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# Patronage Politics and Public Goods Provision in Africa

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Patronage Politics and Public Goods Provision in Africa

by

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A THESIS

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# Patronage Politics and Public Goods Provision in Africa

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University of Nebraska, 2012

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Many prevailing views contend that African politics are strongly influenced by vertical networks of dyadic patronage relationships that have a damaging effect on political systems, economies, and civil society. Since independence, the increasing size of many African cabinets would, following the literature, indicate a growth in political patronage networks. While these networks may increase the likelihood of leadership survival, it is expected, *ceteris paribus*, that growing patronage coalitions would diminish government revenue allocated toward the provision of public goods. This study goes beyond previous research by quantitatively examining the relationship between cabinet size and public goods provision that has been discussed only qualitatively thus far. A time-series cross-sectional analysis utilizing data from 34 countries in Sub-Saharan Africa from 1971-2007 suggests, contrary to previous studies, that increases in cabinet size are associated with improved allocation of public goods in healthcare, education, and infrastructure.



## 1. Introduction

Political institutions structure the incentives that political leaders have to provide good public policy.<sup>1</sup> In the weak states that make up Sub-Saharan Africa, formal rational-legal political institutions are rarely fully consolidated and the resulting lack of leadership restraint has created the incentive for leaders to promote policies that undermine the wellbeing of society. Leaders in the region, such as Paul Biya in Cameroon, have implemented clever strategies for staying in power, but have shown a relative lack of creativity in promoting human development. This is reinforced by the relatively abysmal performance on human development indicators such as life expectancy at birth, infant mortality, and enrollment in secondary education across Sub-Saharan Africa. Instead of providing an environment that promotes economic growth and human development through the provision of important public goods, African leaders have often placed greater focus on diverting public revenue to a select group of constituents.

While scholars have repeatedly focused on the ability of African governments to appropriate public resources for private purposes,<sup>2</sup> far less research has directly examined their ability to redistribute public revenue in the form of public goods. By public goods, this research refers to goods that are non-excludable and non-rival. This means that public goods are those which, once consumed by individual A in group X, cannot be withheld from other group members (Olson 1965, 14). Although few goods fully meet

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<sup>1</sup> See Bueno de Mesquita et al. (2003), Acemoglu, Robinson, and Verdier (2004), Acemoglu and Robinson (2006), and Besley and Kudamatsu (2007).

<sup>2</sup> Bates (1981; 2008) and van de Walle (2001).

this criterion in reality, the concept of public goods provides theoretical contrast to private goods, which are rival and excludable. Examples of public goods include national healthcare programs, public education, and infrastructure such as roads and sanitation services. Given the tremendous collective action problem that prevents these goods from being adequately supplied by private individuals, governments are often required to step in and provide these public goods which are vital to economic and human development.<sup>3</sup>

The importance of public goods provision lies in the externalities associated with it. Although the term originated in economics literature, it actually shares many similarities to network theories in political science.<sup>4</sup> Meade (1973) defines externalities as “an event which confers an appreciable benefit (or inflicts appreciable damage) on some person or persons which were not fully consenting parties in reaching the decision or decisions which led directly or indirectly to the event in question (in Cornes and Sandler 1996, 39).” What this means in the context of African politics is that decisions to allocate funds for public goods such as education or infrastructure have many unintended consequences and benefits.

In Sub-Saharan Africa, the scale of inequality in income makes public goods provision incredibly important. Sierra Leone provides an excellent example given that about 70% of its citizens live below the poverty line. As scholars have noted, weak public goods provision disproportionately hurts the poor.<sup>5</sup> The free market allows wealthy individuals in these societies to access resources like water, sanitation, healthcare,

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<sup>3</sup> See Olson (1965), Cornes and Sandler (1996), and Bueno de Mesquita et al. (2003).

<sup>4</sup> See Putnam (1993) and Slaughter (2004) for examples of network externalities.

<sup>5</sup> Besley and Ghatak (2006) and Ross (2006).

transportation, and schools, but is inadequate for supplying these goods for those who are most in need (Besley and Ghatak 2006, 285). Where these public goods are not adequately supplied by the government the poor are effectively left out of formal market activity. Hyden's (1980, 10) study of peasants in Tanzania emphasizes the exclusion of rural peasants from the cash economy. This exclusion not only hurts the poor and their prospects of human development, but places a tremendous amount of negative externalities on the society at large. Other countries such as Sierra Leone face incredible barriers to developing a robust economy and civil society because of the overwhelming majority who are living in poverty and are unable to participate in formal market activity. The result of these barriers to the formal economy is that governments are unable to generate adequate revenue to provide public goods, which are provided to citizens through taxation and subsidies. Thus, understanding the role of patronage networks in economic and human development in Sub-Saharan African is incredibly important to any effort that seeks to change outcomes in the region.

The provision of public goods has generally been linked to regime type. Scholars have noted the impact that democratic institutions have on promoting public goods and the incentive structure that non-democratic regimes have to pursue private goods.<sup>6</sup> Given the greater levels of accountability that leaders have in democratic systems, it is expected that they provide a wide variety of public goods. Conversely, autocratic leaders face few institutional restraints. While democratic leaders are pursuing public goods to satisfy their broad constituency, autocratic leaders prefer to appropriate public funds and distribute them in the form of private goods to their salient political supporters. Autocratic

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<sup>6</sup> Bueno de Mesquita et al. (2003), Besley (2006), and Besley and Kudamatsu (2007).

governments are thus expected to provide a smaller proportion of public goods because of an incentive structure that promotes bad policy. Since the wave of independence in the 1960s, Sub-Saharan Africa has experienced its fair share of bad policies implemented by kleptocratic states.

However, this clear dichotomy between public goods providing democracies and private goods providing autocracies has been complicated by the many arguments that African politics are characterized by vertical patronage networks or neopatrimonial regimes.<sup>7</sup> Scholars have argued that African politics have been structured not by formal rational-legal institutions, but by patronage networks that function through hierarchical dyadic relationships between a single “big man” and his political support network. Van de Walle (2001) has argued that even those African countries that are transitioning to democratic systems are merely a façade behind which politics continue to be structured through patronage networks.

While Sub-Saharan Africa experienced a wave of founding and second multiparty elections between 1990 and 1994, with 54 elections in 29 countries, scholars were initially very skeptical of democratic consolidation in the region (Bratton and van de Walle 1997). Many transitioning countries in the region have failed to move beyond anything but rigged elections run by corrupt regimes. As Diamond (2008, 38) notes, “Many people in these countries—especially the poor—are thus citizens only in name and have few meaningful channels of political participation.” Instead of participating through the ballot box, some in Africa’s autocratic and transitioning countries are

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<sup>7</sup> See Lemarchand (1972), Lemarchand and Legg (1972), Theobald (1982), Jackson and Rosberg (1982), Bratton and van de Walle (1994, 1997) and van de Walle (2001, 2003), Acemoglu, Robinson, and Verdier (2004).

fortunate enough to be part of the ruling party's patronage network. However, most are left completely outside of the political sphere.

