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## GENERAL & APPLIED ECONOMICS | RESEARCH ARTICLE

# Explaining public investment dynamics in Sub-Saharan Africa: The role of country governance structures

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**Abstract:** This paper assesses the contribution of country governance structures to resolving the unsettled crowding-in–crowding-out hypothesis of public and private investments and arresting the recent fall of public investment in Sub-Saharan Africa (SSA). Within an Arellano–Bond Dynamic Panel Framework, we estimate a derived accelerator model that allows for inclusion of country governance structures (control of corruption, political stability, rule of law, governance effectiveness, voice and accountability and regulatory quality) in a public investment model. The results, based on data from SSA, suggest that country governance structures that control corruption, ensure political stability, regulatory quality and rule of law enhance public investment in SSA. But the presence of these governance structures does not curtail the crowding out effect of private investment on public investment. Thus, policies directed at improving public investment in SSA should target governance structures in addition to the conventional factors.

**Subjects:** Social Sciences; Development Studies; Economics, Finance, Business & Industry

**Keywords:** public investment; country governance structures; crowding-in-out hypothesis and SSA



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Samuel Kwaku Agyei is a lecturer at the Department of Finance, University of Cape Coast, Ghana. He holds a PhD in Finance from the University of Ghana Business School and is a member in good standing of the Institute of Chartered Accountants (Ghana). His current research interests include behavioural finance and development economics. This paper forms part of a broad research in the thematic area of public investment, private investment, employment and social welfare in Sub-Saharan Africa.

### PUBLIC INTEREST STATEMENT

Public investment in Sub-Saharan Africa (SSA) assists in employment generation, provision of schools and health facilities and offering support to the private sector. Unfortunately, however, public investment in SSA has been falling in the past two decades (1990–2009). Meanwhile, it is believed that when countries are managed well, it will lead to their development. So this study was carried out to assess whether good governance can help SSA counties to arrest the fall in public investment. The results of the study show that when countries control corruption; ensure political stability; have quality regulations and rule of law; keep expenditures within budget; ensure efficient utilization of aid; fund public investment from controlled borrowing; and take advantage of imports and exports public investment in SSA would be revived.

## 1. Introduction

Public investment plays significant role in the socio-economic development of developing economies including Sub-Saharan Africa (SSA) even though these investments are generally seen to be less efficient as compared to private investment. Generally, policy-makers assert that private sector-led economy benefits more from proper investment management and reduction in corruption culminating in high relative return when compared to public investment. But the public sector is the biggest employer and its spending pattern defines the economic activity and social welfare dynamics of most developing economies in SSA.

Recent dynamics in investment patterns in SSA show a gradual shift from government-led investment to private sector controlled investment. Public sector investment fell from 7.72% (1990–1999) to 7.13% (2000–2009) while private investment increased from 12.40% of GDP to 13.14% of GDP. The results from the sub-regions of SSA generally support this downward trend in public sector investment. Apart from Central Africa which recorded an increase in public investment (from 6.03% of GDP to 7.34%), all other sub-regions in SSA recorded decreases in public investment (Southern Africa fell from 8.70 to 6.26%; West Africa fell from 7.96 to 6.41%; and East Africa fell from 8.23 to 8.09%) (see Agyei, 2015).

These public investment dynamics coincide with the era of privatization in Africa. Africa saw a surge in privatization due to the impact of the study conducted in 1995 and 1996 on Benin, Burkina Faso, Ghana, Kenya, Madagascar, Nigeria, Togo, Uganda and Zambia, but for the wrong or unintended reasons. Political change; need for world bank, International Monetary Fund and donor support; need to generate proceeds; precarious state of some public enterprises; need to maintain employment levels and sometimes the need to satisfy vested interests even though privatization was mainly meant to reduce the fiscal and administrative burdens of a large public enterprises sector, enhance private sector development, mobilize more domestic and foreign investment and contribute towards the fight against poverty (White and Bhatia, 1999). Even though Nellis (2005) argued that African countries were slow privatizers, the private sector in SSA has seen considerable development (especially in the second decade of the study period) due partly to privatization policies and improvement in institutions. The reluctance of African countries to privatize was due to the fear of job loss by labour unions through collapse of privatized firms and downsizing and the use of privatization as a corruption channel by some governments. Thus, the recent decline in public investment as against a rise in private investment in SSA could be attributed to privatization but what has been the role of public management decisions and institutional factors such as country governance structures in this whole process?

Benefits of good governance practices may not only be limited to corporate entities (Kyereboah-Coleman, 2007), but could also influence certain sectors of the general economy if applied at the national level. The effectiveness with which government distributes scarce national resources could help mitigate the infrastructural gap in SSA. Control of corruption would help mitigate the harmful effects of corruption. Corruption is harmful to national development even though it could be sometimes beneficial. Corrupt officials, through rent seeking, divert state funds and pursue sub-optimal, if not inferior state projects at the detriment of the state. As a consequence of an unintended action of a purposeful corrupt act, corruption may facilitate national development by motivating corrupt officials to constantly embark on developmental projects because of their personal interest. In spite of this, control of corruption is good for public investment to thrive.

Corruption control thrives on the strength of laws and their enforcement. In countries where the judiciary is independent, fair and resourced, corrupt officials receive punitive measures while prospective corrupt officials are deterred from engaging in corrupt activities. Thus, rule of law is expected to have a positive impact on public investment through facilitating control of corruption. The quality of regulations precedes rule of law. When regulations do not adequately address the loopholes in the system, it creates avenues for resource siphoning. Adequate control of public investment process would help check and prevent the misuse or diversion of public funds. In view of this,

quality regulations that are not too stringent to stifle public investment initiative would facilitate public investment by enhancing the rule of law and ensuring government effectiveness.

Transparency of government transactions through proper accountability to the citizenry and enhanced media freedom are governance measures that have the potential to put governments in check and ensure value for money investments. In effect, to ensure continuity of government policies and investment projects, a stable political environment would facilitate that. Thus, all the other key country governance variables thrive in a stable political environment. This probably explains why all previous public investment studies have relied basically on political stability. This study extends the literature on public investment but highlights the individual and composite effect of the new set of country governance variables reported by the world. Apriori, it is expected that governance effectiveness, corruption control, rule of law, regulatory quality, voice and accountability and political stability would help address the dwindling public investment phenomenon.

This paper argues that the benefits from good country governance structures could extend to public investment. Also, depending on the extent of protection offered by country governance structures for public investment and private investments, a better understanding of the crowding-in-out hypothesis could be reached. Thus, this study offers insights on how country governance structures help explain the recent dynamics in public investment in SSA, given the potential of the downward trend of public investment to have negative implications for SSA and the fact that researchers have generally concentrated on explaining private investment dynamics.

The rest of the paper is structured as follows: Section 2 reviews the literature; Section 3 describes the methods used; Section 4 discusses the results; while Section 5 offers conclusion and recommendations for the study.

## 2. Theoretical review

This study contributes to the unsettled debate on the crowding-in–crowding-out hypothesis (Erden & Holcombe, 2005; Munthali, 2012) which has led many to the neglect of assessing the effect of private investment on public investment. The crowding-in hypothesis argues that public investment attracts, maintains or enhances private investment because public investment offers complimentary products, provides supporting infrastructure and sometimes needed resources for private investment to thrive. On the contrary, proponents of the crowding-out hypothesis contend that public investment curtails or replaces private investment because they compete for the same resources—like financial resources—or markets. In the same vein, private investment has the potential to crowd out public investment if they compete for similar resources and markets or through privatization. On the other hand, the effect of private investment on public investment could be positive if the two produce complimentary products or private investors patronize raw materials from public corporations and are socially responsible.

