown faster than municipalities with more voter competition amongst various political parties. I show that in democracies, governments with more freedom to make decisions and less threat from opposition political parties are associated with faster economic growth and improvement in supply of some public goods.

Keywords: Political Competition; Economic Growth; Democracy; Voting Behavior

Classification Numbers: P16, O47, D72.

1 Introduction

Many authors have attempted to study the relationship between political systems and economic growth. The studies usually examine varying degrees of democracy and autocracy and the effect of the political system on subsequent growth. Although there is no consensus,

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the literature seems to suggest that very high economic growth rates are associated with autocracies. Sachs (2005) and Collier (2009) for instance argue that democracy is not helpful for economic development. Kelsall and Booth (2013) and Booth (2012) also argue that multi party electoral democracies are more likely to experience slower growth through weaker governance. Jones and Olken (2005) argue that democracies make it difficult for successful economic policies, such as those of Lee-Kwan Yew in Singapore or Deng Xiaoping in China, to be implemented. Although some studies argue for a positive effect of democracy on economic growth, the argument in favor of more autocratic regimes seems to center around strong political leadership. La Porta, Lopez de Silanes, and Shleifer (2004) for example argue that many of the countries that managed to get out of poverty since 1960 were autocratic regimes. They argue that the choices made by dictators have allowed some poor countries emerge from poverty. In essence these studies argue that the freedom of autocratic leaders to make tough choices, if they choose to, gives autocratic regimes an advantage. However the freedom to make tough decisions and the political system are not necessarily intertwined. It is possible to have relatively weak autocratic regimes which do not have the freedom to make long term decisions. On the other hand it is also possible to have strong political regimes in democracies that have the relative freedom to make tough decisions without the threat of being voted out.

In this paper I examine the effect of the freedom to make decisions without obstruction from political actors, here on referred to as political competition, on economic growth in a democracy. Using election results from municipalities across South Africa, I estimate the relationship between political competition and economic growth. I make the assumption that municipalities with more evenly distributed votes between the dominant political party and opposition parties face more restrictions on decision making. Examining the effect of political competition across municipalities in South Africa allows me to isolate some of the effects of having different types of political institutions. Municipalities across South Africa are all democratic and all face the same systems of checks and balances, the threat

of unconstitutional regime changes are virtually nonexistent, there is a reasonable amount of individual and press freedoms that apply across municipalities, and the rules regarding accountability are relatively uniform across all municipalities. I find that in municipalities in South Africa, a higher level of political competition is associated with slower growth. I use election results in previous elections as instruments to show that this result is at least partly causal. Finally I show that higher levels of political competition are associated with slower improvement in the provision of public goods across South Africa.

2 Background

Although there is no consensus on the impacts of democracy and autocracy on economic growth, episodes of high growth in some countries are often associated with autocratic regimes. Deng Xiaoping in China, Lee Kuan Yew in Singapore and Paul Kagame in Rwanda are often touted as examples of cases where autocratic regimes have a successfully implemented growth miracles. Olson (2000) for example argues that autocratic regimes can produce faster economic growth given some conditions, such as the expectation of a long tenure. Almeida and Ferreira (2002) test some of the arguments of Olson (2000) and find that the best performers are more likely to be autocracies. Although they show that the worst are likely to be autocracies as well. Glaeser, La Porta, Lopez de Silanes, and Shleifer (2004) also find that poor countries that get out of poverty tend to be led by dictators. Findings by Acemoglu (2003) and Yang (2008) also support the argument that countries with periods of high growth rates are often associated with autocracies. The argument in favor of these autocratic regimes is that leaders have more discretionary power to implement either good or bad policies. This discretionary power is however limited in democracies where leaders are accountable to the electorate and face the constant threat of removal. According to Jones and Olken (2005), "Democracies may be able to prevent the disastrous economic policies of Robert Mugabe in Zimbabwe or Samora Machel in Mozambique; however, they

might also have constrained the successful economic policies of Lee-Kwan Yew in Singapore or Deng Xiaoping in China”.

However the discretionary power to make decisions is not necessarily fixed given the type of political system. The same political dynamics might also occur internally in democracies. Democracies where leaders, for whatever reason have guaranteed votes, have more discretion to implement policies which may be unpopular but ultimately good for growth. On the other hand in areas where votes are more evenly distributed among political parties, the threat of losing power serves as a deterrent to implementing unpopular growth enhancing policies. The level of political competition within democracies can perhaps be seen as proxy for the freedom to make tough choices without electoral consequences. In the context of a democratic society, regions with strong victories for a specific party are in some sense freer to make tough policy decisions. Regions dominated by a single party may also face less obstructions from opposition parties, obstructions which may hinder the policy making process and the provision of public goods. These obstructions, and the threat of obstruction, may ultimately lead to faster growth in regions with strong victories for single political parties compared with regions where multiple parties win significant votes. The same strong support for specific political parties can also have negative effects. As is the case with autocratic regimes, governments with discretionary powers can also pursue growth destroying policies.

Some research has been done on political competition in different countries. Pinto and Timmons (2005) find that across countries political competition decreases the rate of physical capital accumulation and labor mobilization but increases the rate of human capital accumulation. They find that political competition systematically affects growth although the effects are both positive and negative. Besley, Persson, and Sturm (2010) find that in the United States, lack of political competition in states is associated with anti-growth policies such as higher taxes and lower capital spending. They argue for a link between low levels of political competition and slow growth. Ricciuti (2003), Goeminne, Geys, and Smolders (2007) and Volkerink and de Haan (2000) all find that some measures of political fragmen-

tation, which can be thought of as potential political competition, are associated with larger government deficits and debt.

In this paper I examine the relationship between political competition and economic growth across municipalities in South Africa. South Africa provides a good case study for understanding the effects of this type of competition on economic growth. South Africa is a stable democracy with reasonably free and fair elections held every five years since the end of apartheid. Some of the much highlighted disadvantages of autocratic regimes, such as coups, lack of individual freedoms and so on are somewhat mitigated in South Africa. The political system and mode of public administration also allows South Africa to serve as a test case. Public administration in South Africa is broken up into different levels of government with provincial governments divided up into district municipalities. District municipalities are then divided into metropolitan and local municipalities. The governments of metropolitan and local municipalities are elected by a system of mixed member proportional representation. In this system the overall total of party members mirrors the proportion of votes received during elections. This system guarantees that political parties that win a significant share of the vote, but not a majority of the vote, still participate in government. In the context of political competition, the higher the fraction of the total vote won by the majority party, the more independent control that party has. However opposition parties can still influence policy with their influence depending on the fraction of votes they win during elections. In essence, depending on election results, there is a lot of variation across municipalities on the level of political competition. The political system is however identical for all municipalities, and the democratic nature also allows me to isolate some of the major negative effects of more autocratic political systems.