A more contemporary analysis by Lindberg (2006) provides caution to this overly pessimistic view of democracy in Sub-Saharan Africa. Instead of assuming that transitions to democracy are complete or failed following one or two rounds of elections, Lindberg shows that increasing the number of election cycles does help to consolidate democracy. Taking Lindberg's view of democratic development suggests that public goods provision across Africa is likely to improve, although at a rate much slower than many Africans would like. These contrasting views have thus exposed a puzzle that has yet to be thoroughly examined in the literature on development in Africa.

This research will seek to evaluate the state of democratic consolidation in Sub-Saharan Africa through the proxy of public goods provision. First, a thorough review of the literature on democracy, leadership survival, and patronage politics will be provided to frame the empirical analysis. Second, a time-series cross-sectional (TSCS) quantitative analysis of 34 countries in Sub-Saharan Africa between 1971 and 2007 will test the relationship between cabinet size in African governments and public goods provision in healthcare, education, and infrastructure.

Contrary to many influential studies in Africanist literature, the empirical analysis here finds a substantively significant positive relationship between cabinet size and public goods provision indicating that patronage networks may not be as pervasive as is often thought. This suggests that the validity of existing theories explaining economic catastrophe across Sub-Saharan Africa is questionable. Far from claiming that kleptocratic regimes are a thing of the past in the region, these findings only suggest that

African countries, even those with large cabinets, can break away from their neopatrimonial past, assuming it was even systemic in the first place. The empirical tests are followed by a discussion of the implications of these findings for policies aimed at improving public goods provision, human development, and economic growth in the region and for theory attempting to explain these phenomena. Although this research will not provide a comprehensive guide to ameliorating Sub-Saharan Africa's problems with public goods provision, it does question the broadly negative view of patronage politics and has important implications for aid and development programs.

### **1. Democratic accountability versus patronage politics**

Theoretical literature on democratic political institutions has long stressed the impact of increased levels of participation on public policy. Dahl's (1971) classic formulation of democracy offers a useful starting point. According to Dahl, democracy can be measured in two dimensions by looking at levels of public contestation and inclusiveness in the political process. Those countries that exhibit high levels of public contestation and inclusiveness come closest to the ideal type democracy that Dahl coins "polyarchy." In systems that approach polyarchy, citizens become empowered to formulate their preferences, inform political leaders of their preferences, and have their preferences weighted equally with others in society (Dahl 1971, 2). In countries like Burundi, Chad, Comoros, Liberia, and Nigeria where more than half the population lives in poverty, the expression of citizen preferences are likely to reflect the desire for greater public goods provision by the government. Indeed, the results of a 2008 Afrobarometer survey indicate that roughly 3 out of 4 Nigerians believe the government's economic

policies hurt the majority of citizens and benefited only a select few.<sup>8</sup> These attitudes are congruent with the general “representation gap” that is perceived in most African countries by citizens who believe elected officials are only concerned with self-enrichment (Bratton, Mattes, and Gyimah-Boadi 2005, 242).

The democratic model provided by scholars like Dahl has been extended to specify the mechanisms through which citizen preferences are channeled. Barro (1973) provides a model of citizen control over elected politicians that specifies the process of politicians’ accommodation of citizen preferences for public goods. With the assumption that politicians wish to stay in office, Barro shows that politicians must often adjust their provision of public goods to satisfy citizen preferences and maximize their probability of reelection. Although public goods are generally underprovided in the region, voters in all countries lament that politicians only reach out to their constituents when seeking reelection (Bratton, Mattes, and Gyimah-Boadi 2005). However, this sentiment is not limited to weakly democratic or neopatrimonial societies. Sub-Saharan Africa was certainly not a region of flourishing democracies during the period under study here, but this logic does provide reason to believe that politicians in Africa’s democratic systems face a greater incentive to provide public goods.

While government representatives do not always wish to be reelected or are institutionally restrained from doing so, the assumption is very powerful in explaining greater public goods provision in democracies.<sup>9</sup> Besley (2006, 104-5) discusses the three main reasons why the motivation to stay in office is so powerful in shaping the behavior

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<sup>8</sup> Afrobarometer. 2008. “Round 4 Afrobarometer Survey in Nigeria.” Question 11.

<sup>9</sup> See Mayhew (1974), Rogoff (1990), and Besley (2006) for further discussion on the preference for reelection.

of politicians. The first is that politicians may gain ‘ego rent’ from holding office.<sup>10</sup> Second, politicians may wish to stay in office because government service provides a platform for material gain. If arguments about neopatrimonialism and zero-sum politics in Africa are correct,<sup>11</sup> this should be a particularly strong motivator of political behavior. Finally, there is a possibility that the reelection incentive comes from the strong preference for providing public goods. This incentive may not be prevalent in Africa’s more autocratic governments, but leaders and cabinet members in transitioning and consolidated democracies such as Liberia and Botswana may be motivated to stay in office based on this benevolent desire. Nevertheless, this final preference is expected to be rare if Sub-Saharan Africa is indeed plagued by systemic neopatrimonialism.

Building off of the assumption that leaders wish to stay in office, Bueno de Mesquita et al. (2003) developed the selectorate theory of leadership survival. This theory suggests that African governments with small winning coalitions have structural incentives to engage in kleptocratic activity that takes public funds and uses them for the provision of private goods among the winning coalition. Given that the theory assumes that leaders are rational, the dominant strategy for autocrats is to distribute private goods among their winning coalition in an amount sufficient to maintain coalition loyalty and stay in office. However, as the winning coalition grows, the dominant strategy for staying in office transitions to one of increasing expenditures on public goods which are able to satisfy a broader coalition (Bueno de Mesquita et al. 2003, 97).

Similar logic has been used by Africanist scholars before the formulation of selectorate theory. Nicolas Van de Walle (2001, 105) argues that growing cabinet size is

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<sup>10</sup> See Rogoff (1990).

<sup>11</sup> See Kramer (1983), Bratton and Van de Walle (1994), Charap and Harm (2002), and Szeftel (2000a&b).

one of several measures that show “the persistence of government consumption privileging the higher levels of the political class with little benefit to the state’s developmental functions.” What this is effectively stating in selectorate theory terms is that true democratization, characterized by large winning coalitions, has not emerged in Africa despite the increase in elections. Instead, even Africa’s “democratic” governments maintain power through the assistance of small winning coalitions. If selectorate theory is correct, this creates an institutional structure that promotes kleptocratic behavior among the political elite.

Not only does Van de Walle suggest that the political elite are skimming public resources, but also that maintaining offices for each ministry in Africa’s growing cabinets is not cheap. Governments in Sub-Saharan Africa often have similar, and in many cases larger, sized cabinets than many of the more developed countries. However, the gap in GDP and government budgets between these countries is substantial. Thus, it is likely that spending to maintain African ministries consumes a much higher as a percentage of GDP than it does in the developed world.

A country where this large cabinet-small economy contradiction can be seen is Cameroon. Its government has one of the largest cabinets in Africa with 44 ministers in 2000. However, its total economic output in terms of GDP converted for PPP was only slightly higher than \$23 billion. This is in comparison to a country like Romania which has a population similar to that of Cameroon but maintains only 19 ministries. While Romania has a cabinet size of less than half of Cameroon’s, its economy was over five times the size in 2000 with a GDP converted to PPP of more than \$116 billion.

