Tanzania's Economic and Political Performance: A District-Level Test of Selectorate Theory[1]

Bruce Bueno de Mesquita and Alastair Smith

Abstract

Hypotheses derived from the selectorate theory of political survival are tested against Tanzanian district-level data. We assess the extent to which resource allocations within Tanzania depend on the size of the district-level presidential winning coalition and the presidential support coalition. Using indicators that precisely measure coalition size given Tanzania's electoral rules, we find that smaller winning coalition districts emphasize private goods allocations such as maize vouchers and road construction. Larger coalition districts emphasize public goods provision such as better health care access, residential electrification, greater income equality, and a lower infant mortality rate. These findings hold with controls for poverty, productivity, and population. Support coalition size – that is, total vote share for the winning party – generally has an insignificant effect on public and private goods allocations. Likewise, the control variables generally have little effect.

Tanzania's Economic and Political Performance:

1 This is derived from a study undertaken on behalf of the World Bank. Detailed district-level data were provided by Jan Hoogeveen, then the World Bank's Senior Economist in Tanzania. We are extremely grateful for his assistance. Neither he nor the World Bank is responsible for any errors of fact or opinion in this study. The findings and opinions reported here do not necessarily reflect the views of the World Bank or any of its members.

A District-Level Test of Selectorate Theory

Bruce Bueno de Mesquita and Alastair Smith

When it comes to understanding government policies and the associated resource allocations, the devil is surely in the details. For instance, numerous cross-sectional time-series studies investigate patterns of public and private goods allocations as a function of national political institutions (Alvares et al 1997; Feng 2003; Lake and Baum 2003; Bueno de Mesquita et al 2003; Brown and Mobarak 2009). These studies show that democratic regimes provide more public goods and fewer private goods than their autocratic counterparts. Although these studies unquestionably point to important patterns, they also smooth over important details about who gets what benefits within a state. Specifically, they treat the extent of democracy or authoritarianism as homogeneous within subunits of a state. Yet, country-specific studies show considerable variation in governance from province to province and from electoral district to electoral district. The details of such variation may be crucial to understanding changes in citizens' quality of life as democracy develops and as it has matured to different degrees in different parts of a country.

Variations in political accountability across constituencies in India, for instance, have been shown to influence local resource allocations (Chhibber and Nooruddin 2004). Similar variations in resource allocations are reported by Jensen (2009) as a function of variability in the size of the coalition needed to sustain political leaders in the antebellum American states. These studies, which rely on the logic of selectorate theory (Bueno de Mesquita et al 2003) and its emphasis on political survival, make clear that within-state policy can vary greatly even though the national-level political institutions do not change. We build on this literature to add to our

understanding of within-state variations in quality of life indicators by applying selectorate theory to several Tanzanian district-level policy choices and resource allocations.

Tanzania provides a fruitful setting for testing selectorate-theory hypotheses about resource allocations. It is a multiparty, fairly democratic state with substantial district level variation in support for the dominant national party, the Chama Cha Mapinduzi Party (hereafter, the CCM). Tanzania appears to typify the emerging, but constrained, democratic impulse in Africa. That is, as in Botswana and elsewhere, elections are largely free and fair and yet a single party has controlled the presidency since independence. Tanzania provides a further benefit as an analytic focus because the structure of its political system affords an opportunity to investigate the claims of the selectorate theory with data on winning coalition size that almost perfectly matches the theoretical concept. Thus, by focusing on district-level data we can gain a nuanced view of the ways in which local political conditions shape the welfare of citizens.

The study proceeds as follows. First we offer a brief, informal explanation of selectorate theory.[2] We then discuss features of the Tanzanian political system and how they relate to the theory. Then we specify key hypotheses and the data necessary to test them. We test the hypotheses by examining Tanzania's delivery of public and private goods at the district level following the 2005 election. Using the theory's logic and the information uncovered in the statistical analyses we then close by discussing steps that could improve Tanzania's future performance.

Selectorate Theory

2 Formal development of the theory is found in Bueno de Mesquita et al (2003), Bueno de Mesquita and Smith (2009a), and Smith and Bueno de Mesquita (2009).

According to selectorate theory (Bueno de Mesquita et al 2003; Bueno de Mesquita and Smith 2009a), all political systems have two institutional characteristics that describe how they retain and select leaders. The *selectorate* (denoted as S) is the set of people in the polity who can take part in choosing a leader. The *winning coalition* (denoted as W) is the subset of selectors whose support the leader must retain to remain in office.

In addition to the selectorate and the incumbent's winning coalition, we distinguish later between the nominal and true selectorate (Smith and Bueno de Mesquita 2009), explaining the difference when it becomes pertinent for understanding some details of how the Tanzanian system operates. In our empirical analysis, we also distinguish between the winning coalition and the *support coalition*. The support coalition coincides with the total vote for the winning party in democratic systems and is a feature assumed to drive a party's policy "mandate" in many studies concerned with democratic rule. As we will see, the size of the winning coalition may differ markedly from the total votes received by a party both because a party cannot control the choice of voters to support it and because a party only needs to reward the subset of voters whose support is essential for victory (Riker 1962). In the empirical section, we examine the impact of the size of the winning coalition and the size of the support coalition on the allocation of public and private goods. The support coalition notion is based on parties trying to maximize their vote share (Downs 1957; Powell 2000), a feature that also follows from the distinction made later between the nominal and true selectorate. The winning coalition represents the smallest number of voters needed to assure electoral victory. As explained below, selectorate theory predicts that larger minimal winning coalitions encourage the provision of more public goods that benefit all and smaller winning coalitions encourage the provision of relatively more private goods that benefit only those in the coalition. The theory makes no prediction with regard to the marginal

impact of "excess" voter support beyond the minimal winning coalition and so makes no prediction about the effect of the support coalition on resource allocations.

In selectorate theory, turnover in leaders arises if the incumbent fails to allocate resources in a manner that ensures that winning coalition members are at least as well off remaining loyal to the incumbent as they expect to be if they switch to a rival party or leader. Deposition occurs if the size of the incumbent's coalition falls below *W*. In that situation, the leader is vulnerable to being removed and replaced by a challenger who can create a coalition of her own of at least size *W* from the selectorate. The challenge for incumbents is to retain the loyal support of their coalition, thereby sustaining themselves in power, while maintaining discretionary, personal control over as much of the government's revenue as possible.