3 Data

3.1 Political Competition

Data on political competition is taken from the results of national elections in South Africa provided by the Electoral Commission of South Africa. The first elections after the fall of the apartheid regime were held in 1994 with the African National Congress, ANC, winning 62.65% of the overall vote. However there was a lot of variation in voting patterns across municipalities. I measure political competition as the fraction of votes in each municipality won by the ANC.

To understand why the fraction of voters who chose the ANC signifies political competition it is perhaps useful to consider scenarios at both ends of the voting spectrum. If all the voters chose the ANC then the municipality is considered a guaranteed ANC district. The likelihood of the ANC losing the district is relatively small regardless of what the ANC does. The ANC also faces less threat of obstruction on its local policies from opposition parties. The potential benefits to opposition parties from actively fighting the ANC are relatively small as a large vote for the ANC implies it is in complete control of the political machinery in that municipality. The cost to opposition parties of trying to gain a foothold in such municipalities is very high which implies less incentive to compete. This relatively small benefit of competition with the nationally leading ANC also applies at the other end of the spectrum. Municipalities where the ANC win no votes are less likely to face political competition from the ANC. The benefits to the ANC are relatively small because of the lack of support in those areas. The costs of competing where its political influence is relatively weak serves as a dis-incentive to compete in those municipalities. However as you move away from the tails, i.e. the ANC winning all votes or winning no votes, the potential benefits of competition between the ANC and opposition parties becomes larger.

In this paper I use the fraction of voters in a municipality who vote for the ANC in the 1994 national elections as a measure of political competition in that municipality. As

an alternative I also use the fraction of voters in the municipality who vote for the ANC during the 1999 election as a measure of the political competition in that municipality. The summary statistics are reported in table one with votes for the ANC ranging from 1% to 98%.

3.2 Economic growth in municipalities

Data on economic growth across municipalities is constructed using satellite data on night time lights as in Henderson, Storeygard and Weil (2012), Elvin, Baugh, Kihn, Kroehl and Davis (1997), Doll, Mller and Morley(2006), Sutton, Elvidge and Ghosh(2007), and Michaelopolous and Papaioannou(2013). Satellites from the United States Air Force Defense Meteorological Satellite Program (DMSP) have been circling the earth 14 times per day recording the intensity of Earth-based lights with their Operational Linescan System (OLS) sensors since the 1970s, with a digital archive beginning in 1992. Although the program was originally intended to collect low-light imaging data for the purpose of detecting moonlit clouds, it also captures lights produced by human settlements. The satellites capture these lights all over the globe sometime between 8:30pm and 10:00pm local time, i.e. the time at the location being captured. This information is then processed by scientists at the National Oceanic and Atmospheric Administrations (NOAA) National geophysical Data Center (NGDC). The processing of these images involve removing some natural anomalies such as the effect of the lunar cycle and auroral activity, and as a result removes sources of natural light, leaving mostly man-made light. Observations where cloud cover obscures the earths surface are also removed. Finally, data from all orbits of a given satellite in a given year are averaged over all valid nights to produce a satellite-year dataset.

The satellite-year dataset reports the intensity of lights as a six-bit digital number, for every 30 arc-second output pixel (approximately 0.86 square kilometers at the equator) between 65 degrees south and 75 degree north latitude. The digital number is an integer between 0 (no light) and 63. The high resolution of this data makes it extremely useful

for spatial analysis of economic activity across small geographical areas. The Intensity of night light reflects outdoor and some indoor use of lights. In general, nearly every economic activity at night requires lights. It is likely that an increase in economic activity, which should correspond to an increase in both consumption and investment goods at night, should be correlated with lights usage per person. Although the use of night lights does not capture any daytime economic activity, examining the change in night lights should provide guidance on the relative size of economic activity and its change over time. Provided there is no bias towards night time economic activity in some particular areas, use of only night time lights should be adequate.

The night lights allow economic activity and change in economic activity to be calculated across any geographic area. In this paper I compute the change in night lights for each municipality between 1994 and 2012, and between 1999 and 2012. This starting period corresponds with the two election periods as discussed above and ends with the latest year for which the night time lights data is available.

4 Results

The argument made in this paper is that municipalities with strong support either for or against the dominant ANC have more freedom to implement economic policy and the opportunity for faster economic growth. In terms of the relationship between growth and political fragmentation, as measured by voter shares in municipalities, I expect higher growth along the tails and slower growth as we move towards municipalities where votes are more evenly distributed. A scatter plot of voter shares in 1994 against the change in night lights between 1994 and 2012 suggests that such a relationship exists. As shown in figure 1, municipalities with either a very high or very low voting share for the ANC seem to have grown faster than municipalities with a split vote between the ANC and other parties. A scatter plot of voter shares in 1999 against growth between 1999 and 2012 also shows the

same phenomenon. As shown in figure 2, municipalities with very high or very low support for the ANC seem to have grown faster than municipalities with split votes. Looking at scatter plots of votes for the ANC and change in night lights conditional on initial night lights and population density of the municipality shows the relationship even more clearly. Figures 3 and 4 show the relationships for the 1994 and 1999 elections respectively. The convex relationship seems apparent with growth highest at the tails and growth slowing the closer you get to a 50% vote.

To examine this relationship more clearly I estimate a simple quadratic model of the form;

$$G_t = \alpha_d + \beta_0 ANC_{t0} + \beta_1 ANC_{t0}^2 + \beta_2 C + \epsilon_{d,e} \quad (1)$$

Where G is the change in night lights over a time range, t , ANC is the fraction of voters who voted for the ANC at time t_0 , C represents controls variables at time, t_0 , which may influence the growth of municipalities, and ϵ is an error term.

The coefficients on ANC and ANC^2 are the major coefficients of interest. Table 2 column 1 reports a simple relationship without any controls estimated using OLS. The coefficients on ANC and ANC^2 are significant and show that an unconditional concave relationship is present. In table 2 column 2 I control for the population density of the municipality in 1996 and the average night lights in 1994. Change in economic activity is likely to be influenced by the presence of people living in that municipality. A densely populated municipality might have different growth patterns than a very sparsely populated municipality. Including the population density therefore removes the possibility that the results are driven by variation in population density. Population density for municipalities is taken from the 1996 South Africa census which was the first nationwide census that included the black African population. The initial level of economic activity could also influence growth in municipalities. Economic

theory suggests that, holding other things constant, growth should be faster in municipalities with lower initial levels of economic activity. On the other hand growth should be slower in municipalities with higher initial levels of economic activity. Controlling for the initial level of economic activity therefore rules out the possibility that the U-shaped relationship is driven by the initial level of economic activity in the municipalities. The results controlling for population density in 1996 and average night lights in 1994 are reported in table 2 column 2. The coefficients on ANC and ANC^2 are significant. This shows that the relationship between political competition and growth is not driven by the initial population density or the initial levels of economic activity. Columns 3 and 4 of table 2 report results using the 1999 elections. The results are qualitatively identical to those of the 1994 elections.