Not only are Cameroon's many cabinet ministries expensive to maintain when operating at peak efficiency, many have accused President Biya and his ruling CPDM party of using cabinet seats to pay off the opposition. Since the return of multiparty elections to Cameroon in 1992, its cabinet size has steadily increased. Instead of an increase in cabinet size to better manage the country's affairs, Takougang (2003) has argued that Biya used the power of incumbency to manipulate the elections in his favor. Along with exploiting the incumbency advantage, Takougang (2003, 428) states that:

President Biya and the CPDM have also continued to dominate the political process through the effective use of patronage. Because the regime maintains a monopoly over the nation's purse strings, it has been able to manipulate individuals, regions, ethnic groups, and even some opposition parties in an effort to maintain control of Cameroon politics. Just as regime loyalty by individuals, ethnic groups or region brought tremendous financial and other socio-economic rewards under the one-party system, the same remains true under the current political environment.

This indicates that President Biya has distributed resources to several of the opposition parties in exchange for their support; this is a clear example of government institutions favoring bad policy for the exigent needs of leadership survival instead of policy intended to benefit society as a whole. Biya was systematically allocating public funds for the private purpose of staying in office. The difficulty of tracking the actual spending of public funds through patronage networks is incredibly difficult; however, the fact that important opposition members such as NUDP Vice President Hamandou Mustapha and Secretary General Issa Tchiroma accepted cabinet positions after the elections in 1992 shows that cabinet seats play an important role in patronage politics and leadership survival (Takougang 2003, 430-1).

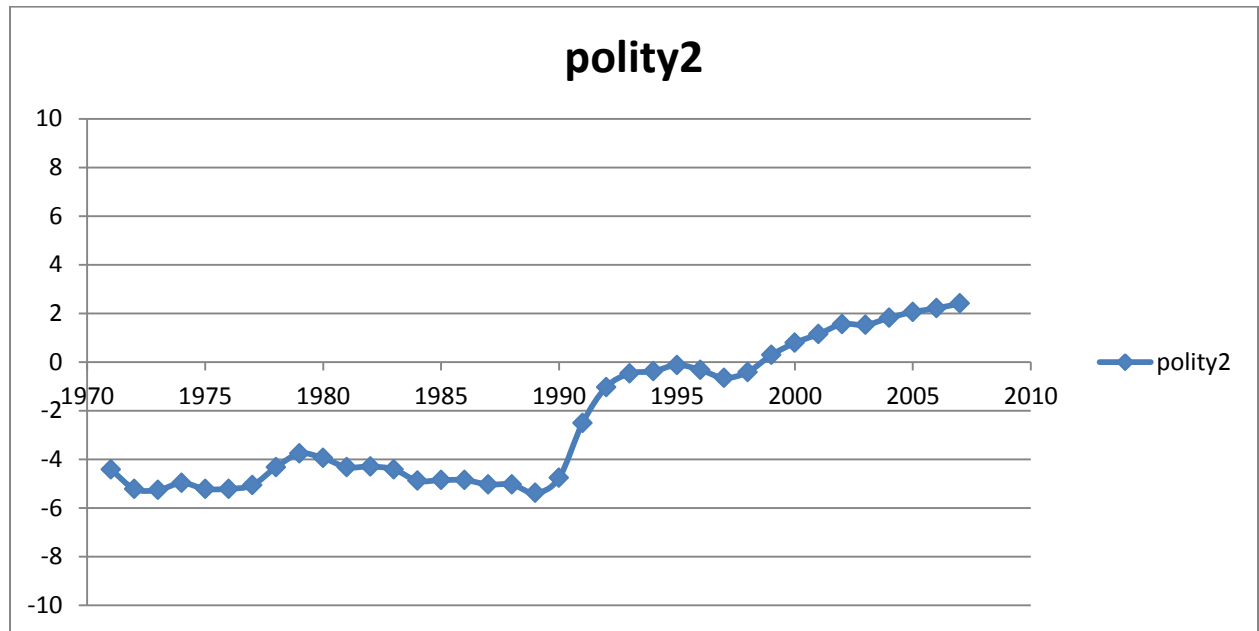
The case of Cameroon provides an ideal type for the tragedy of political economy in Sub-Saharan Africa. Some have related this tragedy of domestic politics to the tragedy of international politics under the conditions of anarchy. Jackson and Rosberg (1982) argue that in African politics as in international politics, the stakes for the incumbent government are high and the governing institutions are weak. Given these structural conditions, they argue that there is an incentive for selfish predatory behavior among those in power. Leaders who do not exhibit these characteristics in this zero-sum environment are not likely to survive. African politics is thus characterized by systems of opportunistic patronage politics. Personal patronage systems are “a dynamic world of political will and action that is ordered less by institutions than by personal authorities and power; a world of stratagem and countermeasure, of action and reaction, but without the assured mediation and regulation of effective political institutions (Jackson and Rosberg 1982, 12).” Where societies are run by patrons or “big men,” the incentive to provide good public policy is diminished and politicians become more interested in strategically distributing private goods to their political supporters.

Other work has also stressed the unique political environment in Sub-Saharan Africa and its path dependent implications. Although African governments have undergone significant transitions to democracy from independence to present,<sup>12</sup> Bratton and Van de Walle (1994) suggest that Africa’s political development is conditioned by its authoritarian past. They argue that “contemporary political changes are conditioned by mechanisms of rule embedded in the ancien régime” (Bratton and Van de Walle 1994, 454). This path dependence functions by subjecting democratic transitions to underlying networks of dyadic patron-client relationships and informal rules that have structured

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<sup>12</sup> The mean polity score for the selected countries was -4.41 in 1971 compared to 2.41 in 2007.

**Figure 1. Mean Polity2 scores 1971-2007.**



African politics in the past. The result is that even in Africa's transitioning countries, the true power structures of government lie beyond the façade of rational legal bureaucratic institutions of the modern state. In the neopatrimonial regime that lies underneath, "the chief executive maintains authority through personal patronage, rather than through ideology or law" (Bratton and Van de Walle 1994, 458). These regimes influence the societal norms of who can participate in politics and the amount of competition that is allowed in the political process.

The salient finding from this literature is that the process of democratic transition has been different in Africa than it has been in areas with corporatist regimes such as Latin America, Southern Europe, and Eastern Europe.<sup>13</sup> The path dependence of patronage politics in Africa is argued to have erected substantial barriers to political participation and increased accountability that usually accompanies democratic

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<sup>13</sup> See Bratton and Van de Walle (1994).

transitions. In her study of women and politics in Senegal, Beck (2003) argues that women lack access to important patronage networks and are thus disadvantaged in the political process. She claims that there is a “hidden public” in Senegalese society that “consists of patronage networks that permit social inequalities to be reproduced in political institutions premised on equality and representation” (Beck 2003, 148).