Selectorate theory recasts discussions of regime structures away from traditional categories such as democracy or autocracy. These conventional labels are broadly associated with the size of a government's winning coalition and selectorate, but these conventional labels lead to ambiguity and unproductive debate over whether this or that regime is "above the bar" required to be a democracy. The selectorate vantage point allows us to speak of subtle differences within regimes across time and across space without appealing to normatively loaded and imprecise labels. The theory makes precise and continuous predictions about anticipated differences in performance as a function of the sizes of W, and for some factors not examined here, W relative to S.

Loosely speaking, what most people refer to as democracies share in common that they have large selectorates and large winning coalitions, although the exact size of each varies with the extent of suffrage and the precise rules by which leaders are elected. One-party autocracies have smaller winning coalitions than democracies; their selectorates may be small or large.

Monarchies and military juntas have small selectorates, and small winning coalitions, but again there can be great variety within each of these regime categories. Selectorate and coalition size are essentially continuous variables.

Leaders maintain the loyalty of their winning coalition by producing *public goods* and *private benefits* with government revenue. Public goods, such as personal freedoms, effective economic policies, equal opportunity, equal access to health care, and national security, benefit everyone in a society. Policies such as the extent of personal freedom or national security typically do not vary greatly across districts within states but policies such as health care access, residential electrification, equal opportunity, and many other quality of life indicators, are likely to vary substantially from district to district within a country. Private benefits, such as grants of monopolies, access to scarce hard currency, and direct payments such as the selective use of vouchers or foreign aid, can be targeted at the leader's essential supporters (W) and, of course, this can be done differentially in different political constituencies.

All polities –indeed, all organizations – produce both public and private goods; it is the mix of the two that varies with selection institutions. As the size of *W* increases, leaders will shift that mix away from private benefits and toward public goods. A larger winning coalition means more supporters to please, spreading out private benefits, making public goods a more efficient way for the leader to retain the backing of a winning coalition. Additionally, as W/S increases, incumbents must spend more of the government's revenue on satisfying coalition demands. This means that the incumbent leader has less discretion over budgetary outlays and, therefore, fewer opportunities either for personal enrichment or for trying out pet policy projects.

The distinction between public and private goods is central to the analysis that follows. Smaller coalitions facilitate the ease with which leaders (or their political party) can survive in

office even in the face of failed national policies. Leaders who are accountable to a large winning coalition find it more difficult to retain office in the face of failed policies. Large coalition politics is a competition in competence to produce public goods; small coalition politics centers on the purchase of the loyalty of key supporters through special rewards or favors.

The patterns just described are not absolutes; they are central tendencies. Some supporters in locales with a large winning coalition receive private benefits. Leaders who answer to a small winning coalition provide some public goods. All else equal, though, large winning coalitions induce leaders to shift public policy away from private benefits and toward the provision of public goods. Naturally, power-seeking leaders always prefer to depend on as small a coalition as possible. Ordinary citizens always benefit most when their leaders are accountable to a large coalition. Coalition members benefit most when the ratio of W/S is large. Circumstances dictate whether they are better off when W is absolutely large and so is S or when W is small and so is S (Bueno de Mesquita and Smith 2009a).

Tanzania's Coalition and Selectorate Structure

In parliamentary systems such as Tanzania has, the size of an incumbent's winning coalition is derived from the aggregation of voter support on a constituency by constituency basis. Parliamentary districts can be differentially rewarded as a means to attract support. Where a large coalition is required, greater local public benefits are to be expected. In constituencies that can be won with a small bloc of votes, private rewards are likely to work better as the means to keep the small bloc loyal. As we explore Tanzania's governance structure we should bear in mind that rational, power-seeking leaders have an interest in engineering their political

institutions to create coalition loyalty to them. That means, reducing W as much as possible and, if they can, making W/S small too.

According to many commonly used definitions of democracy, Tanzania became a multiparty, competitive democracy in 1995. Yet there are issues with the extent of Tanzania's degree of democracy. Despite its first-past-the-post, plurality voting rules in a single-member district system, Tanzania's parliamentary elections typically involve ten or more parties competing for office per constituency. This number of office-seeking parties per constituency contradicts Duverger's law (Duverger 1972; Riker 1982) and Cox's (1997) more general result that the number of parties expected in any constituency is equal to the number of seats to be filled plus one.[3] Tanzania's government encourages the survival of many parties, perhaps as a means to reduce the number of votes required to win in any parliamentary constituency.

Tanzania has a relatively free press that is quite lively in its critique of the government. This is a necessary – but not sufficient – feature of good governance. Free speech and free assembly are also important elements in fostering democracy (as are rule of law, protection of property rights and other considerations) (North, Wallis and Weingast 2009). Tanzania does fairly well on these dimensions. But the electoral process and the governance structure are arranged in a manner that diminishes the true size of the winning coalition required to govern the country. What is more, the electoral system also creates a significant wedge between the size of the (nominal) selectorate (the voters in a universal adult voting system) and the winning coalition. Not only do multiparty elections in a first-past-the-post, single-member district system,

3 Duverger's result is a special case for single-member district systems of Cox's more general result. We leave for future examination how Tanzania sustains a multiparty system with single-member, first-past-the-post elections.

reduce the size of the vote needed to win, but in addition 91 of the Bunge's – Tanzania's parliament – 323 seats are filled by *indirect* election or outright appointment by the president. Understanding how the selection process to fill these seats works helps to explain what determines the size of S and W, and therefore, the allocation of benefits on a district by district level within Tanzania. In particular, to better understand how coalition size is subtly limited we need to examine the Bunge's composition and how that relates to electoral coalitions.[4]

The Bunge and Selectorate Politics

As noted, following the 2005 election, the Bunge has 323 members, including 91 indirectly elected or appointed members. Seventy-five women are indirectly elected, with the number of such seats allocated to parties based on the proportion of directly elected seats they won in parliament. Five members are designated by the Zanzibar assembly, 10 cabinet ministers are appointed to the Bunge by the President, and the Attorney General serves as an ex officio member. Each directly elected Member of Parliament wins by receiving a plurality of the vote in his or her constituency. Votes beyond a plurality add nothing to the party's representation. Forming a majority government, of course, depends in part on the direct elections and in part on the appointment process.