There are many other variables which the literature has shown also influence economic growth. I control for these variables to ensure that the relationship between growth and political competition is not spurious. I control for geographical and environmental conditions in the municipality such as the agricultural constraints in the municipality, the fraction of land that can be used for agriculture, the ruggedness and slopes of the terrain in the municipality. I also control for some demographic factors which may influence growth in the long term. The institutions in South Africa during apartheid were designed to segregate populations by race. It is therefore feasible that some of these demographic factors might have affected growth in the municipalities. To account for these I control for the fraction of the municipality that was black African in 1996, the fraction of the municipality that spoke Afrikaans in 1996, the fraction of people in the municipality that were illiterate in 1996, the fraction of the municipality that was unemployed in 1996, and a dummy variable indicating if the municipality was part of the homelands. Finally I control for other variables such as the proximity of roads, railways and waterways, the presence of mining activity, the distance to the coast, and a dummy variable for metropolitan municipalities.

The results controlling for all these variables are reported in table 3 and 4 for both voting patterns in 1994 and voting patterns in 1999 respectively. The concave relationship between

voting patterns and growth is present and significant in all cases.

In table 5 I rule out the possibility that the relationship is driven by particular provinces. I exclude each province in turns to show that the relationship isnt driven by municipalities in any particular province. The results for both the 1994 and 1999 voting patterns are still present and significant.

As a final robustness check I exclude municipalities with either very high of very low votes for the ANC. The municipalities and the extreme tail ends of the voting distribution show the highest rates of growth and might be driving the entire concave relationship between growth and voting patterns. I exclude municipalities with either a less than 5% or more than 95% vote for the ANC. I also exclude all metropolitan municipalities to show that the results are not driven by the very densely populated metropolitan areas. Columns 1 and 2 exclude the extreme municipalities and metropolitan municipalities in 1994. Columns 3 and 4 mirror columns 1 and 2 but use the 1999 elections. The results using these exclusions are still present and significant.

4.1 Causality

The results in the previous section suggest a simple quadratic relationship between growth and political fragmentation. However the direction of causality is not established. An alternative explanation to the idea that political competition leads to slower growth is the idea that municipalities with relatively faster growth encourage voters to reward the dominant party. It could also be that political parties in municipalities with faster growth generate more resources to solidify their control of these municipalities, ultimately leading to guaranteed votes and less competition from opposition parties. Regardless, there is reason to believe that the direction of causality between growth and political uncertainty can run both ways. I employ two strategies to deal with the possibility of reverse causality.

First I argue the voting patterns in South Africa were not necessarily driven by economic growth in the preceding periods but by race and tribal concerns. Much has been written

about the segregationist policies of the apartheid regime in South Africa before its end in 1994. The segregation led to restrictions on economic potential of different groups based on race. A direct consequence of this was the rise of different political parties that sought to promote the rise of various groups. I argue that the voting patterns are therefore driven not by actual economic growth in these regions but by these demographic and tribal differences across municipalities. Figure 5 shows a scatter plot of the fraction of the population that voted for the ANC against the fraction of the population that is black African in that municipality. The ANC did not win votes in municipalities where a lower fraction of the municipalities was black. On the other hand there was a lot of support for the ANC in many municipalities where a large fraction of the population was black. The relationship between the votes for the ANC and the fraction of the black population is clearer if municipalities in Kwazulu-Natal province are excluded as shown in figure 6. A strong positive correlation between the fraction of the population that was black and the fraction of votes for the ANC is clear. This suggests that voting behaviour was partly driven by race and not necessarily by economic growth.

The votes by the Zulu speakers also shows that voting behaviour was driven by demographic and tribal factors. The Inthaka Freedom Party, IFP, which had its roots as cultural organization for Zulus, also contested the elections in 1994. Although the party was not exclusively for Zulus it was dominated by Zulus and received backing from Zulu speaking people. Figure 7 shows a scatter plot of the fraction of the population that voted for the ANC and the fraction of the population that listed Zulu as their first language during the 1996 census. Excluding the municipalities with few Zulus, the negative correlation seems apparent. In the context of this paper this promotes the idea that voting patterns were driven by demographic and tribal factors and not necessarily by economic growth.

As a second strategy to estimate the causal relationship between political uncertainty and growth I instrument the voting patterns in the 1999 elections using the voting patterns in the 1994 elections controlling for growth between 1994 and 1999. Instrumental variable

regressions require the use of instruments that are correlated with voting patterns in 1999 but uncorrelated with other unobservable factors which might influence growth after 1999. The voting patterns in 1994 are strongly correlated with the voting patterns in 1999 and as I have argued, these voting patterns are driven by demographic factors. Controlling for growth over the period between 1994 and 1999 should also prevent some of the unobservable factors from being correlated with growth after 1999. As figure 8 shows the voting patterns between 1994 and 1999 are sufficiently correlated. Controlling for growth between 1994 and 1999 should however control for the unobservable factors which may be correlated with both voting patterns in 1999 and growth.

The IV estimates, as well as the first stage regressions, are reported in table 7. In column 1 I include all the control variables which were significantly correlated with growth in the OLS regressions. In column 2 I include all control variables as used in the OLS regressions. The u-shaped relationship between voting patterns and growth is present and significant in both cases. The first stage results and Sargan test p-values also suggest that the instruments are valid. The results overall suggest a causal relationship between political uncertainty and growth.

5 Political Competition and Improvement in Public Services

The previous section shows a u-shaped relationship between political competition and economic growth as proxied by change in night lights. I make the arguments that local municipalities are freer to make decisions without the threat of significant competition and opposition from other parties. Although I show that this affects economic growth directly it should also affect the provision of public services by these governments.

In this section I use data from the census in 1996 and 2011 to examine the effects of political competition on the change the provision of some public services controlling for

general growth and other factors. The censuses in both years report the fraction of the municipality that lives in formal dwellings, the fraction with access to piped water and the fraction with access to electricity. Using votes for the ANC in 1994 as an instrument for votes in 1999, I estimate the relationship between political competition and change in the supply of these public services. I control for growth as proxied by change in night lights, to show that this improvement in public services was not necessarily a direct results of economic growth.

Table 8 reports the results with column 1 representing the effect on change in the fraction of the municipality living in formal dwellings. Column 2 represents the effect on the change in fraction of the municipality with access to electricity and column 3 represents the effect on the change in the fraction of the population with access to piped water. The results in all cases show a significant u-shaped relationship between political competition and an improvement in the provision of public services. This suggests that even after controlling for growth, municipalities with less political competition are more effective in the provision of public services.

6 Effects of Political Competition; Insights from Individual-Level Surveys

The results in the previous section show that municipalities with lower political competition have grown faster since 1996. These municipalities have also had greater improvement in the provision of public services. In this section I use results from surveys to get a better picture of individual voter attitudes and the relationship with political competition.