Exclusion from the hidden public is associated with shorter tenure in office for women and is likely inhibiting the descriptive representation of women in Senegal.<sup>14</sup> This suggests that politics in Senegal continue to be influenced by neopatrimonialism despite being categorized as a democratic country according to the Polity IV database.<sup>15</sup> It also indicates that Sub-Saharan African countries like Senegal may provide an inadequate supply of public goods because half of the population faces significant barriers to the political participation. If women have difficulties participating in politics, politicians face pressure from a smaller portion of society and will be less inclined to enact good public policy that supplies sufficient public goods.

While this research questions the broad application of the literature on neopatrimonialism throughout Sub-Saharan Africa, a lack of public goods exists nonetheless. This lack of provision of public goods in areas of health, education, and infrastructure creates economic problems region wide. Economists have long debated the extent to which increasing these public goods produces positive externalities for the economy as a whole, but have come to mixed conclusions. Many of the disputes have centered on problems of endogeneity and have resulted in the widespread use of

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<sup>14</sup> See Mansbridge (1999).

<sup>15</sup> In 2000, Senegal had a Polity score of 8.

instrumental variables that have weakened previous findings.<sup>16</sup> However, most of the research on the externalities of human capital, particularly in education, is conducted inside the U.S. or other highly developed countries because of the availability of data. This provides reason to question the relative insignificance of human capital on economic growth that has been found in previous studies.

Acemoglu (1996) provides a theoretical model that shows the increasing returns from human capital accumulation. He argues that “Human capital externalities arise when investment of an individual in his skills creates benefits for other agents in the economy” (Acemoglu 1996, 779). This explains both the geographic concentration of certain industries in places such as Silicon Valley and also the relative lack of investment in locations throughout Sub-Saharan Africa. Sub-Saharan is thus a relatively unattractive target for foreign direct investment (FDI) despite low wage levels because the region lacks the human capital and the infrastructure to optimize profitability. Regions like East Asia and the Pacific are thus better targets for FDI given their higher levels of human capital. This suggests that greater investments in and improved delivery of public goods could have serious benefits for human development and economic growth.

Other studies reinforce the importance of human capital and FDI by showing the positive spillovers in research and development (R&D). Growth theory since Solow (1957) has stressed the importance of technological innovation resulting from R&D as the driver of long term economic growth. Wei and Liu (2006) show that R&D spillovers from FDI in manufacturing have had a positive impact on the productivity of indigenous Chinese firms. If Sub-Saharan Africa is ever able to reap similar benefits, increases in

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<sup>16</sup> See Ciccone and Peri (2006) and Acemoglu and Angrist (2000).

public goods are a necessity to increase the human capital and infrastructure necessary to attract higher levels of FDI. Public goods provision will need to play an important role in fostering an environment which encourages FDI and is thus incredibly important to the overall economic situation facing Sub-Saharan Africa.

What selectorate theory suggests is that if the wave of democratization in Africa has been substantively significant we should not find any systematic negative influence of cabinet size on public goods provision. Africa's transitioning countries should be approaching Dahl's ideal type polyarchy where citizen preferences for greater public goods provision are taken more seriously, regardless of cabinet size. However, if the wave of democratization in Africa is only masking the hidden patronage networks that continue to be the locus of power in African society we would expect to find increasing cabinet sizes to be correlated with decreases in the provision of public goods. Under selectorate theory this would suggest that even democratic systems have de facto small winning coalitions.

Moving beyond selectorate theory, this study tests previous arguments that suggest Africa's growing cabinets are increasing opportunities for kleptocratic behavior by the state. A simple look at descriptive statistics shows that cabinet size in Sub-Saharan Africa has grown from a mean of 16.34 members in 1971 to a mean of 26.76 members in 2007. If cabinet size is a reasonable proxy of patronage coalitions, literature on neopatrimonialism suggests that such increases should expand the opportunities for members of government to coopt public resources for private benefit. If cabinet members are indeed a systematic cause of lower public goods provision, the growth of Africa's

cabinets will be yet another obstacle in the way of human and economic development in Africa.

### **3. Research Methodology**

#### **3.1 Hypotheses**

The extant research on patronage politics in Africa suggests that expansive patronage networks should create an increase in private goods and a decrease in public goods. Moving beyond previous studies of patronage in African societies, this study disaggregates the relationship between patronage politics and public goods by selecting several specific dependent variables. This approach increases theoretical specification and methodological rigor that Lindberg (2006) claims are lacking in the neopatrimonial literature. The lack of human development in Africa indicates that basic public goods such as healthcare, education, and infrastructure are being poorly provided. This poor provision of basic public goods not only places a burden on the economy by decreasing the marginal product of investment in the private sector, but it also hinders human development among the most vulnerable members of society. Therefore, this study will test three hypotheses to explore the relationship between patronage networks and outcomes in health, education, and infrastructure. The hypotheses are as follows:

*H<sub>1</sub>: Increases in patronage coalition size increase the infant mortality rate.*

*H<sub>2</sub>: Increases in patronage coalition size decrease the average years of secondary education.*

*H<sub>3</sub>: Increases in patronage coalition size decrease primary energy consumption.*

### ***3.2 Data and Methodology***

The dataset used in this analysis includes 34 Sub-Saharan African countries and provides yearly observations from 1971 to 2007. Data on government cabinet size are taken from Arriola's (2009) analysis on cabinet size and leadership survival and is extended by seven years to produce a more inclusive dataset. Taking the country-year as the unit of analysis allows for testing the impact of yearly changes in cabinet size and other control variables on specific public goods across 34 countries. The dataset includes 1181 country-years for the healthcare measure, 838 country-years for the education measure, and 1151 country-years for the infrastructure measure to examine the relationship between public goods and cabinet size.

All hypotheses are tested using a pooled time-series cross-sectional (TSCS) model which utilizes panel corrected standard errors (PCSEs). TSCS models are useful for datasets such as the one used here because of their ability to estimate the strength of relationships across time and space. As Beck and Katz (1995) show, the panel corrected standard error procedure produces more accurate standard error estimates compared to other TSCS regression models, especially in comparative political economy research. PCSEs allow for more accurate estimates of standard errors than standard feasible generalized least squares (FGLS) models by accounting for heteroscedasticity among panels. When PCSEs are coupled with lagged dependent variables, as they are here, the twin problems of heteroscedasticity and autocorrelation are ameliorated. A pooled OLS regression is also estimated for each model to perform regression diagnostics that are unavailable using PCSEs.

### 3.3 Dependent Variables

It is important to note that these hypotheses all utilize dependent variables that are based on outcomes, not government spending. There are two main reasons for this. First, African governments are notoriously corrupt and have an incentive to misrepresent spending on public goods for a variety of reasons. Second, even if we assume the data are accurate, no systematic data are available on specific public goods spending. Also, purely looking at spending does not get to the central question of this research. Africa's citizens do not just need more money spent on public goods; they need money spent in ways that change outcomes. By specifically focusing on outcomes instead of spending, the dependent variables used here help to assess the overall effectiveness of public policy.