Naturally, the president wants his party to control parliament. Since the election of the president and Bunge occur simultaneously, the president and his party face uncertainty over how seats in parliament will ultimately be allocated. This encourages parties with a serious prospect of controlling parliament or of being part of a coalition of parties receiving benefits in exchange for their support to try hard to win seats. But that does not mean that the system translates into a

4 We use Bunge, National Assembly, and parliament interchangeably for stylistic purposes only.

Westminster-style structure in which the winning coalition in parliament is simply determined by the voters. To see why not, consider a modest modification of the selectorate theory that makes a distinction within the selectorate between those we refer to as the nominal selectorate and those who compose the true selectorate (Smith and Bueno de Mesquita 2009).

The *nominal selectorate* includes everyone with a legal say in selecting leaders while the *true selectorate* includes the subset of the nominal selectorate with a prominent role in picking leaders. Although the distinction can become blurry, essentially the nominal selectorate in electoral systems includes all enfranchised citizens, whether the electoral process is legitimate or rigged. The true selectorate may consist of a small set of people who are drawn, for example, from reliable voting blocs, influential political elites (such as party convention delegates, ward bosses, lower-level officials who are not themselves in the inner circle running the government), or a group of second-tier military leaders and civil servants, or the true selectorate may be a large set of people and can even be the same as the nominal selectorate.

In what is generally thought of as a well-functioning, mature democracy there is little difference between the nominal selectorate – the electorate in a universal suffrage system – and the true selectorate. Likewise, though for quite different reasons, the nominal selectorate and the true selectorate converge in size in military juntas and monarchies where they are relatively small groups. In transitional democracies (with Tanzania being a case in point) and in one-party states, the true selectorate is often much smaller than the nominal selectorate. In non-electoral systems, the true selectorate, when it differs from the nominal selectorate, typically refers to the membership in the country's dominant party. That is, in one-party states or in multiparty states with limited electoral competition, the members of the ruling party may be the true selectorate.

Assume that an incumbent allocates three types of goods rather than just two. As in the original theory, the incumbent provides public goods that everyone benefits from and private goods that only benefit members of the winning coalition. Assume, however, that the incumbent also allocates resources toward a third good, a good that is quasi-public and quasi-private. For instance, those indirectly elected and appointed members of the Bunge who are loyal to the president's party may get to use patronage to promote cronies who seek government posts. This is likely to be a benefit that goes to all members of the president's bloc in parliament (Smith and Bueno de Mesquita 2009). That bloc of loyal backers can be thought of as the true selectorate in that if they defect they can cost the president control over parliament.

To secure control over the National Assembly, the president's party must hold a majority of seats but, of course, he need not win a majority of directly elected seats. He only needs to win enough directly elected seats so that, combined with appointed and indirectly elected members, he has a majority. After the votes are tallied and the indirectly appointed seats are allocated among the parties that won seats in the Bunge, the president needs a smaller, inner circle of elected members who, combined with the appointed and indirectly elected members, are sufficient to guarantee him a voting majority in parliament. To make the distinction clearer, let's consider the allocation of all parliamentary seats and what their number implies about the required elected number to secure a parliamentary majority. Then we can use that calculation to identify the smaller subset that is needed to distinguish between W, the winning coalition's size, and the size of the true selectorate; that is the bloc of supporters receiving quasi-public and quasi-private benefits from the President in exchange for their loyal support.

To secure a simple majority in the Bunge, a party (or coalition of parties) requires 162 votes. Of those 162 votes, the president is assured between 11 (10 cabinet members plus the

attorney general) and 16 (the former members plus 5 from Zanzibar on the supposition that the Zanzibar voting bloc will receive sufficient benefits to be loyal to the president) by the appointment process. We will assume that the president is assured of these 16 votes in parliament (as has historically been the case). With that in mind, let X equal the number of directly elected members of parliament so that, according to the Tanzanian indirect election rules, 75(X/232) women are indirectly chosen from the president's party. Then, a majority is achieved by electing:

$X + 75(X/232) + 16 = 162 \rightarrow X = 111$ directly elected members.

With 111 directly elected members, the president's party gets 36 indirectly elected members as well as the 11 the president appoints plus 5 from Zanzibar. It is a safe bet that these 52 appointed and indirectly elected members always vote with the president and it is very likely that this is also true of the 111 directly elected members from his party. Thus, if the party of the president can win 111 out of 232 elected seats, he assures himself of control over parliament and the ruling party achieves the first goal of political leaders according to selectorate theory: maintaining their hold on power.

But selectorate theory claims that politicians not only want to retain power; they also want to maximize discretionary control over the budget. That is achieved by minimizing the size of W relative to the size of the nominal selectorate. The larger the dominant party's directly elected contingent in the Bunge, the greater the number of indirectly elected members they get. These indirectly elected members are most likely to be beholden to the president for backing their candidacy and so are more likely to be rewarded with the general benefits of parliamentary membership and the favorable outlook of the president than they are to be recipients of substantial private goods. These indirectly elected members are likely to be drawn from the true selectorate, receiving some patronage opportunities and the chance to serve in parliament. The

subset that can command the most private goods, those in the national-level winning coalition, are the group the president is likely to attend to most closely. Selectorate theory tells us that the incumbent wants W to be as small as possible.

How can the president minimize W? The more elected seats the winning party secures in parliament, the more indirectly elected seats it secures as well. In fact, every three additional seats won through the ballot box translate into about one more indirectly elected member and, therefore, one fewer directly elected members whose support is essential to guarantee the incumbent president (or the opposition) a majority in parliament (W). By working hard to maximize the number of CCM members elected to parliament, the president inflates the number of those indirectly selected members who are beholden to him and, in the process, decreases W. For instance, imagine the president's party wins 96 more elected seats than the 111 needed to guarantee it a majority in the National Assembly. That is just about equal to the CCM's 2005 electoral victory in parliamentary contests. With an extra 96 elected seats, the party gets 32 additional indirectly elected seats. Adding those 32 members to the Bunge, the president no longer needs 111 members in W. Now he only needs about 79 or 80. Interestingly, this is the number of MPs the president has added to his cabinet, thereby giving them the private good benefit of access to a portion of the revenue controlled by the central government. Thus, by trying to maximize the number of seats won by the ballot box – as the CCM does – the party locks in control over parliament while minimizing the size of the winning coalition. That means more valuable private goods to the smaller group in W.