I use data from the 4th round of the afrobarometer surveys conducted in 2008. The survey is designed to generate a sample that is a representative cross-section of all citizens of voting age. The survey asks citizens a number of questions concerning various issues including governance. I use some of these questions to gage the attitudes of voters across different

municipalities. For each question used I control for the age of the respondent, a dummy variable if the respondent is the head of the household, the gender of the respondent, the race of the respondent, the level of education of the respondent, the religion of the respondent, a dummy variable if the respondent owns a radio, a television or a motor vehicle, and the employment status of the respondent. The results are reported in table 9.

Respondents in municipalities with higher political competition are more likely to predict a negative future outlook for the economy. In response to the question, "Looking ahead, do you expect the following to be better or worse: Economic conditions in this country in twelve months time?", they are more like to respond negatively. They are also more likely to state that the country is moving in the wrong direction and that economic policies of the government hurt most and benefit only a few.

In response to questions of democracy in South Africa, respondents in municipalities with greater political competition are less like to consider South Africa a democracy and are less satisfied with the political system. For example in response to the question, "In your opinion how much of a democracy is South Africa today?", respondents are more likely respond that South Africa is not a democracy.

Finally in response to the question, "In your opinion, how often, in this country: Does competition between political parties lead to violent conflict?", respondents in municipalities with higher competition are more likely to state that it leads to violent conflict.

The theme from the individual voters is a dissatisfaction with government and less optimistic view of the future. They are also more likely to see political competition as a source of problems in government. The results are consistent with results in the previous sections. It is expected that municipalities with slower growth and weaker performance in the provision of public services, will have voters that are more dissatisfied with the status quo.

7 Conclusions

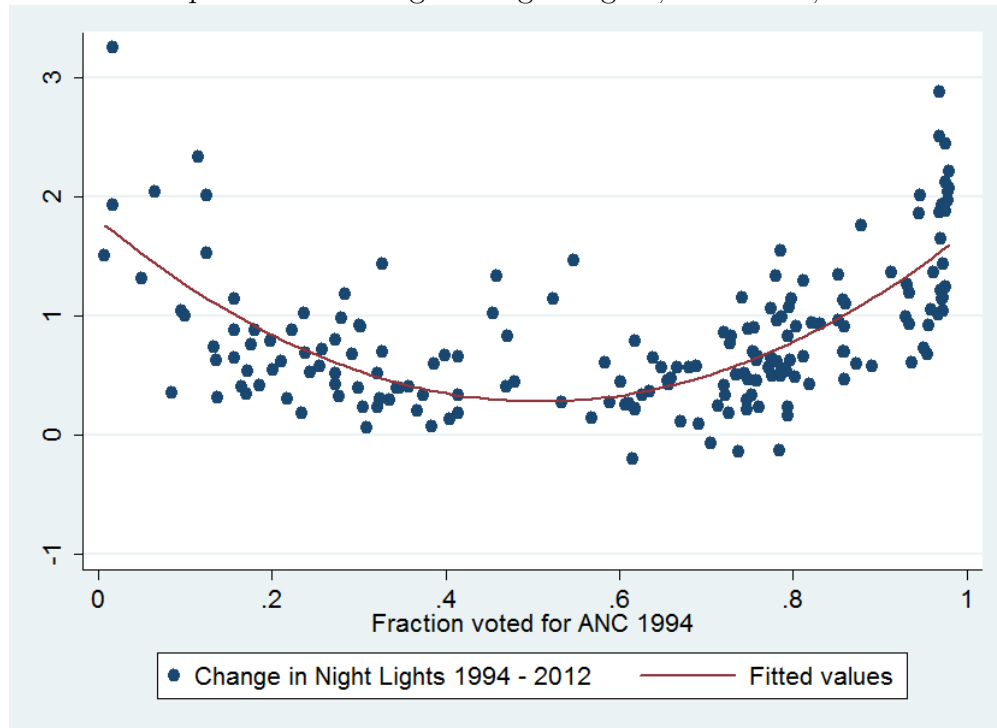
In this paper I show that areas with lower political competition show faster growth. I instrument voting patterns in the 1999 elections using voting patterns in the 1994 elections controlling for growth in between to show that this relationship is at least partly causal. I show that this relationship also manifests in the provision of public services in municipalities over the period. The results suggest that the political competition serves as a disadvantage to the growth of both private enterprise and the expansion of public services by creating the opportunity for opposition parties to block actions or hinder the policy making process. This result add to the literature on the effect of political systems on economic growth. Specifically it shows that variation in growth across political systems is not necessarily caused by the type of system but by the internal dynamics of the particular political system.

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Figure 1: Relationship between Change in Night Lights, 1994-2012, and ANC Votes 1994