### 2.1. Determinants of public investment

Empirical literature on determinants of public investment is scarce especially in SSA. In his seminal work, Aschauer (1989a) hypothesized that an economy's productivity slow down can be linked to fall in public infrastructure, as witnessed by the United States of America (USA) in the 1980s. We argue that key factors that explain public investment include economic growth, private investment, real interest rate, country governance, trade openness, aid for economic and infrastructural development, government borrowing and fiscal discipline.

#### 2.1.1. Economic growth

Based on the accelerator theory, desired future growth levels define the current level of public investment required to sustain that level. In other words, investment projects are undertaken with the expectation that future economic benefits would cover its cost. Thus, a positive association between growth and public investment is theoretically expected. According Turrini (2004), trend output and output gap describe public investment.

### 2.1.2. *Private investment*

Private investment could either crowd-in or crowd-out public investment depending on whether the two investments are compliments or substitutes. Consequently, the relationship between private and public investment depends on whether government decides to support the private sector with basic infrastructure or provides competitive products as social intervention.

### 2.1.3. *Real interest rate*

Theoretically, the cost of funding investment projects is known to have a negative effect on the size of investment projects. Governments are discouraged from undertaking investment projects if their cost of capital is huge and vice versa. But Mehrotra and Vällilä (2006) argued that the cost of financing in the European Monetary Union has not had any systematic effect on investment projects in the area.

### 2.1.4. *Country governance*

It is expected that good governance structures reflected in control of corruption, government effectiveness, political stability, regulatory quality, rule of law and voice and accountability would translate to bridging the public infrastructural gap in SSA. When corrupt state officials decide to maximize their returns rather than that of the state, agency problem in both public and private sectors amplifies (Alesina & Angeletos, 2005; Jain, 2011). In Africa, Gyimah-Brempong (2002) concluded that income inequality and corruption move in the same direction. Also, Braga Tadeu and Moreira Silva (2013) concluded that political and economic instability are harmful to investment in Nigeria.

### 2.1.5. *Trade openness*

It is postulated that increase in imports and exports would boost public investment through income generation and foreign technology accessibility and spillover channels. Taxes on imports and exports could enhance government revenue for development. Internationalization grants governments' access to foreign technologies needed for local infrastructural development.

### 2.1.6. *Aid*

Africa's socio-economic development has, to a large extent, been influenced by international donor agencies. These official development agencies have supported the construction of schools, hospitals and road infrastructure. Sturm (2001) contend that key variables that explain public infrastructure include aid. Thus, aid for economic infrastructure is expected to exert a positive influence on public investment in SSA.

### 2.1.7. *Government borrowing*

Benefits of debt financing through financial (fiscal) discipline emanating from restrictive covenants associated with debt financing could be extended to the public sector and not limited to the private sector. Consequently, it is more difficult for managers of state funds to divert borrowed funds for public investment projects than internally generated funds. Meanwhile, high external debt financing could also reduce public investment during the servicing stage and deter international financial institutions from funding investment projects as well as increase economic uncertainty (Ndikumana, 2000).

### 2.1.8. *Fiscal discipline*

Primary fiscal balance, stance of budgetary policies and fiscal sustainability considerations are key to explaining public investment dynamics (Mehrotra & Vällilä, 2006; Turrini, 2004). Benefits associated with fiscal discipline such as savings and increased confidence of development partners could benefit public capital formation.

### 3. Methodology

#### 3.1. An empirical model of public investment

The model used in this study relied on a similar derivation by Erden and Holcombe (2005) who built a private investment model from a flexible accelerator. According to Blejer and Khan (1984) and Ramirez (1994), the flexible accelerator model begins on the premise that desired capital stock is proportional to the level of expected output:

$$K_{git}^* = \alpha Y_{it}^e, \tag{1}$$

where  $K_{git}^*$  is the desired public capital stock of country  $i$  in time  $t$  while  $Y_{it}^e$  is the expected level of output taken to be future aggregate demand of country  $i$  in time  $t$ .

In the absence of adjustment process and its associated cost, actual public capital stock and the desired or target public capital should be the same. But in reality, due to technical constraints and the time it takes to plan, decide, build and install new capital, adjustment process may be costly and not instantaneous. This implies that the adjustment process is partial. In other words, adjustment cost stalls the process of fully adjusting public capital stock from previous year's level to the current year. According to Salmon (1982), the partial adjustment function can be derived from the minimization of the following cost function,  $J$ . Thus, we capture this dynamic structure of public investment behaviour by introducing a one-period quadratic adjustment cost function,

$$J = \beta(K_{git} - K_{git}^*)^2 + (1 - \beta)(K_{git} - K_{git-1})^2, \tag{2}$$

where  $K_{git}$  is actual public capital stock of country  $i$  in time  $t$  and  $K_{git-1}$  is the lag of actual public stock of country  $i$  in time  $t$ . The first term of Equation (2) is the cost of disequilibrium, and the second term, the cost of adjusting towards equilibrium. The following partial adjustment mechanism can be derived from minimizing the cost of adjustment with respect to  $K_{git}$ :

$$K_{git} - K_{git-1} = \beta(K_{git}^* - K_{git-1}) \quad 0 \leq \beta \leq 1, \tag{3}$$

The evolution of public capital stock takes the following standard form:

$$I_{git} = (K_{git} - K_{git-1}) + \delta K_{git-1} \tag{4}$$

where  $I_{git}$  is gross public investment and  $\delta$  is the depreciation rate of public capital stock.

Equation (4) can be rearranged as follows:

$$I_{git} = [1 - (1 - \delta)L]K_{git}, \tag{4a}$$

The steady state of Equation (4a) can be specified as follows:

$$I_{git}^* = [1 - (1 - \delta)L]K_{git}^* \tag{4b}$$

When we substitute Equation (1) in (4b) we get,

$$I_{git}^* = [1 - (1 - \delta)L]\alpha Y_{it}^e \tag{4c}$$

The partial adjustment process in Equation (3) can be written in terms of  $I_{git}$ , for empirical purposes, as follows:

$$I_{git} - I_{git-1} = \beta(I_{git}^* - I_{git-1}) \tag{5}$$

Based on the assumption that private investment and other relevant factors affect the speed at which the gap between actual public investment adjust towards the desired level in each short run period, the speed of adjustment can be specified in a linear function as follows:

$$\beta = \alpha_0 + [1/(I_{git}^* - I_{git-1})](\gamma_1 I_{pit} + \gamma_2 X_{it}), \quad (6)$$

where  $\alpha_0$  is the intercept,  $I_{pit}$  is private investment and  $X_{it}$  is the vector of other relevant factors that condition the adjustment process.

When Equation (6) is substituted in (5), it leads to

$$I_{git} - I_{git-1} = \{\alpha_0 + [1/(I_{git}^* - I_{git-1})](\gamma_1 I_{pit} + \gamma_2 X_{it})\}(I_{git}^* - I_{git-1}) \quad (7)$$

Rearranging Equation (7) leads to

$$I_{git} - I_{git-1} = \alpha_0(I_{git}^* - I_{git-1}) + \gamma_1 I_{pit} + \gamma_2 X_{it} \quad (8)$$

When we substitute Equation (4c) in (8) we get

$$I_{git} - I_{git-1} = \alpha_0([1 - (1 - \delta)L]\alpha Y_{it}^e - I_{git-1}) + \gamma_1 I_{pit} + \gamma_2 X_{it} \quad (9)$$

Rearranging Equation (9) leads to

$$I_{git} = \alpha\alpha_0([1 - (1 - \delta)L]Y_{it}^e + (1 - \alpha_0)I_{git-1}) + \gamma_1 I_{pit} + \gamma_2 X_{it} + u_{it} \quad (10)$$

$$X_{it} = f(\gamma_{21}RIR_{it}, \gamma_{22}CGI_{it}, \gamma_{23}TOPEN_{it}, \gamma_{24}AID_{it}, \gamma_{25}EDS_{it}, \gamma_{26}CBB_{it}) \quad (11)$$