The biggest rewards should be expected to go to the districts that give the CCM (or some other party perhaps in a future election) victory with the smallest required margin (although the party will try hard to ensure victory) and from which members of the president's winning

coalition (including the MPs he appoints to his cabinet) are drawn. Thus, as we have seen, the Tanzanian system provides such a large opportunity to secure support from appointed and indirectly elected members that it naturally gravitates to a small coalition, rent-seeking system with secondary benefits going to the bloc designated as the true selectorate in parliament.

Because victory goes to the party with a plurality of votes in each district, the size of the constituency-level winning coalition is clearly defined. The smallest winning coalition needed on a district by district basis is determined by the vote total received by the second largest party in each district.[5] Figure 1 shows the distribution of CCM district-level minimal winning coalitions as a percentage of the district total vote (W/S) for the 2005 presidential election across Tanzania's 119 districts (comprising 232 electoral constituencies).[6] Smaller values are associated with a stronger norm of loyalty to the incumbent (Bueno de Mesquita et al 2003). Since the (nominal) selectorate (S) in each district is the adult population, the relative magnitude of the norm of loyalty varies as a function of W; that is, the vote share for the second largest party in each district (with the CCM having the largest vote share for the president in each district) and the population of the district. As can be seen in Figure 1, nearly 25 percent of all constituencies

5 Ideally, to measure the minimal required coalition size we would take into account uncertainty about the vote expected by the second largest party (Riker 1962). We do not have data on such uncertainty and so assume that the winning party knows it must get just enough votes to defeat the second largest party in any given district; that is, one vote more than the vote total of the second largest party.

6 Unfortunately, we have not been able to secure data strictly at the level of the parliamentary constituency because the Tanzanian government does not report information on resource allocations in that way.

have a ratio of W/S that is less than 5 percent. About 50 percent of the districts have a ratio of W/S less than 10 percent. Only about 15 percent of the districts show relatively weak party loyalty, with W/S greater than 25 percent in these cases.

Figures 1 about here

In accordance with the deductive results from selectorate theory, we hypothesize that the national government's provision of district-level public goods rises with the size of the required winning coalition in a district; that is, with the vote total of the second largest party in the presidential elections. Private goods provision falls as the size of that vote increases. As noted earlier, selectorate theory is agnostic with regard to the allocation of public and private goods in each district as a function of the winning party's actual vote-share; that is, its support coalition.

The empirical tests that follow examine these hypothesized relations between the district-level size of the minimal winning coalition and public and private goods allocations. We will also test the alternative possibility that the larger the CCM's vote share, regardless of the plurality it required, the more public goods it provides and the fewer private rewards.

Data

As reflected in Figure 1, we estimate winning coalition size at the district level. We evaluate the size of the district-level winning coalition as the logarithm of the vote total for the second largest party cast in each district (log(W)). We also test the effect of the CCM's vote, measured as the logarithm of its vote total in each district (log(CCM)), and we construct models that look separately and then simultaneously at the effect of the size of the required minimal winning coalition and the size of the support coalition; that is the CCM's vote.[7]

7 The data and program to analyze the data in Stata 10 are provided at www.ANONYMOUS.

Private Goods

Tanzania's main crop is maize. The government selectively provides vouchers for subsidized purchases of maize seed. The vouchers to different districts are of varying value, providing two opportunities to observe private rewards. Selectorate logic implies that who gets vouchers and how much the vouchers are worth should be driven by the size of the winning coalition in each district. That is, the voucher program is hypothesized to be a central government private goods transfer payments to loyal, small-coalition constituencies. Large coalition districts should be unlikely to receive vouchers and if they receive any they should be of lesser worth than those given to smaller coalition districts.

We also evaluate the budgetary expenditure on road construction as an indicator of private goods since road construction, like all large construction projects, provides opportunities for graft and corruption. We recognize that roads also provide an important public good in that they facilitate labor mobility and the ease with which people can coordinate opposition to government policies if they are so inclined. Still, choices over how much funding to provide for road construction on a district by district basis inherently includes a significant private goods component which should be evident when we analyze district level patterns in relation to the size of the district winning coalition.

Public Goods

The district level data we have also permit us to investigate in some detail the extent to which the district's winning coalition's size shapes policies oriented toward providing public goods. We investigate several indicators of quality of life, including access to health care

(measured as the number of health care facilities per square kilometer), the district-level infant mortality rate, spending on education as a percentage of the district budget, the proportion of housing that is electrified, and the district-level Gini index. We view greater income equality (a smaller Gini index) as a public good, just as we view more efforts on behalf of residential electrification (Brown and Mobarak 2009), health care access, education and low infant mortality as public goods.

The analysis of these dependent variables proceeds as follows. In each case, we report three regression results. We estimate the impact of coalition size on public and private goods provision. We separately estimate the impact of the total vote for the CCM on the same dependent variables and finally we examine the effects of each when both are included in the analysis.

Control Variables

The statistical analyses control for factors besides coalition size or CCM vote that seem to be plausible alternative or confounding candidates for explaining the allocation of resources to public and private benefits in each district. All have been chosen to facilitate the separation of political considerations as an explanation for policy choices from need, resource availability, or scale. All variables are calibrated as the logarithm of their raw value (with 1 added for values of 0). This means that regression coefficients are readily interpreted as the percentage change in the dependent variable for a one percent change in any independent variable.

We control for productivity, poverty, and for the value of vouchers when appropriate. Productivity is measured, in keeping with the practice in Tanzania, as maize production averaged across the long and short rainy season (District Analysis from the World Bank, 2008). Poverty is

measured as the percentage of the population in each district identified by the World Bank as below the poverty line. Vouchers can reasonably be viewed as the central government's opportunity to provide aid transfers to the districts and, as such, might be used to improve economic conditions rather than to advance the government's political agenda. Thus, when examining allocations other than to vouchers, we control for the value of vouchers (log(Vouchers+1)) to see whether the government uses them to improve district-level living conditions. Additionally, we control for district population or population density (population per square kilometer), depending on which is more appropriate for the dependent variable. Here the objective is to correct for any scale or proximity/crowding effects that might have a confounding effect on the size of the CCM or winning coalition vote as explanations for policy choices between public and private goods.