The first dependent variable, *infant mortality*, measures infant mortality rate in year  $y_{+1}$ . Infant mortality provides a good proxy for public goods provision in healthcare and sanitation and is lagged because of the expected delay in the impact of the independent variables. Infant mortality rate is defined here as the number of infant deaths per 1000 live births and is taken from the World Bank Development Indicators. Kudamatsu (2006) has shown that democratization in Sub-Saharan Africa has improved public service delivery in healthcare which has led to a decrease in infant mortality rates, particularly among infants born to mothers of lower socioeconomic status. While the impact of democratization may be beneficial, literature on neopatrimonialism suggests that larger patronage networks might have a negative independent effect on infant mortality rate.

The second dependent variable for public goods provision, *secondary education*, measures the average years of secondary education for the total population aged 15 years

or older and is lagged forward one year. These data are taken from the Barro-Lee (2011) dataset which measures secondary education at five year intervals. Linear interpolation was required to measure secondary education on a yearly basis and the variable was log transformation to create a normal distribution that meets the assumptions of the regression model. The skewness of the distribution here reflects the extremely low levels of secondary education in the majority of Sub-Saharan African countries. Deacon (2009) has shown that increases in democracy are associated with moderate increases in the average years of secondary education and that the interaction effects between democracy and income have a particularly strong impact on secondary education. Nevertheless, the literature on patronage politics suggests that larger patronage coalitions should lead to lower levels of secondary education.

The final dependent variable, *primary energy consumption*, is used as a proxy for public goods provision in infrastructure. This variable is taken from the Correlates of War National Military Capabilities dataset (v4.0) and measures energy consumption converted into thousands of tons of coal (Singer 1987). This is not an ideal measure of public goods provision in infrastructure, but does provide some indication of the availability of power and the capacity of the state's infrastructure to handle energy consumption. Other studies have used finer measures such as the percentage of paved roads and the number of telephones per worker (Alesina, Baqir, and Easterly 1999), but the availability of systemic data requires that inferences be made using the crude measure of energy consumption. The importance of infrastructure development in promoting economic development and foreign direct investment suggests that improving African infrastructure is necessary to improve levels of development. Again, scholars such as Deacon (2009)

have shown that increases in democracy are associated with increases in things such as road density, but none, to my knowledge, have investigated the impact of patronage networks on infrastructure development.

### **3.4 Independent Variables**

The literature on public goods provision specifies a number of important determinants; however, it overlooks the possibility that patronage networks are redistributing public resources for private benefits. While no measure exists that can perfectly capture the size of formal and informal patronage networks, several other studies have used cabinet size as a proxy (Arriola 2009; LeVan and Assenov 2009; van de Walle 2001). Data on cabinet size are taken from Arriola (2009) who measures the number of individuals with cabinet minister status in each country-year and is expanded to include cabinet size measures through 2007. The coding scheme used here does not count deputy ministers, regional ministers, military councils, or similar high level posts because of the inconsistent data across countries in the source.<sup>17</sup>

Cabinet size is a reasonable proxy because individual ministers are appointed by the leader in both democratic and autocratic systems. Minister choice depends on a variety of factors, but the literature on neopatrimonialism and leadership survival suggests that cabinet ministers are chosen based on the leader's affinity for them (Bueno de Mesquita et al. 2003, 88). Bueno de Mesquita et al. (2003, 61) define affinity as "simply a preference for one individual over another, independent of the policies of the individuals." Similarly, selectorate theory suggests that potential cabinet members desire a place in government based on the amount of private goods a leader can supply them.

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<sup>17</sup> Data are taken from Europa Publications Limited (1972-2001). *Africa South of the Sahara*. New York: Routledge. Additional research could expand the cabinet size measure to be more inclusive.

The lack of public good provision in Sub-Saharan Africa means that individuals should have a strong desire to gain a cabinet post because it is a way to gain public resources for their own private benefits.<sup>18</sup>

Although previous studies and selectorate theory suggest cabinet size is a useful proxy for formal patronage coalitions, the measure does have certain drawbacks. First, the cabinet size may not reflect the actual size of the patronage coalition. Cabinet ministers may be at the head of very dense networks of informal patronage that have an impact on public goods. Deputy Ministers, regional ministers, and military councils may also hold important positions in formal patronage networks, but are excluded here because of data availability issues. Furthermore, governments with small cabinets may have vast patronage systems that are not captured by the cabinet size variable. Second, there is a possibility that cabinet ministers are not the ones profiting from public resources. Lower level government employees may be involved with kleptocratic activities to a larger extent than cabinet ministers. Unfortunately, there is no complete cross-national data available on lower level government corruption to test this possibility.

Several other important independent variables are included in the model to control for alternative explanations of public goods provision. A variable that has received significant attention in the public goods literature is *Regime Type*. *Regime type* is measured using Polity2 scores from the Polity IV dataset. This variable codes democracies on a scale from 0 to 10 and autocracies on a scale from 0 to -10. The higher (lower) the Polity2 score is for a given country, the more democratic (autocratic) the

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<sup>18</sup> Additional research could examine the relationship between multi and single party cabinets and public goods provision.

country is. While Sub-Saharan Africa was characterized by relatively autocratic governments in the early 1970s, the region has undergone a significant transformation to more representative forms of government. This has certainly not lead to a region rife with democracy; however, the mean polity score in the region has increased from -4.41 in 1971 to 2.41 in 2007.

The vast majority of research on regime type and public goods allocation supports the idea that public goods are better provided under democratic regimes (Baum and Lake 2001, Bueno de Mesquita et al. 2003, Besley and Kudamatsu 2006, Deacon 2009). While there are differences between explanations for higher levels of public goods provision under democratic regimes, most explanations highlight the incentives that government officials have to promote good/bad public policy. As Lake and Baum (2001, 589) note, all politicians have the “proximate goal of maximizing rents earned from the monopoly power of the state...autocrats are unusual only in their ability to earn greater rents.” The lower cost of political participation in democracies helps to promote citizen interests and thus increases the public goods provided. The costs of leaving office are also much lower in democracies so there is lesser incentive to earn rents from providing a lesser amount of public goods. This interaction between political participation and leadership incentives is thus expected to improve public goods provision. Given the relative prevalence of intrastate conflict throughout Africa, a control variable is also included for civil wars.<sup>19</sup> The variable *Civil War* is a dichotomous variable which is coded 1 for every country year where there was an ongoing civil war and 0 for country years in which there was no civil war. The focus on human development through the provision of public goods necessitates

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<sup>19</sup> Out of 981 country years, 174 involved a civil war.

the inclusion of at least one variable of political instability. The destructiveness of civil wars suggests that they should play an important role in public goods provision in areas like healthcare, education, and infrastructure. Hoeffler and Reynal-Querol (2003) argue that civil wars place a twin burden on society by destroying important human capital and infrastructure and also diverting investment away from productive activity. This diversion of resources from productive activity distorts government budgets and hinders their ability to provide public goods (Hoeffler and Reynal-Querol 2003, 3).