When Equation (11) is substituted in (10), it leads to:

$$I_{git} = \alpha\alpha_0([1 - (1 - \delta)L]Y_{it}^e + (1 - \alpha_0)I_{git-1}) + \gamma_1 I_{pit} + \gamma_{21}RIR_{it} + \gamma_{22}CGI_{it-1} + \gamma_{23}TOPEN_{it} + \gamma_{24}AID_{it} + \gamma_{25}EDS_{it} + \gamma_{26}CBB_{it} + u_{it} \quad (12)$$

Equation (12) can be rewritten as follows:

$$I_{git} = \varphi_0([1 - (1 - \delta)L]Y_{it}^e + \varphi_1 I_{git-1} + \varphi_2 I_{pit} + \varphi_3 RIR_{it} + \varphi_4 CGI_{it} + \varphi_5 TOPEN_{it} + \varphi_6 AID_{it} + \varphi_7 EDS_{it} + \varphi_8 CBB_{it}) + u_{it} \quad (13)$$

where,

$$\alpha\alpha_0 = \varphi_0, (1 - \alpha_0) = \varphi_1, \gamma_1 = \varphi_2, \gamma_{21} = \varphi_3, \gamma_{22} = \varphi_4, \gamma_{23} = \varphi_5, \gamma_{24} = \varphi_6, \gamma_{25} = \varphi_7, \gamma_{26} = \varphi_8$$

Assuming depreciation of public investment is 0, we get,

$$I_{git} = \varphi_0 Y_{it}^e + \varphi_1 I_{git-1} + \varphi_2 I_{pit} + \varphi_3 RIR_{it} + \varphi_4 CGI_{it} + \varphi_5 TOPEN_{it} + \varphi_6 AID_{it} + \varphi_7 EDS_{it} + \varphi_8 CBB_{it} + u_{it} \quad (14)$$

Basically, Equation (14) says that additions to public capital stock ( $I_{git}$ ) is influenced by expected output levels ( $Y_{it}^e$ ), previous year's public investment level ( $I_{git-1}$ ), current level of private investment ( $I_{pit}$ ), a host of other relevant factors ( $X_{it}$ ) and  $u_{it}$  is assumed to be equal  $\mu_i + \nu_{it}$  where  $\mu_i$  is the country specific variable and  $\nu_{it}$  is the white noise. The coefficient of expected output could be positive or negative because it is used to capture the effect of cyclical factors on public capital expenditure. In a situation where the economy is not performing well, governments' stabilization policies would be geared towards increasing capital expenditure to correct the downturn and vice versa. Also, the coefficient of private investment is ambiguous. If governments respond to private investments with the

provision of basic infrastructure to facilitate their business, then a positive relationship would be expected. On the other hand, if private investments into SSA region are basically through acquisition of state-owned enterprises (SOEs) or governments respond to private investments with the establishment of competitive SOEs, a negative relationship would be expected. The co-efficient of the lagged dependent variable is expected to be positive. Also, it is assumed that government and private investment depreciate at the same rate of zero based on previous empirical findings (for example Blejer & Khan, 1984; Erden & Holcombe, 2005; Munthali, 2012; Ramirez, 1994).

In order to reduce the bias in the coefficient estimates of expected output, private investment and lagged dependent variable and also to capture the other relevant factors that condition the adjustment process, we include other control variables that other researchers have found to influence public investment. Generally, these variables are grouped into macro-economic and politico-institutional variables (Turrini, 2004). Those included in this study are aid, budget deficit, trade openness (Sturm, 2001), interest rate, governance (de Haan & Sturm, 1997; Henrekson, 1988; Mogue, 2013; Roubini & Sachs, 1989), fiscal discipline and external public debt (Mehrotra & Väilä, 2006; Sturm, 2001; Turrini, 2004). These are captured in  $X_{it}$ .

The study included data from all SSA countries except South Sudan. The exclusion of South Sudan was basically based on lack of data. In all, 48 countries were included in the study over a 20 year period, from 1990 to 2009. The unbalanced panel data was used as not all countries had data for all variables at all times.

$$\ln GPINV_{it} = \varphi_0 \ln GPINV_{it-1} + \varphi_1 \ln PRINV_{it} + \varphi_2 \ln GDPr_{it-1} + \varphi_3 \ln RIR_{it} + \varphi_4 \ln TOPEN_{it} + \varphi_5 \ln AID_{it} + \varphi_6 \ln EDS_{it} + \varphi_7 \ln CBB_{it} + \ln CGI_{it} + \chi_i + z_{it} \quad (15)$$

where the variables are explained in Table 1.

All the data were taken from the online edition of the African development index of the World Bank except that of Trade openness. The variable for trade openness was taken from UNCTAD (2012). All the variables are presented in their natural log form in order to control for heteroskedasticity and also help in the determination of their elasticities.

### Country governance indexes (CGI)

CGI was measured as an index constructed by the researcher (using the Principal Component Analysis - PCA) from the global governance indicators published by the World Bank. The following equation was used for the construction of the governance index.

$$CGI_t = W_1CCN_t + W_2GEN_t + W_3PSN_t + W_4RQN_t + W_5RLN_t + W_6VAN_t \quad (16)$$

where the components have been explained in Table 1 and the “Ws” are the weights.

The variance proportions of the various countries used in the study (see Appendix 1) showed that in all the countries, the first composition gave the best weights to be used in the calculation of the governance index.

### 3.2. Dynamic panel methodology

The nature of data used for the study allows for panel data methodology. Panel data methodology allows researchers to undertake cross-sectional observations over several time periods and also control for individual heterogeneity due to hidden factors which, if neglected in time-series or cross-section estimations, leads to biased results (Baltagi, 1995). The general form of the panel data model can be specified as:

$$Y_{it} = \alpha + \beta X_{it} + e_{it} \quad (17)$$

where the subscript  $i$  denotes the cross-sectional dimension and  $t$  represents the time-series dimension.  $Y_{it}$  represents the dependent variable in the model.  $\alpha$  is the constant and  $\beta$  represents the

**Table 1. Definition of variables (proxies) and expected signs**

Variable	Definition	Expected sign
GDP <sub><i>t</i></sub>	It is the real gross domestic product of country <i>i</i> in time <i>t</i>	Positive
GPIINV	Public investment covers gross outlays by the public sector on additions to its fixed domestic assets. This is scaled by GDP and is taken for country <i>i</i> in time <i>t</i>	
PRINV	Private investment = investment output ratio and is computed as the ratio of private investment to GDP of country <i>i</i> in time <i>t</i> . Private investment covers gross outlays by the private sector (including private non-profit agencies) on additions to its fixed domestic assets	Indeterminate
RIR	Real interest rate (independent variable) = is the year end real interest rate of country <i>i</i> in time <i>t</i>	Negative
CGI	Country governance index (1): Is an index constructed using principal component analysis from six global governance indicators provided by the world bank. The index is constructed for country <i>i</i> in time <i>t</i>	Positive
TOPEN	Trade openness = This shows exports, imports and sum/average of exports and imports as percentage of nominal gross domestic product (GDP) for country <i>i</i> in time <i>t</i> . The indicators are calculated for trade in goods, trade in services and total trade in goods and services	Positive
AID	This is gross official development agency's (ODA) aid disbursement for economic infrastructure. It is the aggregate total for transport and storage; communications; energy; banking and financial services; business and other services. It is scaled by GDP and taken for country <i>i</i> in time <i>t</i>	Positive
EDS	Is external debt stocks for public and publicly guaranteed debt which comprises long-term external obligations of public debtors, including the national government, political subdivisions (or an agency of either), and autonomous public bodies, and external obligations of private debtors that are guaranteed for repayment by a public entity. It is scaled by GDP and taken for country <i>i</i> in time <i>t</i>	Positive
CBB	Current budget balance—Is the excess of current revenue over current expenditure, scaled by GDP and taken for country <i>i</i> in time <i>t</i>	Negative
CCN	Control of corruption measures the extent to which public power is exercised for private gain, including petty and grand forms of corruption, as well as “capture” of the state by elites and private interests	Positive
GEN	Government effectiveness measures the quality of public services, the quality and degree of independence from political pressures of the civil service, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies	Positive
PSN	Political stability and absence of violence measures the perceptions of the likelihood that the government will be destabilized or overthrown by unconstitutional or violent means, including domestic violence or terrorism	Positive
RQN	Regulatory quality measures the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development	Positive
RLN	Rule of law measures the extent to which agents have confidence in and abide by the rules of society, in particular the quality of contract enforcement, the police, and the courts, as well as the likelihood of crime and violence	Positive
VAN	Voice and accountability measures the extent to which a country's citizens are able to participate in selecting their government and to enjoy freedom of expression, freedom of association, and a free media. Further documentation and research using the World Governance Indicators (WGI) is available at <a href="http://www.worldbank.org/wbi/governance">www.worldbank.org/wbi/governance</a>	Positive
$X_i, Z_{it}$	Are the country specific factors and white noise, respectively	