The Analysis

The results of our district-level analysis must be interpreted with some caution as we only have data for resource allocations following the 2005 election. Therefore, we cannot control for prior accumulated values of private and public goods in the districts. Still, the data are extensive enough that we can perform careful tests that sort out the relative impact of coalition size as distinct from general support for the CCM.

It is at the district level that the Tanzanian central government has the greatest opportunity to equalize or distort economic and social circumstances. It can make decisions purely on a needs basis, as will be estimated by controlling for the logarithm of district-level poverty (and also productivity) or it can make decisions to dole out resources on a political basis. If the latter path is chosen, then we should expect private benefits like vouchers and road

construction to go to the districts that have relatively small pro-CCM presidential election winning coalitions and for health, electrification, and income equality benefits to go to the districts in which the CCM needs a relatively large winning coalition. If selectorate-style politics is not central, then the size of the required winning coalition in each district should have no particular bearing on resource allocations. The CCM vote total might still be relevant insofar as it may reflect past satisfaction with the party's performance on behalf of the people in the district. As we will see, there is substantial support for the idea that selectorate-style politics is a central consideration in Tanzanian constituencies and little support for the notion that the support coalition reflects positive feedback for the past performance of the CCM.

Table 1a provides summary statistics for the variables used here while table 1b shows the bivariate correlations among the independent variables. It is noteworthy that the bivariate correlation between Log(W) and Log(CCM) – the two independent variables of greatest interest – is only 0.36, indicating that the size of the second largest party's vote total (W) is not strongly associated with the vote total amassed by the CCM.

Tables 1a and 1b about here

Table 2 tests the impact of winning coalition size and the control variables across the dependent variables. Table 3 replicates the tests in table 2, but substituting the size of the support coalition (log(CCM)) for the size of the winning coalition in each district. Table 4 repeats the tests, examining the simultaneous impact of the winning coalition's size and the support coalition's size, as well as the control variables, on the dependent variables.

The first column in tables 2-4 evaluates the likelihood of receiving vouchers (a dummy variable coded as 1 in the districts that received vouchers and 0 otherwise) as a function of coalition size and CCM support. As expected, the impact of coalition size is substantial, with a

doubling of the size of a districts presidential election winning coalition being equal to about a 69 percent decline in the prospect of receiving vouchers. The CCM's presidential vote, by contrast, is not significantly associated with the likelihood of receiving vouchers. When we consider both the size of W and the CCM vote, the CCM vote total is insignificant while a 1 percent increase in the size of W is associated with a 1 percent decrease in the odds of getting vouchers.

Tables 2-4 about here

The value of the vouchers is even more dramatically responsive to coalition size than is the likelihood of receiving vouchers. The second column of tables 2-4 shows the results when predicting the value of vouchers across all districts, a rather unrealistic condition given that we know from the previous results that not all districts are expected to get vouchers and we know ex post that not all districts actually got vouchers. Still, it is a useful first cut on the question. Column 3 looks at the same question in a more nuanced and realistic fashion, focusing on those districts actually selected to receive vouchers.

As can be seen in column 2 of tables 2-4, a 10 percent increase in the size of the required winning coalition translates into a 15 percent decline in the value of vouchers received. The vote for the CCM is insignificantly related to the value of vouchers, although taking the size of W and the CCM vote into account simultaneously, both dramatically reduce the value of vouchers, with the effect of W being statistically more significant than the effect of the CCM vote.

Column 4 replicates the test, but looks only at the districts that actually received vouchers. A doubling of W (remembering that the districts receiving vouchers are selected, as we have seen, on the basis of having a small coalition to begin with), produces about a 1/3 reduction in the value of vouchers. The size of the CCM vote, in contrast, is not significantly associated

with the value of vouchers in those districts that actually received this private benefit. Thus we find that even among the small coalition districts – those most likely to receive vouchers – the central government seems to have sharply discriminated between those that value private goods the most (the smallest coalition districts) and those that value such goods the least (the relatively larger small coalition districts).

Columns 1-4 of tables 2-4 paint a clear picture of private rewards – in the form of vouchers as transfer payments – to districts in which the loyal support of only a few are needed. Among the control variables, productivity and population size tend to be associated with the receipt of vouchers and the magnitude of their value. Contrary to the stated purpose of the voucher program in Tanzania, need – as measured by the logarithm of the proportion of the district's population below the poverty line – has no consequential impact on the use of vouchers to help stimulate the agricultural economy.

The private-goods oriented indications of small coalition districts are further reinforced by the results for road construction as a percentage of the district budget. Again the effect is substantively and statistically strong in pointing to the use of roads as a mechanism to reward small coalition districts. The vote for the CCM also is negatively associated with spending on road construction. That is, where the required winning coalition is small and the support coalition also is small, more is spent on building roads than where either or both are large. Less productive, wealthier, less densely populated districts generally experience greater spending on road construction. It seems road construction is not being used to alleviate poverty, but is being used to reinforce coalition loyalty in small coalition districts.

The allocation of resources devoted to private benefits that can easily be targeted to loyal supporters seems to follow the expectations derived from the selectorate theory. The results are

uneven with regard to the role that the size of a support coalition (that is, the vote for the CCM) plays in party decisions to dole out rewards. Finally, these results do not encourage the conclusion that the allocation of resources for vouchers and road construction is being used to alleviate poverty and improve general living conditions.

We can now turn attention to the relationship between winning coalition size, support coalition size and public goods at the district level. We begin with the regression analyses linking income inequality to coalition size. Here we find support for the idea that a larger winning coalition means greater income equality. As expected the coefficient for log(W) is consistently negative and statistically significant, meaning that districts with larger coalitions also have more equal income distributions than districts that rely on smaller coalitions. The magnitude of CCM support is unrelated to income distribution. The control variables likewise have no consequential effect on income inequality.