Relationship between Change in Night Lights, 1994-2012, and ANC Votes 1994

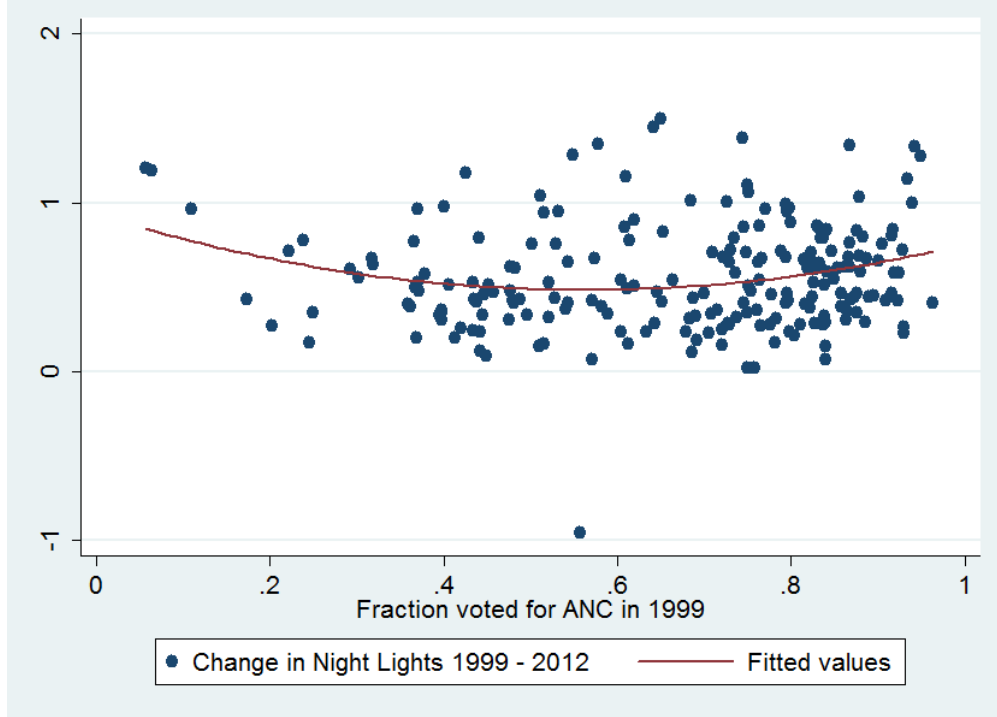
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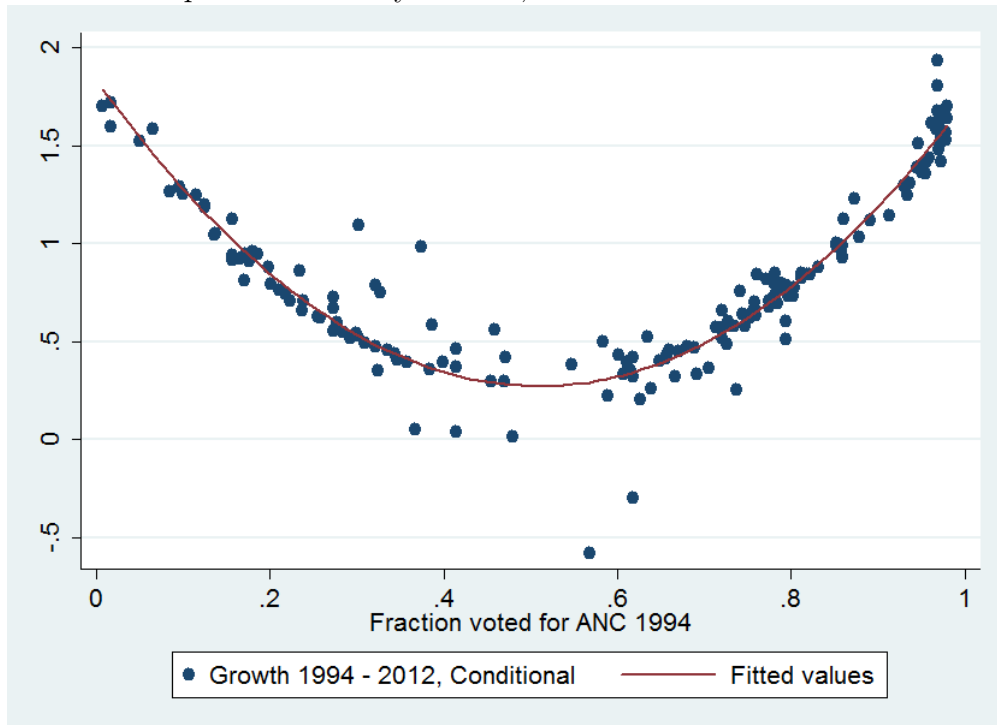
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Figure 2: Relationship between Change in Night Lights, 1999-2012, and ANC Votes 1999



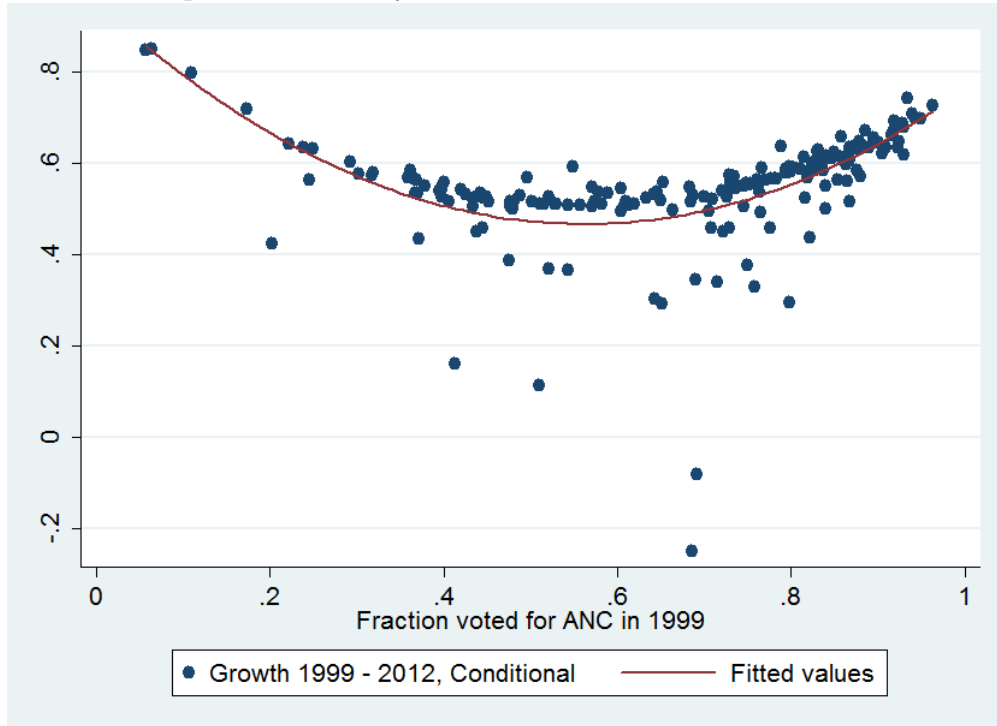
Relationship between Change in Night Lights, 1999-2012, and ANC Votes 1999

Figure 3: Relationship between Change in Night Lights, 1994-2012 Conditional on Night Lights in 1994 and Population Density in 1996, and ANC Votes 1994



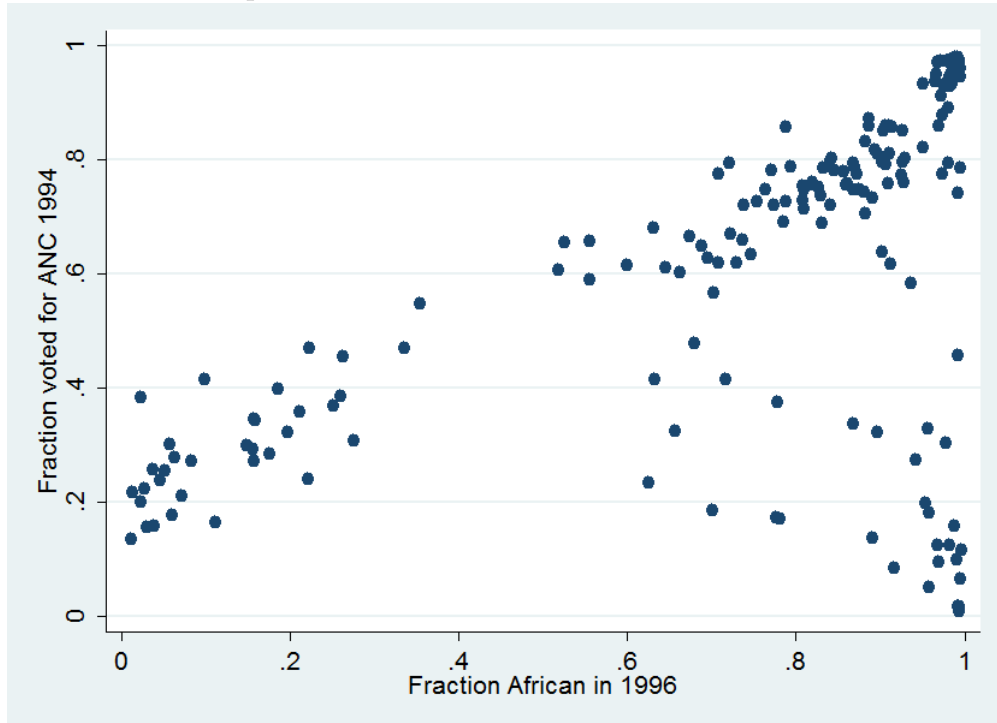
Relationship between Change in Night Lights, 1994-2012, and ANC Votes 1994