coefficients.  $X_{it}$  contains the set of explanatory variables in the estimation model.  $e_{it}$  is the error term. According to Baltagi (2005), most panel data applications have been limited to a single regression with error components disturbances which is explained as:

$$Y_{it} = \alpha + \beta X_{it} + \mu_i + \lambda_t + v_{it} \tag{18}$$



where the  $\mu_i$  is an unobserved individual specific effect.  $\lambda_t$  is an unobserved time specific effect.  $\nu_{it}$  is a zero mean random disturbance with variance  $\delta_v^2$  and the other variables, are as explained in Equation (17).

The nature of the test to be carried out requires that a dynamic panel methodology is applied. In addition to other benefits associated with panel data methodology, dynamic panel allows for measuring the speed of adjustment (through the lagged dependent variable) using the partial adjustment-based approach. The dynamic panel approach accounts for individual effects, which mostly is the cross-sectional (see Baltagi, 2005) even though the time-specific effects can also be included. The dynamic error components regression is characterized by the presence of a lagged dependent variable among the regressors i.e.

$$Y_{it} = Y_{it-1} + \beta X_{it} + \mu_i + \nu_{it}, \quad (19)$$

where  $Y_{it}$  is the dependent variable in country  $i$  for time  $t$ ,  $Y_{it-1}$  is the dependent variable in the previous period,  $\beta X_{it}$  is a vector of explanatory variables,  $i = 1 \dots 48$ ,  $t = 1 \dots 20$ .

In this particular study, the Arellano Bond General Moments Method (AB-GMM (1991)) approach, first proposed by Holtz-Eakin, Newey, and Rosen (1988), was used because of its popularity in dynamic panel modelling. The Arellano-Bond GMM approach is designed with the ability to handle the econometric problems that may arise in estimating Equation (14). It also uses the differencing (first differencing) GMM approach to wipe out the time invariant country-specific effects (which may be correlated with the explanatory variables) and also caters for the problem of autocorrelation which may be caused by the inclusion of the lagged dependent variable. Lastly, the AB approach has been designed for small-T (20 years) and large-N (48 countries) panels (Mileva, 2007).

### 3.2.1. Diagnostic tests

The Sargan test and autocorrelation test are the two main diagnostic tests relevant to this study. The Sargan test for over-identifying restrictions is used to determine if the instruments are suitable. The null hypothesis states that “the instruments as a group are exogenous”. Consequently, a higher  $p$ -value is preferred. Thus, if the  $p$ -value is less than 0.05, we reject the null hypothesis in favour of the alternate. The null hypothesis of no autocorrelation is applied to the differenced residuals (Mileva, 2007).

## 4. Analysis and discussion

### 4.1. Descriptive statistics

Table 2 presents the descriptive statistics for the study. On an average private investment to gross domestic product (in percentage) was as low as about 12.75% with a variation of 9.54. Some economies recorded as low as  $-2.64\%$  with others as high as  $112.35\%$  in some years. The wide difference between the minimum and maximum ratios also attests to the fact that private investment activities on the continent are not evenly distributed. While others were able to attract even more than their national output in certain years, others experienced a reduction in private investment in certain years over the study period. Again, private investment as a percentage of GDP was almost double that of public investment (7.41%).

Meanwhile, real interest rate on the continent averaged at 10.8% but with huge disparities. The minimum and maximum rates were  $-96.87$  and  $508.74\%$ , respectively, meaning that real interest rates on the continent are far from being homogenous. Impliedly, the result does not truly reflect the position of the entire continent. Consequently, a lot of work needs to be done in the area of monetary policy harmonization if the continent is really committed towards economic integration. The average Country Governance Index was 0.47099. Again, the wide difference between the minimum and maximum ( $-33.7$  and  $31.6$ ) only goes to confirm the disparities in governance structures of African economies. Whilst some economies have good structures to facilitate control of

**Table 2. Descriptive statistics**

Variable	Obs	Mean	SD	Min	Max
GDP	916	3.92338	8.29937	-51.031	106.28
GPINV	841	7.407808	4.82583	0.1001	42.9755
PRINV	840	12.75484	9.77695	-2.6404	112.352
RIR	641	10.84186	27.7605	-96.87	508.741
CGI	532	0.470989	18.1122	-33.695	31.6019
TOPEN	838	31.4506	21.2424	2.68738	140.576
AID	374	1.116619	1.24082	-0.2216	10.7369
EDS	882	81.32798	79.4891	1.8722	862.108
CBB	850	4,516.69	128,957	-50.95	3,759,757

corruption, government effectiveness, political stability, regulatory quality, rule of law and voice and accountability are destroying the few structures they put up, through post-election conflict.

The average growth rate of GDP was about 4%. The volume of trade in SSA was about 31 times the size of aid the sub-region gets for economic infrastructure. If SSA was making more exports from this volume or importing more capital items for manufacturing, then a lot may be achieved through trade than aid.

#### 4.2. Multicollinearity

The correlation matrix shown in Table 3 indicates that the country governance indicators are highly correlated among themselves with the country governance index calculated. In view of this, the stepwise regression approach was used. The individual country governance variables and the combined governance index were introduced into the model one at a time, resulting in eight estimated models. Also, variance inflation factors (VIF) analysis was conducted. The results (available on demand) show that the presence of multicollinearity is minimal in each of the models estimated. Multicollinearity is deemed to be high if VIF is greater than five (as a common rule of thumb) and according to Kutner, Nachtsheim, and Neter (2004), VIF of 10 should be the cut off.

#### 4.3. Discussion of regression results

From Table 4, the results suggest that key country governance structures that influence public investment, in addition to private investment, trade openness, aid and external debt are control of corruption, political stability, regulatory quality and rule of law. These findings, based on the Sargan test and AR (1) and AR (2) test results reported in Table 4 emanate from models that are generally well specified. Table 4 gives the main results of our multivariate analysis. Model 1 is the base model mentioned in Equation (15) without any country governance indicator as a control variable. This model shows the impact of private investment on public investment, with economic growth, real interest rate, trade openness, aid, current budget balance, and external debt as conditioning factors but without the governance factors as controls. Model 2, through model 7, includes the governance factors (control of corruption, government effectiveness, political stability, and regulatory quality, rule of law and voice and accountability, in that order) singly as a control. Model 8 includes an index of all governance factors as the governance measure.