Another important control variable that has been shown to have a significant effect on public goods provision is *GDP per capita*. This variable, *GDP per capita*, is taken from the Penn World Tables (7.0) and is measure in terms of purchasing power parity (PPP) in millions of U.S. dollars (Heston, Summers, and Aten 2011). The impact of *GDP per capita* on public goods is straightforward given the fact that public goods can be financed through the direct taxation of society and/or through subsidies to private spending (Roberts 1987). It should not be assumed that a higher GDP per capita automatically leads to efficient spending and better outcomes in public goods provision; however, previous studies show that economic size and income levels play an important role in reducing infant mortality rates, increasing average years of secondary education, and improving infrastructure. Thus, *GDP per capita* is expected to play an important role in all models.

The relationship between economic aid and economic outcomes in Africa has also received significant attention in the literature.<sup>20</sup> The variable *Official Development Assistance*, taken from the World Bank Development Indicators, measures net official

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<sup>20</sup> See Wolf (2007), Burnside and Dollar (2004; 2000), Dollar and Easterly (1999).

development assistance (ODA) per capita in current U.S. dollars and is log transformed. The research on the impact of aid on economic outcomes is decidedly mixed, however there is a strong theoretical basis for including the variable in the model. As Collier and Dollar (1999) argue, the efficiency of aid depends on the quality of government policy. This leads them to claim that efficient aid allocation that focuses on countries with good policy environments increase the number of individuals lifted from poverty each year from 16 million to over 30 million. Burnside and Dollar (2000) provide further support for this argument by finding that aid only has a significant effect on growth when it is distributed in a good policy environment. Easterly (2003) conducts several robustness checks on these findings with an updated dataset only to find weaker results.<sup>21</sup>

Quantitative squabbles aside, countries in Sub-Saharan Africa do receive a tremendous amount of ODA. In 2010, Africa was the highest regional recipient of net ODA at \$47.9 billion which is over \$10 billion more than the second largest recipient, Asia (OECD 2012). While it is unlikely that Africa will see a twofold net ODA increase that was pledged during the G-8 summit at Gleneagles in 2005, ODA will continue to play a large role in financing African government budgets toward the pursuit of the Millennium Development Goals (MDGs). As Wolf (2007, 651) states, “to reach these MDGs improved service delivery in education and health as well as investment in water and sanitation is needed.” Wolf is clear that spending alone cannot improve public goods provision, but she claims that good institutional environments promote more efficient spending to improve human development outcomes. The importance of aid to the provision of public goods is thus an important control variable.

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<sup>21</sup> See Burnside and Dollar (2004) for a critique of Easterly (2003).

Although sufficient data is not available to measure corruption over the period under study here, an available measure that comes close to capturing the presence of corruption is government consumption. The variable *Government Consumption* measures the government expenditures as a percentage of GDP and is taken from the Penn World Tables (7.0). Higher government consumption does not suggest corruption in and of itself; however, if higher levels of government consumption are correlated with reduced performance in public goods indicators the government is likely to be engaging in kleptocratic activity.

The final control variable used is Openness to trade. This variable, *Openness*, is taken from the Penn World Tables (7.0) and measures the total imports and exports as a percentage of GDP. There is little research that directly addresses the relationship between trade and public goods provision; however, there is a large body of literature that relates trade to various economic outcomes. Although their results have been contested, Frankel and Romer (1999) find that trade increases income when controlling for a variety of other factors. Increases in income are likely to be associated with an increased revenue base for government to finance public goods spending from. Not only that, but increasing economic output is associated with better public goods provision in general. Trade can also give governments an incentive to raise public goods provision to reduce the marginal product of private investment thus making domestic industries more efficient and competitive in global markets. This hypothesis is supported by Alcalá and Ciccone (2004) who find that increased trade is significantly related to increased productivity domestically. Conversely, Bates (1981) has shown that poor government trade policies

have reduced trade and total output, particularly in African agriculture. Therefore, controlling for trade is justified in analysis.

#### **4. Findings**

Each model provides consistent results with model fits ( $R^2$ ) of .43 to .48. While this shows that the models leave a large portion of the variance unexplained, the models are explaining a moderate amount of what determines public goods provision in the three selected areas. Most independent variables yield results that are consistent with previous research; however, cabinet size, the variable of particular importance in this study, is found to be highly significant in the opposite direction that is expected from the body of literature on neopatrimonialism. This is not to suggest that the literature on neopatrimonialism is incorrect as these results may be stemming from cabinet size being a poor proxy for patronage coalitions. Nevertheless, the divergent findings using cabinet size as a proxy for patronage coalitions by prominent scholars such as van de Walle (2001) and Arriola (2009) suggests that Lindberg (2006) is correct to criticize theories of neopatrimonialism as being poorly specified.

##### ***4.1 Public Goods Provision in Healthcare***

Previous research has emphasized the disastrous economic consequences of the clientelist relationships that permeate African governments. Van de Walle (2001, 274) argues that a select few government elite have been unable to move beyond their own material interests and therefore have been unable to implement growth oriented policies. While van de Walle is correct to note the problems that bad data pose to quantitative analysis on the issue, recent use of cabinet size measures are sufficient to capture a general relationship (Arriola 2009; LeVan and Assenov 2009). If a select group of senior

government officials are pursuing their material interests at the expense of society across Africa, we would expect that an increase in cabinet ministers would lead to a decrease in the funds available for public goods in healthcare.

The results of the models indicate that van de Walle may be overstating his claims. *Cabinet size* is found to be significant as a predictor of infant mortality rates, but it takes the incorrect (negative) sign. Model 1 suggests that increasing the size of the government cabinet by one minister decreases the infant mortality rate by roughly .3 infants per 1000 live births. Critics of quantitative studies in Africa are correct to point out the lack of quality data and that using infant mortality rates as a proxy for public goods provision certainly has its flaws (Ross 2006); however, the logic of neopatrimonial arguments suggests that when there are more important individuals within government that are seeking their own material interests, there should be more kleptocratic behavior. The findings here suggest that larger patronage coalitions increase public goods provision in healthcare or that cabinet size is not a good proxy for patronage coalitions.

All other control variables, save for *Civil War* and *Official Development Assistance*, are statistically significant at or beyond the  $p < .01$  level. As expected, *Regime Type* plays an important role in predicting infant mortality rates which is assumed here to be the result of democratic regimes increasing public goods provision in healthcare. The results show that increasing the Polity2 score by one point decreases the infant mortality rate by nearly 2 infants per 1,000 live births. This fits with existing

theory on democracy and leadership survival that suggests increases in democracy allow citizens to signal their preferences to government and have them taken seriously.<sup>22</sup>

Of the four economic variables, three achieve significance in the model and take the anticipated sign. The coefficients of the log transformed variables *GDP per capita* and *Government Consumption* are slightly more difficult to interpret than the other. The results indicate that a 10% increase in *GDP per capita* is associated with a decrease of 1.4 infant deaths per 1000 live births. The coefficient for *Government Consumption* shows that a 5% increase leads to a decrease of 0.1 infant deaths per 1000 live births. The final economic variable, *Openness*, shows that a 10% increase in openness as a percentage of GDP results in a decrease in infant mortality of roughly 1.1 infants per 1000 live births. These results show the importance of looking beyond the statistical significance of variables and determining their actual substantive significance in the real world.<sup>23</sup> *Government Consumption*, while significant at the  $p < .01$  level, has a very small substantive impact on reducing infant mortality. It also suggests that increased government consumption, although it may be linked to corruption, does not have an adverse effect on public goods provision in healthcare. The results for *GDP per capita* and *Openness* have a larger substantive effect in the analysis as expected.