Residential electrification is a significant factor in improving the quality of life in a largely rural, agricultural country such as Tanzania. Brown and Mobarak (2009) have shown that as African countries move from small coalition to large coalition environments at the national level they improve the affordability of residential electricity at the expense of industrial subsidies. We cannot quite replicate their tests here on the Tanzanian district level, but we can come close by evaluating the percentage of electrified homes in each district as a function of coalition size. The results indicate that districts that require a larger winning coalition provide greater residential electrification than districts that depend on a small coalition. Indeed, a doubling of the winning coalition's size is associated with a 57 percent increase in the percentage of electrified homes. The CCM's vote, in contrast, on its own, is unrelated to residential electrification. It is significant in Table 4, where we include as well the impact of log(W). As we

would expect, poverty and a large population act against home electrification. Vouchers do nothing to influence the availability of this public good and neither does district productivity.

Next we assess the relationship between coalition size, CCM support, and the percentage of the district's budget that is spent on education. In this instance, we find that neither the size of the winning coalition nor the size of the support coalition significantly influences education spending and neither do any of the control variables. Whatever is driving variation in education spending in Tanzania's districts, it is not captured in the models tested here.

Health care access, a critical indicator of quality of life, is found to be strongly linked to winning coalition size. A 10 percent increase in the required size of the winning coalition translates into a 2 percent improvement in the number of health care facilities per capita. CCM's presidential vote also strongly improves health care access but still, even when controlling for the CCM's vote, the size of the winning coalition remains a significant contributor to improved health care. Happily, more impoverished districts also enjoy much more health care access, a major consideration in improving the prospects for future productivity. A 10 percent increase in poverty in a district converts to about a 4 percent increase in health care facilities per capita. This indicates a significant needs-based component to health care access. The poor, of course, are most vulnerable to illness and disease and the government seems to be responsive to this problem.

A final assessment of coalition size effects on health care is seen by looking at the infant mortality rate across districts. As the table shows, coalition size (W) is consistently associated with a reduction in infant mortality rates. Support for the CCM is not and, sadly, when CCM support borders on significance (as it does for a one-tailed test in Table 3), increasing CCM support is associated with an increase, not a decrease, in infant mortality. Doubling the minimum

winning coalition's size is associated with a decrease of 7 or 8 infant deaths per thousand, a substantively important improvement. Poverty, of course, contributes to a sharply higher infant mortality rate and productive economic activity helps to reduce infant mortality.

Conclusion

What have we learned? Depressingly, Tanzania's program of transfer payments in the form of vouchers was not found to influence provision of any of the public goods examined here. So these agricultural transfers seem not to be freeing up resources to improve quality of life. Excess votes for the CCM above the minimum winning coalition requirement are generally inconsequential in shaping policy outcomes but the size of the coalition required to ensure victory on a district by district basis is strongly and consistently associated with policy outcomes. Table 5 provides a scorecard. It shows that the required size of the minimal winning coalition is consistent with selectorate hypotheses in 88 percent of the tests. The size of the support coalition – the CCM vote – significantly influences choices on the dependent variables only 38 percent of the time. Thus, the analysis both reinforces earlier empirical examinations of selectorate hypotheses – in this instance with a coalition size indicator that almost perfectly captures the theoretical concept – and illuminates some of the problems that may be hindering improved living conditions in Tanzania.

We have seen how certain important structural pathologies distort efforts to improve quality of life in Tanzania and that these structural pathologies are consistent with the incentive-based arguments from selectorate theory. This means that the logic of that theory, coupled with the evidence, might be used to infer changes that are likely to improve welfare in Tanzania or wherever else similar patterns exist. Although what needs to be fixed is clear and so are some of

the policy changes required to fix things, we should not underestimate the tenacity of entrenched interests whose influence, inevitably, will be diminished by moving Tanzania from its current equilibrium to a new equilibrium. Identifying what might be changed is not the same as implementing the changes. As to the question of what needs to be done, our hope is that those in a position to do so will heed the implications of studies like this and look for incentive compatible means to convince entrenched leaders to alter how they use domestic and foreign-aid-based resources so that these resources improve the quality of life of impoverished people regardless of how they vote.

The international aid community is in a position to use economic assistance as a lever to encourage better resource allocation decisions. Aid funds could be concentrated on constituencies that rely on a large coalition. Such aid funds might be distributed directly to the local governments rather than through the national government, although this might merely shift corrupt practices from the center to the districts. If the international aid donor community makes increased or continued funding conditional on coalition-increasing electoral and political reform, then it is likely that Tanzania can be moved toward greater growth, more equal opportunities, and greatly improved quality of life. In the absence of such pressures – and other selectorate studies suggest that national aid donors are not interested primarily in improving economic or political outcomes in recipient countries (Bueno de Mesquita and Smith, 2009a, 2009b) – the small coalition framework is likely to become more and more entrenched, retarding progress even as it enriches a few at the top of the political order.

Table 1a: Summary Statistics

Variable	Observation	Mean	Median	Minimum	Maximum
Voucher (Dummy: 1= Yes, 0 = No)	119	0.328	0.471	0	1
Log(Voucher)	119	3.395	4.905	0	12.006
Log(Roads)	113	0.014	0.008	0.002	0.44
Log(Infant Mortality)	118	4.490	0.310	3.434	4.997
Log(Health Care Access Per Capita)	117	8.795	0.471	7.040	10.179
Log(Electrified Households)	119	0.996	1.581	-2.780	3.841
Log(Gini Index)	119	3.452	0.082	3.268	3.769
Log(Poverty)	119	3.460	0.386	2.404	4.215
Log(Productivity)	119	5.107	1.127	0	6.958
Log(Population)	119	12.392	0.587	10.616	13.901
Log(Population/Km^2)	119	4.193	1.443	0.697	8.637
Log(W)	119	10.133	0.927	7.340	12.362
Log(CCM)	119	11.073	0.571	9.261	12.565

Table 1b: Bivariate correlation: Independent Variables

N = 119	Log (W)	Log (CCM)	Log (Poverty)	Log (Productivity)	Log (Vouchers)	Log (Population)	Log (Population/Km^2
Log (W)	1.00						
Log (CCM)	0.36	1.00					
Log (Poverty)	0.059	-0.00	1.00				
Log (Productivity)	-0.18	0.19	0.03	1.00			
Log (Vouchers)	-0.29	-0.03	-0.09	0.33	1.00		
Log (Population	0.52	0.93	0.07	0.18	-0.01	1.00	
Log (Population/Km^2	0.28	0.18	-0.44	-0.25	-0.16	0.13	1.00