The coefficient of the lagged dependent (lnGPINV) variable is positive and is at least 5% significant in model 1 through to 8. This indicates that past levels of public investment in SSA inform current levels, implying that public investment follows a partial adjustment process. Given the degree of persistence of 0.4181 (using the base model), the speed of adjustment is estimated to be about 7 months  $((1-0.4181) \times 12)$ . The results generally confirm the view that investment process take time, and this time lag is lengthened by the bureaucratic processes prevalent among most SSA countries.

**Table 3. Correlation matrix**

	lnGPINV	lnPRINV	lnTOPEN	lnRIR	lnGDP <sub>t-1</sub>	lnCBB	lnEDS	lnAID	lnVAN	lnCCN	lnGE	lnPSN	lnREN	lnRLN	lnCGI
lnGPINV	1.0000														
lnPRINV	0.0939***	1.0000													
lnTOPEN	-0.0671*	0.3617***	1.0000												
lnRIR	-0.1173***	-0.1620	0.0852*	1.0000											
lnGDP <sub>t-1</sub>	-0.1739***	-0.0801**	0.1009***	0.0022	1.0000										
lnCBB	0.1740**	-0.1015**	0.0086	0.0090	0.0998*	1.0000									
lnEDS	-0.1027***	-0.2575***	-0.2573***	0.0509	-0.1063***	-0.0309	1.0000								
lnAID	0.1955***	0.0342	-0.4127***	0.0710	-0.2282***	-0.1227*	0.2909***	1.0000							
lnVAN	0.0239	0.1153**	0.0852*	-0.0099	0.2615***	0.1284**	-0.4870***	0.0555	1.0000						
lnCCN	0.0173	0.1094**	0.0876*	0.0296	0.3140***	0.1340**	-0.4911***	0.0580	0.9169***	1.0000					
lnGE	0.0098	0.1226***	0.0854*	0.0467	0.3082***	0.1258**	-0.4640***	0.0596	0.9104***	0.9844***	1.0000				
lnPSN	-0.0645	0.1451***	0.1197***	0.0742	0.4230***	0.2151***	-0.4600***	-0.0810	0.8420***	0.8393***	0.8314***	1.0000			
lnREN	-0.0018	0.1493***	0.0915**	0.0758	0.3525***	0.1698***	-0.4461***	0.0485	0.8772***	0.9488***	0.9696***	0.8196***	1.0000		
lnRLN	-0.0021	0.1072**	0.0582	0.0369	0.3436***	0.1884***	-0.4672***	0.0737	0.9259***	0.9530***	0.9532***	0.8319***	0.9630***	1.0000	
lnCGI	-0.1821***	0.0805	0.1573**	-0.0398	0.2012***	0.1881***	-0.5215***	-0.0193	0.9683***	0.9836***	0.9807***	0.8919***	0.9633***	0.9894***	1.0000

\*p < 0.1.

\*\*p < 0.05.

\*\*\*p < 0.01.

**Table 4. Regression results (dependent variable—GPINV)**

Variable	1	2	3	4	5	6	7	8
LnGPINV <sub>it-1</sub>	0.4181** [0.1646]	0.4116*** [0.1401]	0.4187*** [0.1378]	0.4291*** [0.1368]	0.4228*** [0.1293]	0.4011*** [0.1321]	0.4036*** [0.1453]	0.3932*** [0.1015]
lnPRINV	-0.1686** [0.0798]	-0.1718** [0.0838]	-0.1822** [0.0768]	-0.175** [0.0743]	-0.1711** [0.0717]	-0.1957** [0.0842]	-0.1817** [0.0797]	-0.2472*** [0.0622]
lnGDP <sub>it-1</sub>	0.2367 [0.1722]	0.0189 [0.2169]	0.0665 [0.1981]	0.0665 [0.1954]	0.1185 [0.1711]	-0.0445 [0.2176]	0.0575 [0.2034]	-0.0917 [0.1965]
lnTOPEN	0.3593** [0.154]	0.3162 [0.1956]	0.3176 [0.2036]	0.3348* [0.1858]	0.3338* [0.1949]	0.3297 [0.2044]	0.2834 [0.1848]	0.1716 [0.2362]
lnRIR	-3.50E-04 [0.0312]	0.0115 [0.0322]	0.0221 [0.0313]	0.0202 [0.0305]	0.024 [0.032]	0.0181 [0.0348]	0.0065 [0.0302]	0.067* [0.0395]
lnCBB	-0.0343 [0.0263]	-0.0393 [0.0282]	-0.0377 [0.0282]	-0.0328 [0.0277]	-0.0344 0.0269	-0.0395 [0.0259]	-0.046 [0.0288]	0.0054 [0.0274]
lnEDS	0.1623*** [0.0416]	0.2457*** [0.0525]	0.2465*** [0.0516]	0.241*** [0.0446]	0.2245*** [0.0443]	0.2342*** [0.0474]	0.2515*** [0.0589]	0.2208 [0.1474]
lnAID	0.0515 [0.0354]	0.0668* [0.0397]	0.0646* [0.0385]	0.0614* [0.0356]	0.0582 [0.0355]	0.0696** [0.0353]	0.0639* [0.0383]	0.1274* [0.0769]
lnCCN		0.4071* [0.236]						
lnGEN			0.44 [0.2711]					
lnPSN				0.3776** [0.1869]				
lnRQN					0.503* [0.2921]			
lnRLN						0.5387** [0.2347]		
lnVAN							0.4386 [0.2794]	
lnCGI								0.39497 [0.39918]
$\chi^2$	98.95	141.10	117.10	110.80	132.30	84.19	120.60	382.90
N	86	86	86	86	86	86	86	48
AR(1) (p-value)	0.0910	0.0758	0.0887	0.0710	0.0794	0.0885	0.0793	0.0942
AR(2) (p-value)	0.5045	0.5819	0.6911	0.8104	0.5867	0.7479	0.5021	0.1651
Sargan test (p-value)	0.0983	0.0838	0.0833	0.1228	0.0991	0.0934	0.0957	0.1728

Notes: GDP<sub>it</sub> is real GDP; CBB is current budget balance; EDS is external debt stock; AID is aid for economic infrastructure; CCN is control of corruption; GEN is government effectiveness; PSN is political stability; RQN is regulatory quality; RLN is rule of law; VAN is voice and accountability; CGI is the country governance index constructed by the author using the six main country governance variables reported by the World Bank. Also note that model 1 presents results for the baseline model while models 2–7 present results on the effect of each of the country governance indicators on the base line model. Model 8 presents results for the effect of country governance index.

From Table 4, the coefficient of  $\ln\text{PRINV}$  is negative and is at least significant at 5% in all models (model 1 through model 8), suggesting that private investment reduces public investment irrespective of whether or not there is country governance structures in place and the type of governance structures in place. This may probably be as a result of privatization of state-owned enterprises and private sector engagement in social activities that lead to the provision of social goods. It therefore suggests that more private investment may be an alternative means of reducing the burden on the public sector for the provision of economic and social infrastructure. In effect, this result in a way completes the crowding-in-crowding-out story in SSA. In SSA, private investment and public investments are substitutes. In other words, private investors are partners in the development of SSA. The result supports Sturm's (2001) assertion that private investment is key to public investment decisions. A thorough assessment of the relative strengths and weaknesses of each of these major forms of investment would enable a more formidable formulation of public private partnerships that would speed up the development of the sub-region. Thus, there is the need for private sector protection such as building strong institutions and encouraging less government competition with the private sector.