Finally, the *Civil War* variable is found to be statistically insignificant as a predictor of infant mortality. This result is in contrast to earlier tests of the model using a shorter time series (1971-2000) which revealed a large negatively signed coefficient that indicates civil wars substantially reduce infant mortality rates. Nevertheless, the

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<sup>22</sup> Ross (2006) provides a critique of this result. However, this analysis of Sub-Saharan Africa supports the orthodox conclusion in the political economy literature.

<sup>23</sup> See Zilliak and McCloskey (2004).

expanded dataset provides an increase in country-years which, although returning another large negatively signed coefficient, finds that civil wars fail to be substantively important in predicting infant mortality rates.

#### **4.2 Public Goods Provision in Education**

The result for the impact of cabinet size on public goods provision in education also questions the hypothesis that larger cabinets should be associated with poorer provision of public goods in education. In model 2, *Cabinet Size* is highly significant ( $p < .001$ ), but is positively signed indicating that larger cabinets tend to increase the average years of secondary education for individuals 15 and older. The coefficients indicate that increasing cabinet size by 1 minister increases the average years of secondary education by nearly 2.1%. Therefore, adding 5 additional cabinet members is associated with a roughly 10.5% increase in average years of secondary education. This is not a tremendous impact given that the mean years of secondary education in the dataset is .84 years, but cabinet size is found to increase public goods provision in education nonetheless. This creates greater suspicion that neopatrimonialism provides a general explanation for what hinders the provision of public goods in Sub-Saharan Africa.

Ross (2006, 861) does provide reason to be suspicious of using secondary schooling as a proxy for public goods provision by claiming that its use has led to inconsistent results. However, he does make the case that infant mortality rates, along with being a strong indicator of health services, are a reasonable indicator of the educational attainment of women. If this is the case, the results from model one provides reason to believe that the measure of cabinet influence in model two is robust. Again, this questions important findings in the literature.

*Regime Type*, as expected, also has a positive impact on public goods provision in education. For every one unit increase on the Polity2 scale, average years of secondary education are increased by 3.2%. This means that moving from a Polity2 score of 0 to 10 leads an increase in the average years of secondary education of 32%. These figures match the theoretical expectations in the literature on democracy and leadership survival and also fit well into the empirical literature on secondary education. Given the findings of scholars like Ross (2006), however, this result should be treated cautiously. Perhaps even more important to keep in mind is that the data on secondary education required linear interpretation of measures taken every five years. The results of model two are thus best judged in their relation to the findings in models 1 and 3.

The variable with the strongest effect on secondary education is *Civil War* which indicates that an ongoing civil war increases the average years of secondary education by 14.6%. This is perhaps one of the unfortunate findings of this research as it likely indicates a significant portion of the poorly educated are killed during civil war and thus raising the average years of secondary education among those who survive. The result indicates that, instead of advocating civil war to improve education, another proxy for public goods in education must be found that is able to more closely test public goods provision. A better proxy would require a variable that is not focused on the average years of secondary education for the population over age 15 because of the impact that civil wars have on the lesser educated in this category.

The analysis in model two shows that three out of four economic variables are highly significant while *Official Development Assistance* has no significant effect. A 10% increase in *GDP per capita* is shown to increase the secondary education measure by

3.4%. Economic growth of this kind is certainly difficult, but there is little doubt increasing *GDP per capita* will have a positive influence on public goods provision. Interestingly, raising *Government Consumption* by 5% leads to a decrease in secondary education of 1.3%. This supports the idea that corruption is widespread in African governments by showing a specific public good that is being decreased by greater government consumption. If funds were being used efficiently to improved education, the sign on this variable is expected to be positive. Lastly, increasing *Openness* by 1% is found to increase levels of secondary education by .9%. This effect may look small, but countries with relatively closed economies could benefit greatly in education from increasing openness to trade.

#### **4.3 Public Goods Provision in Infrastructure**

Previous research has found that corruption is endemic in the provision of public goods in various infrastructure sectors, particularly in construction projects. As Bueno de Mesquita et al. (2003) note, “The ease with which graft can be hidden in construction projects makes this industrial activity unusually attractive as a way for leaders to indulge in cronyism and nepotism.” While cross-national data on construction spending is not available for Sub-Saharan Africa, the widely available measure of energy consumption in thousands of tons of coal would be expected to be negatively influenced by neopatrimonial politics. However, *Cabinet Size* is found to be highly significant and positively signed in model 3 indicating that a one Minister increase in cabinet size leads to a 7.1% increase in *Primary Energy Consumption*. While it would be foolish to roundly reject the possibility that patronage coalitions do not have any effect on certain infrastructure related public goods, the coefficient for *Cabinet Size* shows a strong

positive effect on *Primary Energy Consumption* that further undermines the generality of cabinet size arguments based on the literature on neopatrimonialism.

The first political variable, *Regime Type*, is shown to have a positive impact on *Primary Energy Consumption*. Specifically, a one unit increase in the Polity2 score increases *Primary Energy Consumption* by 1.2%. This variable should be treated with some suspicion given that initial analysis using a time series from 1971 to 2000 indicated a statistically significant but negative relationship between *Regime Type* and *Primary Energy Consumption*. The other political variable, *Civil War*, does not achieve statistical significance in the model.

As might be expected, all economic variables are significant in model 3; with increased economic activity comes increased energy consumption. A 10% increase in *GDP per capita* is estimated to increase energy consumption by 2.4%. Ironically, increases in *Official Development Assistance* decrease *Primary Energy Consumption*. For every \$1 increase in ODA per capita, *Primary Energy Consumption* is decreased by .3%. This effect is likely picking up on troubling situations that lead to increases in ODA and thus may not be reflecting the independent contribution of ODA itself. Consistent with the literature suggesting that infrastructure projects are rife with corruption, increasing *Government Consumption* by 5% decreases energy consumption by nearly 5%. This suggests that corrupt activity is indeed taking place in public goods related to infrastructure. Reducing this corrupt activity is thus tremendously important to improving access to energy for all members of society.

The negative coefficient on the final economic variable, *Openness*, seems counter-intuitive. One might expect that a country that was very open to international

trade would have a more robust export sector that would generate the foreign exchange necessary to import a high volume of products. However, the results in model 3 show that a 1% increase in *Openness* leads to a 1.7% decrease in *Primary Energy Consumption*. The results are likely being driven by the weak economies in Sub-Saharan Africa that are heavily reliant on imported goods while remaining relatively underdeveloped in their own export sectors. Further research is needed adequately explain this result.