Table 2: Tests of Model 1: The Role of Winning Coalition Size on District Resource Allocations

Model 1: Size of Winning Coalition	Vouchers?	Voucher Value, All Districts	Voucher Value, Districts Getting Vouchers	Road Budget	GINI	Home Electric	Ed. Budget	Health Care Access	Infant Mortality
Log(W)	-0.686 2.36*	-1.532 2.74#	-0.330 2.74#	-0.003 4.42#	-0.025 2.41*	0.408 2.50*	0.800 1.42	0.192 4.23#	-0.078 2.10*
Log Poverty	-0.469 0.83	-1.105 1.02	0.165 1.62	-0.004 2.33*	-0.029 1.50	-2.259 7.34#	-1.141 1.07	0.402 3.57#	0.244 3.50#
Log Productivity	0.779 2.63#	1.138 2.85#	0.513 1.65	-0.002 3.64#	-0.010 1.37	0.003 0.02	0.158 0.36	0.041 1.11	-0.055 2.07*
Log Voucher				0.000 0.32	0.000 0.11	-0.018 0.69	-0.003 0.04	-0.004 0.50	-0.007 1.12
Log Population	0.299 0.63	0.852 0.96	1.038 4.23#		0.030 1.88	-0.772 3.07#	0.605 0.70		0.071 1.24
Log Pop/km^2				-0.002 3.37#				0.010 0.30	
Constant	-0.043 0.01	6.375 0.68	-1.929 0.73	0.078 7.76#	3.586 20.90#	14.294 5.40#	8.232 0.91	5.227 8.28#	3.862 6.43#
Observations	119	119	39	113	119	119	118	117	118
R-Squared		0.18	0.50	0.33	0.08	0.38	0.06	0.27	0.16

In tables 2-4: Absolute value of z- or t-statistics is displayed in second row of each cell (z for Voucher: Yes or No and t- statistic for all others). * significant at 5%; # significant at 1%

Table 3: Tests of Model 2: The Role of Support Coalition Size on District Resource Allocations

Model 2: Size of Support Coalition	Vouchers?	Voucher Value, All Districts	Voucher Value, Districts Getting Vouchers	Road Budget	GINI	Home Electric	Ed. Budget	Health Care Access	Infant Mortality
Log(CCM)	-1.125 1.10	-2.373 1.13	0.199 0.49	-0.007 6.84#	0.035 0.94	0.325 0.55	-1.973 0.99	0.401 6.10#	0.176 1.32
Log Poverty	-0.549 0.97	-1.443 1.27	0.374 1.10	-0.004 2.52*	-0.026 1.27	-2.219 6.88#	-1.366 1.25	0.416 0.399#	0.262 3.64#
Log Productivity	0.949 3.30#	1.526 3.94#	0.224 2.03*	-0.001 1.54	-0.006 0.88	-0.075 0.064	0.037 0.09	-0.023 0.65	-0.045 1.71
Log Voucher				0.000 0.98	0.001 0.82	-0.033 1.26	-0.044 0.50	-0.008 1.05	-0.003 0.48
Log Population	0.690 0.70	1.609 0.79	0.554 1.43		-0.024 0.66	-0.703 2.92#	3.100 1.61		-0.157 1.22
Log Pop/km^2				-0.002 3.56#				0.001 0.03	
Constant	0.053 0.01	6.928 0.72	-1.221 0.41	0.114 9.75#	3.476 20.39#	14.292 5.26#	8.802 0.97	3.054 3.94#	3.818 6.37#
Observations	119	119	39	113	119	119	118	117	118
R-Squared		0.13	0.39	0.45	0.04	0.35	0.05	0.37	0.14

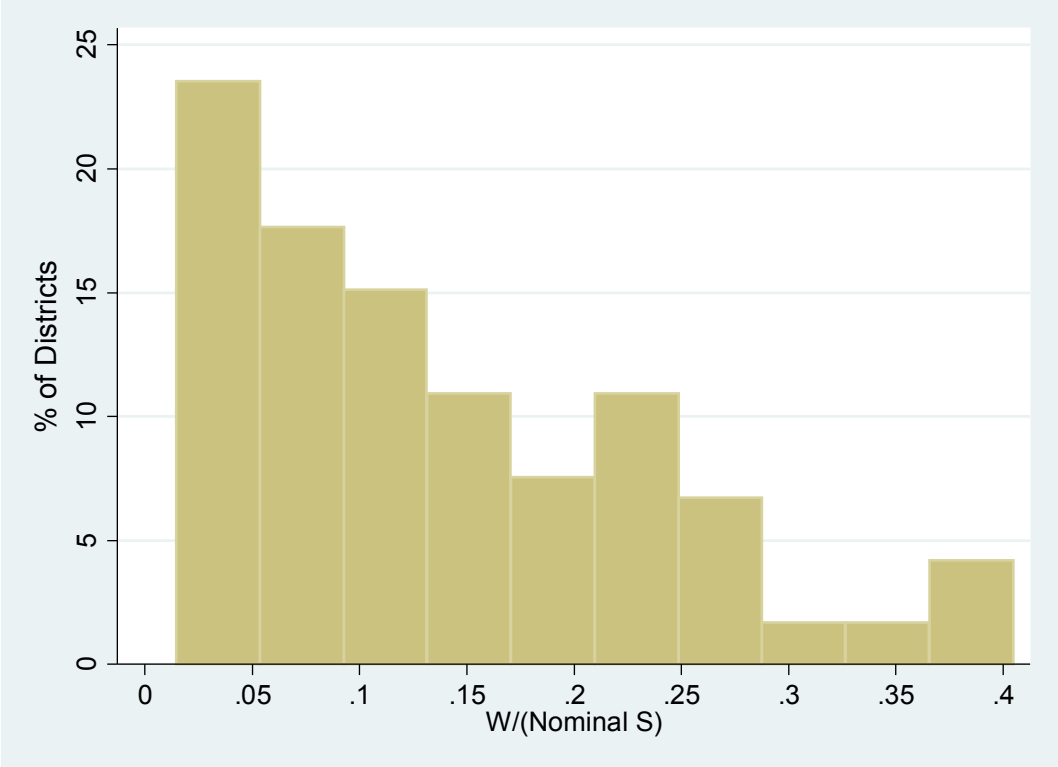
Table 4: Tests of Model 1: The Role of Winning Coalition Size and Support Coalition Size on District Resource Allocations