Meanwhile, the study does not offer support for the accelerator model. All throughout models 1–8, economic growth in SSA exerts positive but insignificant influence on public capital formation. Expectations of future economic growth are probably met with increases in public capital. Thus, government public investment may signal economic growth expectations. The coefficient of  $\ln\text{TOPEN}$  is positive and significant at 5% for the base model but only retains its significance (but at 10%) in a governance environment that ensures political stability and regulatory quality. The results imply that the absence of violence or unconstitutional government overthrows as well as the presence of policies that facilitate private sector development ensures that government revenue from taxation of imports and exports for public investment is guaranteed. Governments benefit from trade, through taxes on imports and exports and accessibility of capital goods, facilitates public capital formation. These results are in line with previous studies by Mehrotra and Väililä (2006), Turrini (2004).

The coefficient of  $\ln\text{EDS}$  is positive and significant at 1% for all models (except model 8) implying that external debt financing increases public investment in SSA. This relationship could emanate from the discipline that international financial institutions (IFIs) instill in countries when they borrow from them. Also, these debts go with restrictive covenants and strict supervision from the IFIs. Governments, therefore, find it difficult to use their discretion to divert these borrowed funds, as is common with IGF budgetary allocations. It is observed that the presence of good country governance structures amplifies this relationship as the coefficient of  $\ln\text{EDS}$  increases for models 2–8 when the governance variables are introduced. The coefficient of  $\ln\text{AID}$  of the base model is positive but insignificant. But it becomes at least significant at 10% for virtually the rest of the models (2–8) implying that as country governance structures improve benefits from aid for economic and infrastructural development also improves in SSA. In other words, countries that are governed well stand the chance of getting the best out of aid for economic and infrastructural development. In effect, the results on aid and external debt effects on public investment in SSA, confirm the special role played by good country governance in realizing the gains from aid and external debt.

Comparatively, trade (with coefficient of 0.3593 and significant at 5%) has the biggest impact on public investment, followed by debt (with a coefficient of 0.1623 and significant at 1%) and Aid (with coefficient of 0.0515 and generally significant at 10%). This puts in perspective recent agitation of the African continent for trade instead of aid, as the results point to the fact that public investment benefits more from trade than aid. Apparently, the continent needs to strategize to take advantage of the benefits from trade. Also, the sub-region needs to build the needed capacity to attract external loans to fund public investment, if IGF proves futile. This would not only enhance public investment but would reduce governments' activity in the domestic credit market, thereby reducing its crowding-out effect on private investment.

Fiscal indiscipline harms public investment but this result is not significant. When governments are not able to maintain current budget balance, it reduces public investment. Current budget deficit increases governments' activities in the domestic financial market reducing credit to the private sector. When governments find it difficult to even meet their current budget requirements, nothing or little is left for infrastructural development. Thus, fiscal discipline enhances the IGF of governments in order to generate funds for investment.

From model 2 in Table 4, control of corruption has positive and significant relationship with public investment. This indicates that as corruption is controlled public investment increases. The public investment gains from control of corruption are not only evidence of benefits from controls that ensure that public power is exercised for the benefit of the public and not private individuals, but also evidence of gains that accrue to the public sector when private individuals are prevented from siphoning state funds. Thus, control of corruption prevents the misuse or misappropriation of funds for public investments and this is in tandem with similar results by Alesina and Angeletos (2005), Gyimah-Brempong (2002), Jain (2011). In Africa, a stable political economy facilitates public investment. The results show a significantly positive relationship political stability and public investment. This could be as a result of the continuity of government projects guaranteed by a peaceful political environment. This benefit is not restricted to only national political stability since local government instability may distort sustainability of public investment projects. Similar results were reported by Braga Tadeu and Moreira Silva (2013). Model 5 shows the relationship between regulatory quality and public investment. The results show a significantly positive relationship between regulatory quality and public investment depicting that improvement in the quality of regulations augments public investment in SSA. Basically, policies geared towards promoting private sector development eventually benefit public investment probably through taxation benefits of the private sector. The sizes of the coefficient of the governance variables stress the importance of country governance structures in explaining public investment.

Thus, governments in SSA should pay particular attention to the way in which their countries are governed through country governance structures like control of corruption, political stability, rule of law and the quality of regulation. In fact, good country governance structures amplify the positive effect of aid and external debt on public investment by enhancing their coefficient and/or significance level. But existing governance structures appear not to enable governments in SSA to take advantage of trade for public investment and also worsen the crowding out effect of private investment on public investment. Probably, this could be as a result of the fact that existing government structures have been designed factoring in privatization and attraction of foreign direct investment.

## 5. Conclusion

This study examined how country governance structures like control of corruption, political stability, rule of law, governance effectiveness, voice and accountability and regulatory quality influence the crowding-in–crowding-out hypothesis and assist in explaining public investment dynamics in SSA. The findings depict that in SSA, private investment crowds out public investment when they compete with public investment for resources and markets, irrespective of whether or not there exist sound country governance structures. The results suggest that key country governance structures that influence public investment, in addition to private investment, trade openness, aid and external debt are control of corruption, political stability, regulatory quality and rule of law. Also, the adjustment process of public investment in SSA takes less than a year. Thus, policies directed at improving public investment in SSA should go beyond conventional factors to include governance structures. The study augments existing literature on the unsettled crowding-in–crowding-out hypothesis by controlling country governance structures in explaining public investment in SSA. Future studies could consider whether the findings of this study are homogenous across SSA countries.

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## Appendix 1

### Eigenvalues and Eigenvectors for the construction of the CGI variable

<b>Angola</b>						
	<b>Comp 1</b>	<b>Comp 2</b>	<b>Comp 3</b>	<b>Comp 4</b>	<b>Comp 5</b>	<b>Comp 6</b>
Eigenvalue	34.6254	0.38011	0.16671	0.14176	0.06812	0.01371
Variance Prop.	0.97824	0.01074	0.00471	0.00401	0.00192	0.00039
Cumulative Prop.	0.97824	0.98897	0.99368	0.99769	0.99961	1
<b>Eigenvectors</b>						
<i>Variable</i>	<i>Vector 1</i>	<i>Vector 2</i>	<i>Vector 3</i>	<i>Vector 4</i>	<i>Vector 5</i>	<i>Vector 6</i>
Control of corruption	0.45649	0.25615	-0.1548	-0.6062	0.29279	0.49888
Govt effectiveness	0.32244	0.42213	-0.0465	0.60738	0.57527	-0.1258
Political stability	0.14631	0.3636	0.79465	-0.2755	-0.0737	-0.3655
Regulatory quality	0.28265	0.42931	-0.0697	0.30752	-0.7369	0.30546
Rule of law	0.51525	-0.1112	-0.4392	-0.1933	-0.1865	-0.6761
Voice and accountability	0.56646	-0.6537	0.38027	0.23628	-0.007	0.22654
<b>Benin</b>						
	<b>Comp 1</b>	<b>Comp 2</b>	<b>Comp 3</b>	<b>Comp 4</b>	<b>Comp 5</b>	<b>Comp 6</b>
Eigenvalue	65.7119	0.33381	0.29024	0.18295	0.07455	0.02462
Variance Prop.	0.9864	0.00501	0.00436	0.00275	0.00112	0.00037
Cumulative Prop.	0.9864	0.99141	0.99577	0.99851	0.99963	1
<b>Eigenvectors</b>						
<i>Variable</i>	<i>Vector 1</i>	<i>Vector 2</i>	<i>Vector 3</i>	<i>Vector 4</i>	<i>Vector 5</i>	<i>Vector 6</i>
Control of corruption	0.43798	-0.0182	-0.5871	-0.3025	-0.6096	-0.0087
Govt effectiveness	0.40639	-0.2173	-0.1555	-0.1378	0.50668	0.69838
Political stability	0.22282	0.42709	-0.4395	0.0205	0.56752	-0.5023
Regulatory quality	0.31768	-0.7212	-0.0435	0.497	0.05017	-0.3572
Rule of law	0.457	-0.0727	0.58226	-0.5833	0.06374	-0.3203
Voice and accountability	0.53255	0.49467	0.31164	0.54943	-0.2074	0.1723
<b>Botswana</b>						
	<b>Comp 1</b>	<b>Comp 2</b>	<b>Comp 3</b>	<b>Comp 4</b>	<b>Comp 5</b>	<b>Comp 6</b>
Eigenvalue	43.0145	0.84382	0.41072	0.14623	0.03091	0.00519
Variance Prop.	0.96768	0.01898	0.00924	0.00329	0.0007	0.00012
Cumulative Prop.	0.96768	0.98666	0.9959	0.99919	0.99988	1
<b>Eigenvectors</b>						
<i>Variable</i>	<i>Vector 1</i>	<i>Vector 2</i>	<i>Vector 3</i>	<i>Vector 4</i>	<i>Vector 5</i>	<i>Vector 6</i>
Control of corruption	0.40066	-0.0201	4.53E-05	0.88321	0.20036	-0.1373
Govt effectiveness	0.40842	-0.2476	-0.1976	0.01085	-0.3557	0.77859
Political stability	0.18379	0.21102	0.32037	0.06021	-0.8396	-0.3324
Regulatory quality	0.30792	-0.8065	-0.0907	-0.2245	-0.0107	-0.4428
Rule of law	0.44099	0.4491	-0.6968	-0.2345	0.02579	-0.2503
Voice and accountability	0.59127	0.20414	0.6038	-0.3328	0.35723	0.07584
<b>Burkina Faso</b>						
	<b>Comp 1</b>	<b>Comp 2</b>	<b>Comp 3</b>	<b>Comp 4</b>	<b>Comp 5</b>	<b>Comp 6</b>
Eigenvalue	68.7594	0.3562	0.22641	0.09212	0.05497	0.01789
Variance Prop.	0.98924	0.00513	0.00326	0.00133	0.00079	0.00026
Cumulative Prop.	0.98924	0.99437	0.99763	0.99895	0.99974	1