Figure 4: Relationship between Change in Night Lights, 1999-2012 Conditional on Night Lights in 1996 and Population Density in 1996, and ANC Votes 1999



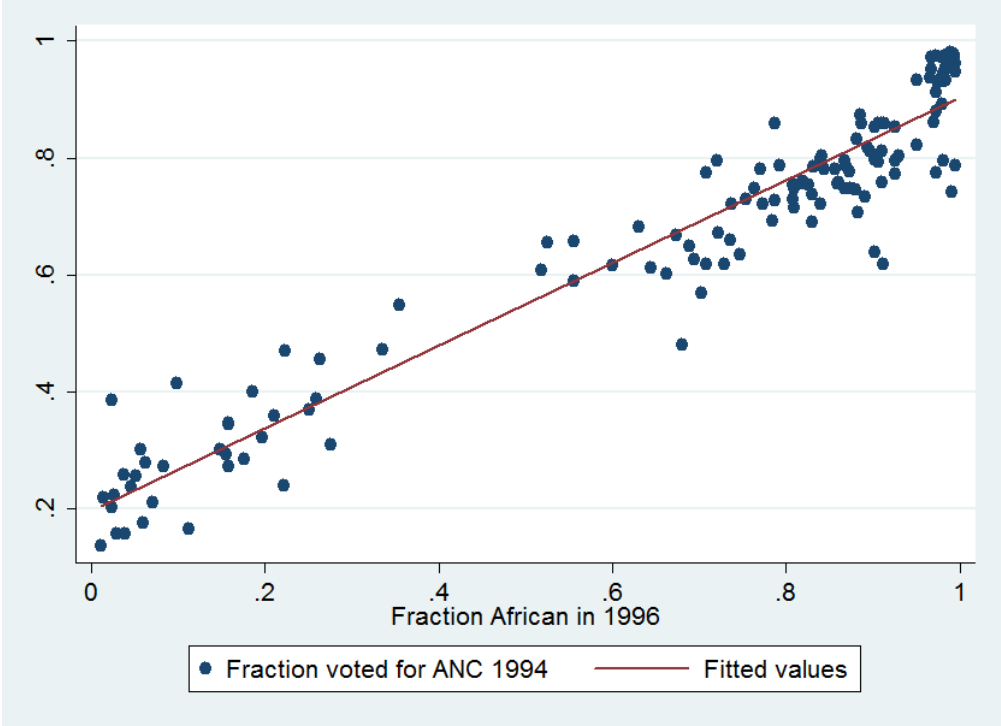
Relationship between Change in Night Lights, 1999-2012, and ANC Votes 1999

Figure 5: Relationship between ANC votes in 1994 and Fraction African in 1996



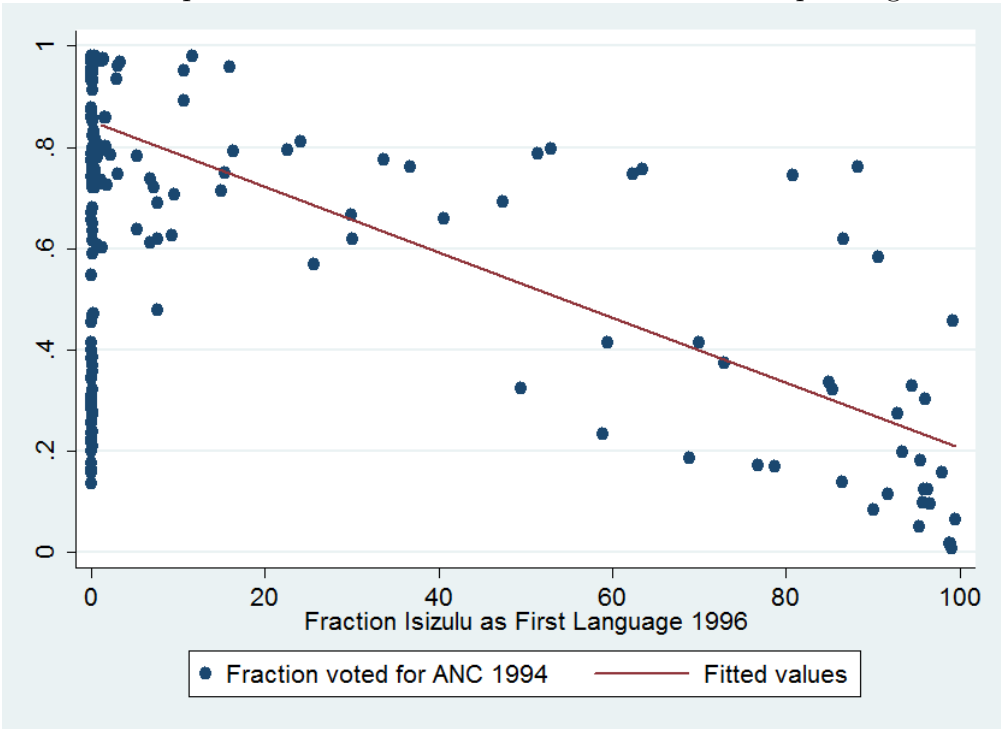
Relationship between ANC votes in 1994 and Fraction African in 1996

Figure 6: Relationship between ANC votes in 1994 and Fraction African in 1996 Excluding Kwazulu-Natal