#### **4.4 Robustness Checks**

The use of PCSEs and lagged dependent variables corrects for the two most common problems in TSCS research, heteroscedasticity and autocorrelation. Beck and Katz (1995) have made a strong case for this procedure, but conducting diagnostic checks using PCSEs is rather difficult because of the limited options available in STATA. Therefore, after running each model with PCSEs, each model was run again using a straightforward pooled OLS regression. This procedure returns substantive results that are identical to those found using PCSEs, only standard errors differ slightly between models.

Using pooled OLS regression creates the capability to examine residual plots for influential observations. Examining the plots and DFBetas showed that there were two potential country-year outliers in the partial plots (Congo 2005 and Zambia 1995) for the *Official Development Assistance Variable*. Two dummy variables were created to control for these potentially influential cases, but the results in the amended model remained substantively the same. Therefore, the dummy variables were dropped and the original models were left unchanged.

## 5. Conclusion

Are Africa's burgeoning cabinets reducing the resources available to provide public goods? While many have argued that the increasing number of cabinet ministers in African governments are a troubling sign of patron-client relationships that have a pernicious effect on society, it appears that this phenomenon is actually increasing human development in the region. Rather than being a widespread source of corruption and instability, this research shows that patronage politics can actually constitute stability and progress in a difficult political environment. It is important to remember that, to a certain extent, patronage politics occurs in every political system. Although Western observers may be appalled by the by the patronage tactics of African leaders, looking at the societal impact of these networks provides reason to caution against a wholly antagonistic outlook. Patronage networks can, indeed, be a source of progress.

The findings here emphasize the point made by Lindberg (2006, 4) that the literature on neopatrimonialism suffers from a lack of "theoretical specification, methodological rigor, and, perhaps most of all, insufficient collection of data suitable for comparative analysis." Theoretically, scholars have often dismissed the potentially beneficial impact that patronage politics have on society, particularly in political environments like Sub-Saharan Africa. By assembling a large original dataset for the region and using a rigorous methodological approach, this study exposes empirical regularities that will aid in the building of a more useful theory of neopatrimonial rule in Africa. This study also reinforces the need to disaggregate analyses of neopatrimonial rule to gain a more detailed picture of its impacts in a variety of areas. The results presented here can certainly be challenged because of the lack of quality data; however,

governments, international organizations, and non-governmental organizations rely on much of the same data used here to design policies that have a real world impact. Even though the data is often poor, scholars must not shy away from using the information available to them.

What the information used in the time-series cross-sectional analysis shows is that increases in cabinet size have a statistically significant and substantively important real world impact on the provision of public goods in healthcare, education, and infrastructure across Sub-Saharan Africa. The analysis also shows that general theories of public goods provision are correct to claim that increases in democracy are associated with the better provision of public goods in the region. Sub-Saharan Africa's democratic regimes, particularly with healthcare and education, do have higher levels of effective public service delivery. Also consistent with previous findings, economic development is incredibly important for improving public goods provision. Improving GDP per capita increases the tax base that provides national healthcare, education, and infrastructure. However, increasing government spending in these areas is not enough. This disaggregated analysis shows that increases in government consumption have negative effects on education and energy usage. Nevertheless, further research needs to be done to examine this relationship thoroughly.

As scholars of Asian and Latin American politics have noticed, patronage politics is not necessarily damaging to economic and human development. This study of Sub-Saharan Africa reaches the same conclusion and provides a microstructure for a better general theory of neopatrimonial rule. Beyond a merely academic endeavor, this research has the ability to influence the ways in which outside actors provide development

assistance to the region. Far from being the cause of Africa's political and economic problems, large cabinets can actually be beneficial. This provides reason to be weary of calls to reduce the size of government in exchange for development funds. While there are certainly many institutional factors at play in the region's dismal provision of public goods, the results here indicate that large cabinets can actually benefit society.

*Appendix A*

| Independent Variables                                   | Infant<br>Mortality | Secondary<br>Education | Energy<br>Usage     |
|---------------------------------------------------------|---------------------|------------------------|---------------------|
| <i>Cabinet Size</i>                                     | .29**<br>(.08)      | .02***<br>(.002)       | .06***<br>(.007)    |
| <i>Regime Type</i>                                      | 1.91***<br>(.21)    | .03***<br>(.002)       | .01*<br>(.005)      |
| <i>Civil War</i>                                        | -2.39<br>(1.75)     | .13*<br>(.05)          | .08<br>(.11)        |
| <i>Log GDP per capita</i>                               | 14.62***<br>(.99)   | .34***<br>(.02)        | .24***<br>(.03)     |
| <i>Official Development Assistance<br/>(per capita)</i> | -.0002<br>(.02)     | .0002<br>(.0006)       | -.002*<br>(.001)    |
| <i>Log Government Consumption<br/>(% of GDP)</i>        | 2.46**<br>(.71)     | .25***<br>(.03)        | .83***<br>(.04)     |
| <i>Openness</i>                                         | .11***<br>(.03)     | .009***<br>(.21)       | .01***<br>(.02)     |
| <b>Constant</b>                                         | 207.1***<br>(6.68)  | 3.11***<br>(.21)       | 207.19***<br>(6.74) |
| <b>R<sup>2</sup></b>                                    | .4406               | .4801                  | .4325               |
| <b>States</b>                                           | 34                  | 24                     | 34                  |
| <b>N</b>                                                | 1181                | 838                    | 1151                |

Pooled cross sectional time series

Figures listed are coefficients with panel corrected standard errors in parentheses.

\*p < .05; \*\*p < .01; \*\*\*p < .001. STATA 9 was used to generate results.

**Appendix B****Correlation Matrix**

|         | cabinet | polity2 | civwar  | logcgdp | odapc  | logcgov | openc  |
|---------|---------|---------|---------|---------|--------|---------|--------|
| cabinet | 1.0000  |         |         |         |        |         |        |
| polity2 | -0.0643 | 1.0000  |         |         |        |         |        |
| civwar  | 0.0955  | -0.0202 | 1.0000  |         |        |         |        |
| logcgdp | 0.2260  | 0.3042  | -0.1849 | 1.0000  |        |         |        |
| odapc   | 0.0242  | 0.1568  | -0.1094 | 0.3340  | 1.0000 |         |        |
| logcgov | -0.1940 | -0.0568 | 0.1814  | -0.1388 | 0.0855 | 1.0000  |        |
| openc   | -0.1177 | 0.2555  | -0.2656 | 0.4356  | 0.3707 | 0.0060  | 1.0000 |

## ***Appendix C***

### **Countries in the dataset**

|                               |              |
|-------------------------------|--------------|
| Benin                         | Madagascar   |
| Botswana                      | Mali         |
| Burkina Faso                  | Mauritius    |
| Burundi                       | Malawi       |
| Central African Republic      | Nigeria      |
| Cote d'Ivoire                 | Niger        |
| Cameroon                      | Rwanda       |
| Congo, Democratic Republic of | Sudan        |
| Congo, Republic of            | Senegal      |
| Ethiopia                      | Sierra Leone |
| Gabon                         | South Africa |
| Gambia                        | Tanzania     |
| Ghana                         | Chad         |
| Guinea                        | Togo         |
| Kenya                         | Uganda       |
| Liberia                       | Zambia       |
| Mauritania                    | Zimbabwe     |

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