Eigenvectors						
Variable	Vector 1	Vector 2	Vector 3	Vector 4	Vector 5	Vector 6
Control of corruption	0.43717	-0.0535	0.4903	0.69892	0.06874	0.2691
Govt effectiveness	0.37803	-0.2102	0.30661	-0.4987	-0.6406	0.24444
Political stability	0.2186	0.54705	0.52498	-0.3213	0.28281	-0.4406
Regulatory quality	0.28629	-0.4277	-0.0293	-0.3781	0.70591	0.30494
Rule of law	0.45646	-0.4345	-0.2283	0.12866	-0.0749	-0.727
Voice and accountability	0.5726	0.53099	-0.5805	0.0048	-0.0307	0.22846
Burundi						
	Comp 1	Comp 2	Comp 3	Comp 4	Comp 5	Comp 6
Eigenvalue	43.1958	0.3034	0.13284	0.11543	0.05941	0.00557
Variance Prop.	0.98593	0.00693	0.00303	0.00264	0.00136	0.00013
Cumulative Prop.	0.98593	0.99285	0.99588	0.99852	0.99987	1
Eigenvectors						
Variable	Vector 1	Vector 2	Vector 3	Vector 4	Vector 5	Vector 6
Control of corruption	0.42935	0.19421	0.39632	-0.6713	-0.3716	0.17931
Govt effectiveness	0.36219	0.1874	-0.4604	-0.3989	0.55887	-0.3876
Political stability	0.20469	-0.0375	0.76831	0.22973	0.49423	-0.2633
Regulatory quality	0.32678	0.53948	-0.0938	0.35453	0.22984	0.6441
Rule of law	0.50281	0.18394	-0.1099	0.45346	-0.4989	-0.4967
Voice and accountability	0.53196	-0.7752	-0.1406	0.07859	0.05963	0.29436
Cameroon						
	Comp 1	Comp 2	Comp 3	Comp 4	Comp 5	Comp 6
Eigenvalue	44.5173	0.45082	0.23623	0.07039	0.02426	0.00658
Variance Prop.	0.9826	0.00995	0.00521	0.00155	0.00054	0.00015
Cumulative Prop.	0.9826	0.99255	0.99777	0.99932	0.99986	1
Eigenvectors						
Variable	Vector 1	Vector 2	Vector 3	Vector 4	Vector 5	Vector 6
Control of corruption	0.48041	-0.0326	0.71298	0.43426	-0.2295	0.13616
Govt effectiveness	0.35141	-0.3742	-0.014	-0.3076	0.52306	0.60672
Political stability	0.19279	0.21026	0.42883	-0.527	0.37495	-0.5625
Regulatory quality	0.28608	-0.5503	-0.1141	-0.4324	-0.6132	-0.1983
Rule of law	0.44369	-0.2651	-0.4028	0.47844	0.33695	-0.4777
Voice and accountability	0.57431	0.66453	-0.3638	-0.1524	-0.2088	0.17152
Cape Verde						
	Comp 1	Comp 2	Comp 3	Comp 4	Comp 5	Comp 6
Eigenvalue	17.5328	0.49758	0.30449	0.09602	0.06114	0.00382
Variance Prop.	0.94793	0.0269	0.01646	0.00519	0.00331	0.00021
Cumulative Prop.	0.94793	0.97483	0.9913	0.99649	0.99979	1
Eigenvectors						
Variable	Vector 1	Vector 2	Vector 3	Vector 4	Vector 5	Vector 6
Control of corruption	0.35857	-0.2574	0.57542	0.16106	-0.6062	0.28409
Govt effectiveness	0.37767	-0.0266	0.04692	-0.2374	-0.1927	-0.8723
Political stability	0.24697	-0.6735	0.22946	-0.2038	0.62279	0.05768
Regulatory quality	0.31521	0.40548	0.04595	-0.7868	0.00773	0.33902
Rule of law	0.47284	-0.2951	-0.773	0.07587	-0.2154	0.19906
Voice and accountability	0.58726	0.47743	0.11975	0.50129	0.40139	0.02105