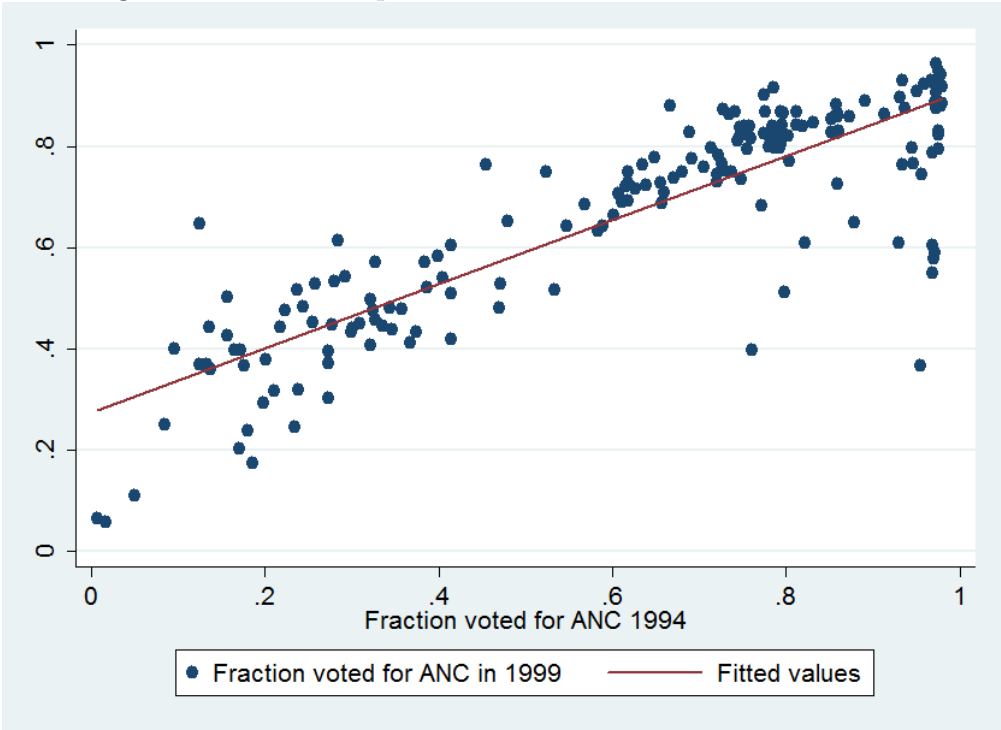
Relationship between ANC votes in 1994 and Fraction African in 1996 Excluding Kwazulu-Natal

Figure 7: Relationship between ANC votes in 1994 and Fraction speaking Isizulu in 1996



Relationship between ANC votes in 1994 and Fraction speaking Isizulu in 1996

Figure 8: Relationship between ANC votes in 1994 and 1999



Relationship between ANC votes in 1994 and 1999

Table 1: Summary Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Change in Night Lights 1994 - 2012	234	0.87	0.62	-0.68	3.25
Change in Night Lights 1999 - 2012	234	0.57	0.34	-0.95	1.73
Average Night Lights 1994	234	2.43	5.71	0.01	48.90
Average Night Lights 1999	234	2.75	6.01	0.01	51.49
Fraction voted for ANC 1994	188	0.60	0.29	0.01	0.98
Fraction voted for ANC 1999	213	0.67	0.20	0.05	0.96
Population Density 1996	234	3.41	3.71	0.00	24.02
Road Dummy	234	0.95	0.21	0	1
Rail Dummy	234	0.63	0.48	0	1
Distance to the Waterway	234	0.11	0.20	0	1.04
Mining Activity Dummy	234	0.75	0.43	0	1
Manufacturing Activity Dummy	234	0.97	0.18	0	1
Fraction Black African	218	0.74	0.31	0.01	1
Fraction White	218	0.09	0.09	0	0.53
Fraction Afrikaans 1st Language (M)	218	0.23	0.32	0	0.99
Fraction Illiterate in 1996 (M)	218	0.18	0.05	0.05	0.31
Fraction Unemployed in 1996 (F)	218	0.40	0.19	0.07	0.80
Ruggedity Index (F)	234	0.22	0.14	0.24	0.67
Terrain Slope	234	0.63	0.40	0.07	1.90
Historical Distance to Church	234	0.54	0.54	0	2.80
Distance to Coast	234	2.19	2.00	0	6.59
Homeland Dummy	234	0.39	0.49	0	1
Agricultural Constraints	234	5.35	1.45	3	8.01
Suitability for Agriculture	234	0.17	0.14	0	0.86
Fraction Formal Dwellings 1996	218	0.60	0.22	0.07	0.95
Fraction Telephone 1996	218	0.20	0.15	0	0.61
Fraction Electricity 1996	218	0.49	0.25	0.01	0.90
Fraction Sanitation 1996	218	0.36	0.28	0	0.93
Fraction Piped Water 1996	218	0.33	0.22	0.01	0.79
Fraction Formal Dwellings 2011	234	0.76	0.18	0.24	0.98
Fraction Piped Water 2011	234	0.36	0.23	0.02	0.84
Fraction Electricity 2011	234	0.80	0.15	0.14	0.98

¹ Notes. Rounded to two decimal places.

Table 2: Relationship between political competition and growth

	1994 Elections		1999 Elections	
	(1)	(2)	(3)	(4)
Fraction Voted for ANC	-5.99***	-5.35***	-1.60***	-1.49***
	(0.52)	(0.53)	(0.58)	(0.55)
Fraction Voted for ANC squared	5.90***	5.31***	1.42***	1.32***
	(0.46)	(0.48)	(0.48)	(0.46)
Initial Night Lights		-0.03***		-0.02***
		(0.01)		(0.00)
Population Density		0.04***		0.01
		(0.01)		(0.01)
no. of obs	188	179	213	200
R^2	0.49	0.55	0.04	0.14

¹ Notes. ***, ** and * indicate significance at the 1%, 5%, and 10% levels.

Table 3: Relationship between political competition and growth - Full controls 1994

	(1)	(2)	(3)	(4)
Fraction Voted for ANC	-3.70*** (0.63)	-4.41*** (0.56)	-5.43*** (0.55)	-3.27*** (0.68)
Fraction Voted for ANC squared	3.70*** (0.60)	4.42*** (0.51)	5.29*** (0.48)	3.40*** (0.63)
Initial Night Lights	-0.02*** (0.01)	-0.02*** (0.01)	-0.03*** (0.01)	-0.02** (0.01)
Population Density	0.03*** (0.01)	0.03*** (0.01)	0.05*** (0.01)	0.02* (0.01)
Fraction African	0.38 (0.65)			-0.55 (0.69)
Fraction Afrikaans language	0.71 (0.62)			0.14 (0.64)
Fraction Illiterate	0.83 (0.76)			0.89 (0.78)
Fraction Unemployed	1.31*** (0.29)			1.37*** (0.32)
Homeland Dummy	0.06 (0.10)			0.08 (0.10)
Road Dummy		-0.21 (0.15)		-0.16 (0.15)
Rail Dummy		-0.20*** (0.07)		-0.17** (0.08)
Distance to River		0.01 (0.18)		-0.00 (0.18)
Mining Dummy		-0.11 (0.08)		-0.07 (0.08)
Manufacturing Dummy		-0.54*** (0.18)		-0.47*** (0.18)
Distance to Church		0.08 (0.06)		0.04 (0.07)
Ruggedity index			0.19 (0.94)	0.76 (0.96)
Terrain slope			-0.35 (3.33)	-2.49 (3.40)
Distance to coast			0.06** (0.03)	0.06** (0.03)
Agric constraints			0.03 (0.03)	-0.03 (0.03)
Suitability for agric			-0.22 (0.22)	0.21 (0.22)
no. of obs	179	179	179	179
R^2	0.62	0.62	0.58	0.68

¹ Notes. ***, ** and * indicate significance at the 1%, 5%, and 10% levels.