Model 3: Size of Winning Coalition and Support Coalition	Vouchers?	Voucher Value, All Districts	Voucher Value, Districts Getting Vouchers	Road Budget	GINI	Home Electric	Ed. Budget	Health Care Access	Infant Mortality
Log(W)	-1.010 3.00#	-2.179 3.63#	-0.347 2.69*	-0.002 2.48*	-0.026 2.21*	0.570 3.13#	0.688 1.09	0.115 2.61*	-0.070 1.66*
Log(CCM)	-2.820 2.08*	-5.670 2.59*	-0.156 0.40	-0.006 5.51#	-0.007 0.17	1.251 1.94*	-0.870 0.39	0.338 4.94#	0.063 0.42
Log Poverty	-0.711 1.21	-1.653 1.53	0.503 1.59	-0.004 2.27*	-0.030 1.50	-2.125 6.81#	-1.233 1.12	0.378 3.68#	0.251 3.49#
Log Productivity	0.758 2.47*	1.054 2.70#	0.168 1.63	-0.001 2.04*	-0.010 1.37	0.007 0.06	0.156 0.35	-0.011 0.31	-0.055 2.05*
Log Voucher				0.000 0.46	0.000 0.07	-0.006 0.22	-0.012 0.13	-0.004 0.55	-0.006 0.98
Log Population	3.089 2.14*	6.571 2.77#	1.175 2.76#		0.037 0.82	-2.044 2.92#	1.488 0.61		0.006 0.04
Log Pop/km^2				-0.001 3.03#				-0.014 0.48	
Constant	0.820 0.15	7.168 0.79	-1.715 0.63	0.119 10.26#	3.488 20.79#	14.040 5.36#	8.400 0.92	2.707 3.52#	3.849 6.37#
Observations	119	119	39	113	119	119	118	117	118
R-Squared		0.22	0.50	0.48	0.08	0.40	0.06	0.40	0.16

Table 5 Scorecard: Significant in the Predicted Direction or Insignificant?

	Table 2 Log(W)	Table 3 Log(CCM)	Table 4 Log(W)	Table 4 Log(CCM)
Voucher Dummy	**Significant**	Not Significant	**Significant**	**Significant**
Log(Vouchers)|District Received Vouchers	**Significant**	Not Significant	**Significant**	Not Significant
Log(Road Construction Spending)	**Significant**	**Significant**	**Significant**	**Significant**
Log(GINI)	**Significant**	Not Significant	**Significant**	Not Significant
Log(Residential Electrification)	**Significant**	Not Significant	**Significant**	**Significant**
Log(Education Spending)	Not Significant	Not Significant	Not Significant	Not Significant
Log(Health Care Access)	**Significant**	**Significant**	**Significant**	**Significant**
Log(Infant Mortality)	**Significant**	Not Significant	**Significant**	Not Significant
Total	7/8	2/8	7/8	4/8

Figure 1: Tanzania's District Level W/NS: Presidential Election



References

Alvares, Michael, José Antonio Cheibub, Fernando Limongi, and Adam Przeworski. 1997. "Classifying Political Regimes," *Studies in Comparative International Development* 31:3-36.

Brown, David S. and Ahmed Mushfiq Mobarak. 2009. "The Transforming Power of Democracy: Regime Type and the Distribution of Electricity," *American Political Science Review* 103, 2 (May): 193-213.

Bueno de Mesquita, Bruce and Alastair Smith. 2009a. "Political Survival and Endogenous Institutional Change." *Comparative Political Studies* 42, 2 (February): 167-197.

Bueno de Mesquita, Bruce and Alastair Smith. 2009b. "A Political Economy of Aid," *International Organization*, 63, 2 (Spring):309-340.

Bueno de Mesquita, Bruce, Alastair Smith, Randolph M. Siverson and James D. Morrow. 2003. *The Logic of Political Survival*. Cambridge, MA: MIT Press.

Chibber, Pradeep and Irfan Nooruddin. 2004 "Do Party Systems Count? The Number of Parties and Government Performance in Indian States," *Comparative Political Studies* 37, 2 (April): 152-187.

Cox, Gary. 1997. *Making Votes Count*. New York: Cambridge University Press.

Downs, Anthony. 1957. *An Economic Theory of Democracy*. New York: Harper.

Duverger, Maurice. 1972. "Factors in a Two-Party and Multiparty System," in *Party Politics and Pressure Groups* (New York: Thomas Y. Crowell, 1972), pp. 23-32.

Feng, Yi. 2003. *Democracy, Governance and Economic Performance*. Cambridge, MA: MIT Press.

Jensen, Jeffrey Louis. 2009. "Democratic Development and Public Goods Spending: A Comparative Politics Approach Using the American States During the Antebellum Period 1789-1860. Paper presented at the annual meetings of the Midwest Political science Association, Chicago, Illinois, April 3, 2009.

Lake, David and Matthew Baum. 2003. "The Political Economy of Growth: Democracy and Human Capital," *American Journal of Political Science* 47, 2 (April): 333-47.

North, Douglass C., John J. Wallis and Barry R. Weingast. 2009. *Violence and Social Orders: A Conceptual Framework for Interpreting Recorded Human History*. New York: Cambridge University Press.

Powell, G. Bingham. 2000. *Elections as Instruments of Democracy*. New Haven: Yale University Press.

Riker, William H. 1962. *The Theory of Political Coalitions*. New Haven: Yale University Press.

Riker, William H. 1982. "The Two-party System and Duverger's Law: An Essay on the History of Political Science." *American Political Science Review*, 76 (December), pp. 753-766.

Smith, Alastair and Bruce Bueno de Mesquita. 2009. "Pivotal Patronage," Working Paper, Alexander Hamilton Center for Political Economy at NYU.