Table 4: Relationship between political competition and growth - Full controls 1999

	(1)	(2)	(3)	(4)
Fraction Voted for ANC	-1.04*	-1.50***	-1.65***	-1.14*
	(0.58)	(0.57)	(0.57)	(0.62)
Fraction Voted for ANC squared	0.82*	1.27***	1.22**	0.85*
	(0.60)	(0.48)	(0.48)	(0.51)
Initial Night Lights	-0.01	-0.01***	-0.02***	-0.01***
	(0.01)	(0.00)	(0.00)	(0.01)
Population Density	0.00	0.00	0.01	0.00
	(0.01)	(0.01)	(0.01)	(0.01)
Fraction African	0.54			-0.33
	(0.48)			(0.49)
Fraction Afrikaans language	0.53			0.00
	(0.44)			(0.45)
Fraction Illiterate	1.15**			0.92*
	(0.54)			(0.55)
Fraction Unemployed	0.23			0.61***
	(0.71)			(0.19)
Homeland Dummy	-0.00			-0.04
	(0.07)			(0.07)
Road Dummy		-0.06		0.04
		(0.12)		(0.11)
Rail Dummy		-0.02		0.04
		(0.05)		(0.05)
Distance to River		0.02		-0.02
		(0.12)		(0.12)
Mining Dummy		-0.01		-0.04
		(0.05)		(0.06)
Manufacturing Dummy		-0.20		-0.17
		(0.14)		(0.13)
Distance to Church		0.14***		0.04
		(0.04)		(0.05)
Ruggedity index			0.20	0.60
			(0.63)	(0.67)
Terrain slope			-0.66	-2.12
			(2.24)	(2.37)
Distance to coast			0.06***	0.06***
			(0.02)	(0.02)
Agric constraints			-0.01	-0.03
			(0.02)	(0.03)
Suitability for agric			0.02	0.29*
			(0.15)	(0.17)
no. of obs	200	200	200	200
R^2	0.21	0.20	0.24	0.32

¹ Notes. ***, ** and * indicate significance at the 1%, 5%, and 10% levels.

Table 5: Relationship between political competition and growth Excluding Provinces

	(1)		(2)
Exc Eastern Cape	-3.18*** (0.71)	Exc Mpumalanga	-3.48*** (0.75)
	3.19*** (0.65)		3.64*** (0.71)
no. of obs	144		162
R^2	0.65		0.70
Exc Free State	-3.26*** (0.71)	Exc North West	-3.35*** (0.70)
	3.40*** (0.66)		3.46*** (0.66)
no. of obs	159		163
R^2	0.70		0.69
Exc Gauteng	-3.33*** (0.69)	Exc Northern Cape	-2.47*** (0.68)
	3.49*** (0.64)		2.62*** (0.64)
no. of obs	170		168
R^2	0.69		0.71
Exc Kwazulu-Natal	-3.62*** (1.16)	Exc Western Cape	-3.55*** (0.80)
	3.61*** (0.80)		3.58*** (0.74)
no. of obs	147		156
R^2	0.67		0.69
Exc Limpopo	-3.45*** (0.72)		
	3.63*** (0.68)		(0.01)
no. of obs	163		
R^2	0.68		

¹ Notes. ***, ** and * indicate significance at the 1%, 5%, and 10% levels.

Table 6: Robustness Tests

	(1)	(2)	(3)	(4)
Fraction Voted for ANC	-3.46***	3.23***	-1.33**	-1.18**
	(0.67)	(0.74)	(0.63)	(0.62)
Fraction Voted for ANC squared	3.54***	3.32***	0.96*	0.90*
	(0.63)	(0.73)	(0.53)	(0.53)
no. of obs	171	151	192	199
R^2	0.70	0.54	0.33	0.32

¹ Notes. ***, ** and * indicate significance at the 1%, 5%, and 10% levels.

Table 7: IV regressions

	(1)	(2)
First Stage: Fraction voted for ANC 1999		
Fraction Voted for ANC 1994	1.63***	1.08***
	(0.15)	(0.18)
Fraction Voted for ANC squared 1994	-0.95***	-0.47***
	(0.14)	(0.17)
First Stage: Fraction voted for ANC 1999 squared		
Fraction Voted for ANC 1994	1.41***	0.78***
	(0.20)	(0.23)
Fraction Voted for ANC squared 1994	-0.65***	-0.13
	(0.18)	(0.22)
IV Results		
Fraction Voted for ANC 1999	-5.04***	-5.99***
	(1.23)	(1.72)
Fraction Voted for ANC squared 1999	4.50***	5.61***
	(1.08)	(1.60)
Basic Controls	Yes	Yes
Full Controls	No	Yes
no. of obs	171	171
Sargan P-Value	0.00	0.00

¹ Notes. ***, ** and * indicate significance at the 1%, 5%, and 10% levels.

Table 8: IV regressions - Change in Public Services

	(1)	(2)	(3)
First Stage: Fraction voted for ANC 1999			
Fraction Voted for ANC 1994	1.16*** (0.16)	1.16*** (0.16)	1.16*** (0.16)
Fraction Voted for ANC squared 1994	-0.57*** (0.15)	-0.57*** (0.15)	-0.57*** (0.15)
First Stage: Fraction voted for ANC 1999 squared			
Fraction Voted for ANC 1994	0.93*** (0.21)	0.93*** (0.20)	0.93*** (0.20)
Fraction Voted for ANC squared 1994	-0.33* (0.19)	-0.33* (0.19)	-0.33* (0.19)
IV Results			
Fraction Voted for ANC 1999	-4.52*** (1.42)	-18.21*** (6.43)	-9.29*** (3.14)
Fraction Voted for ANC squared 1999	4.20*** (1.49)	18.55*** (6.74)	9.05*** (3.29)
Basic Controls	Yes	Yes	Yes
Full Controls	Yes	Yes	Yes
no. of obs	171	171	171
Sargan P-Value	0.00	0.00	0.00

¹ Notes. ***, ** and * indicate significance at the 1%, 5%, and 10% levels.

Table 9: Individual Survey Results

		S.E	Obs	Mun.	R2
Q7A	-5.28*** (1.69)	5.15*** (1.53)	1067	157	0.02
Q7 SAF	8.18*** (2.44)	-7.35*** (2.02)	1032	157	0.04
Q11	3.97** (1.82)	-3.62** (1.57)	1078	157	0.02
Q42A	-4.11* (2.37)	3.98** (1.98)	1089	155	0.02
Q42D	-5.74** (2.36)	5.09** (2.06)	1026	154	0.01
Q45A	6.60** (2.79)	-5.46** (2.19)	1071	156	0.01

¹ Notes. ***, ** and * indicate significance at the 1%, 5%, and 10% levels. Clustered standard errors reported in brackets. All regressions include control for age, head of household, gender, race, religion, owns a radio, owns a television, owns a motor vehicle, and employment status. Definitions of variables in appendix.