Central African Republic						
	Comp 1	Comp 2	Comp 3	Comp 4	Comp 5	Comp 6
Eigenvalue	19.1504	0.68455	0.38878	0.0903	0.03815	0.02283
Variance Prop.	0.9399	0.0336	0.01908	0.00443	0.00187	0.00112
Cumulative Prop.	0.9399	0.97349	0.99258	0.99701	0.99888	1
Eigenvectors						
Variable	Vector 1	Vector 2	Vector 3	Vector 4	Vector 5	Vector 6
Control of corruption	-0.3667	0.29887	0.35479	-0.5419	0.36539	0.47244
Govt effectiveness	-0.3599	0.31998	0.12044	-0.1973	0.05789	-0.8434
Political stability	-0.2073	-0.0018	0.74878	0.62473	-0.0642	0.04412
Regulatory quality	-0.3629	0.47294	-0.5125	0.51482	0.30142	0.16135
Rule of law	-0.5288	0.01825	-0.1363	-0.1082	-0.8101	0.18283
Voice and accountability	-0.5307	-0.7644	-0.133	0.02001	0.3344	-0.0642
Chad						
	Comp 1	Comp 2	Comp 3	Comp 4	Comp 5	Comp 6
Eigenvalue	49.5825	0.35495	0.16365	0.03434	0.01455	0.00279
Variance Prop.	0.98863	0.00708	0.00326	0.00069	0.00029	5.6E-05
Cumulative Prop.	0.98863	0.99571	0.99897	0.99965	0.99994	1
Eigenvectors						
Variable	Vector 1	Vector 2	Vector 3	Vector 4	Vector 5	Vector 6
Control of corruption	0.40396	-0.3146	0.4094	-0.5614	-0.3697	-0.344
Govt effectiveness	0.39424	-0.2447	-0.1285	-0.315	0.79464	0.19367
Political stability	0.24457	0.23251	0.73693	0.23381	0.0315	0.5361
Regulatory quality	0.33204	-0.3969	-0.4198	0.10011	-0.4567	0.58085
Rule of law	0.45684	-0.2524	0.03181	0.71209	0.09488	-0.4588
Voice and accountability	0.55012	0.75221	-0.3092	-0.1177	-0.1151	-0.0941
Comoros						
	Comp 1	Comp 2	Comp 3	Comp 4	Comp 5	Comp 6
Eigenvalue	10.631	0.45848	0.16427	0.06238	0.01722	9.86E-17
Variance Prop.	0.93803	0.04045	0.0145	0.0055	0.00152	0
Cumulative Prop.	0.93803	0.97848	0.99298	0.99848	1	1
Eigenvectors						
Variable	Vector 1	Vector 2	Vector 3	Vector 4	Vector 5	Vector 6
Control of corruption	-0.3065	0.33637	0.28347	-0.4462	0.11615	0.70711
Govt effectiveness	-0.3065	0.33637	0.28347	-0.4462	0.11615	-0.7071
Political stability	-0.0722	0.12064	-0.5962	-0.4136	-0.6736	2.48E-14
Regulatory quality	-0.3257	0.31354	0.38375	0.55115	-0.587	3.28E-14
Rule of law	-0.5579	0.2839	-0.5713	0.34033	0.40729	#####
Voice and accountability	-0.6241	-0.7617	0.10095	-0.1059	-0.0939	4.54E-15
Congo Dr						
	Comp 1	Comp 2	Comp 3	Comp 4	Comp 5	Comp 6
Eigenvalue	35.5949	1.14045	0.17861	0.09484	0.07819	0.03111
Variance Prop.	0.95896	0.03073	0.00481	0.00256	0.00211	0.00084
Cumulative Prop.	0.95896	0.98969	0.9945	0.99706	0.99916	1

Eigenvectors						
Variable	Vector 1	Vector 2	Vector 3	Vector 4	Vector 5	Vector 6
Control of corruption	-0.4037	0.14251	0.10624	-0.5591	-0.6275	0.3148
Govt effectiveness	-0.3269	0.33445	0.27221	-0.4874	0.60913	-0.314
Political stability	-0.1628	0.38626	-0.8363	-0.0111	-0.108	-0.3363
Regulatory quality	-0.2786	0.49379	-0.025	0.40652	0.2597	0.66725
Rule of law	-0.4474	0.15744	0.38993	0.53045	-0.3264	-0.4849
Voice and accountability	-0.6526	-0.6708	-0.2501	0.05557	0.22277	0.09403
Congo Rep						
	Comp 1	Comp 2	Comp 3	Comp 4	Comp 5	Comp 6
Eigenvalue	27.3683	0.34901	0.24516	0.06122	0.04899	0.00375
Variance Prop.	0.97478	0.01243	0.00873	0.00218	0.00175	0.00013
Cumulative Prop.	0.97478	0.98721	0.99594	0.99812	0.99987	1
Eigenvectors						
Variable	Vector 1	Vector 2	Vector 3	Vector 4	Vector 5	Vector 6
Control of corruption	0.39377	-0.7641	0.2789	0.21775	-0.2345	-0.2845
Govt effectiveness	0.40356	0.07289	-0.4354	-0.3641	0.34363	-0.6258
Political stability	0.21714	0.20327	0.06643	-0.5623	-0.7684	0.02265
Regulatory quality	0.35828	-0.3406	-0.1769	-0.3827	0.29653	0.69992
Rule of law	0.47345	0.24276	-0.5043	0.59318	-0.2741	0.18883
Voice and accountability	0.53143	0.44112	0.66534	0.07444	0.27099	0.0367
Cote D' Voire						
	Comp 1	Comp 2	Comp 3	Comp 4	Comp 5	Comp 6
Eigenvalue	28.4058	0.38417	0.20081	0.17043	0.0215	0.00476
Variance Prop.	0.97322	0.01316	0.00688	0.00584	0.00074	0.00016
Cumulative Prop.	0.97322	0.98638	0.99326	0.9991	0.99984	1
Eigenvectors						
Variable	Vector 1	Vector 2	Vector 3	Vector 4	Vector 5	Vector 6
Control of corruption	0.43377	-0.1776	0.4702	0.63477	0.29889	-0.2588
Govt effectiveness	0.37444	-0.2572	0.12997	-0.1737	0.19665	0.84136
Political stability	0.21366	0.62199	0.57745	-0.1548	-0.4514	0.0794
Regulatory quality	0.32238	-0.2456	0.19632	-0.7311	0.23603	-0.455
Rule of law	0.4697	-0.3893	-0.2868	0.08587	-0.7273	-0.096
Voice and accountability	0.54904	0.55095	-0.5548	0.03304	0.28903	-0.0509
Djibouti						
	Comp 1	Comp 2	Comp 3	Comp 4	Comp 5	Comp 6
Eigenvalue	15.5476	0.68434	0.18742	0.0553	0.03226	#####
Variance Prop.	0.94188	0.04146	0.01135	0.00335	0.00196	0
Cumulative Prop.	0.94188	0.98334	0.9947	0.99805	1	1
Eigenvectors						
Variable	Vector 1	Vector 2	Vector 3	Vector 4	Vector 5	Vector 6
Control of corruption	-0.3276	0.42789	0.13383	0.26724	0.34674	-0.7071
Govt effectiveness	-0.3276	0.42789	0.13383	0.26724	0.34674	0.70711
Political stability	-0.1641	-0.0182	0.89963	-0.1229	-0.3851	1.69E-14
Regulatory quality	-0.2464	0.35631	-0.3302	0.30585	-0.7809	2.43E-14
Rule of law	-0.5344	0.15178	-0.2016	-0.8066	0.0072	3.06E-14
Voice and accountability	-0.6419	-0.6953	-0.0721	0.31279	0.03829	#####

Equatoria Guinea						
	Comp 1	Comp 2	Comp 3	Comp 4	Comp 5	Comp 6
Eigenvalue	6.86464	1.02626	0.16442	0.04073	0.00812	#####
Variance Prop.	0.84705	0.12663	0.02029	0.00503	0.001	0
Cumulative Prop.	0.84705	0.97368	0.99397	0.999	1	1
Eigenvectors						
Variable	Vector 1	Vector 2	Vector 3	Vector 4	Vector 5	Vector 6
Control of corruption	-0.2316	0.33148	0.30725	-0.2189	-0.4406	0.70711
Govt effectiveness	-0.2316	0.33148	0.30725	-0.2189	-0.4406	-0.7071
Political stability	-0.0685	-0.1451	0.60631	0.77801	-0.0369	3.26E-15
Regulatory quality	-0.3093	0.4792	0.27047	-0.1122	0.76743	#####
Rule of law	-0.5933	0.26584	-0.5949	0.45482	-0.1289	9.96E-15
Voice and accountability	-0.6636	-0.6774	0.12874	-0.2818	0.06894	#####
Eritrea						
	Comp 1	Comp 2	Comp 3	Comp 4	Comp 5	Comp 6
Eigenvalue	22.4894	0.37075	0.24921	0.17006	0.03846	0.00153
Variance Prop.	0.96441	0.0159	0.01069	0.00729	0.00165	6.6E-05
Cumulative Prop.	0.96441	0.98031	0.99099	0.99829	0.99993	1
Eigenvectors						
Variable	Vector 1	Vector 2	Vector 3	Vector 4	Vector 5	Vector 6
Control of corruption	0.41345	-0.0705	0.70721	0.36579	-0.4072	0.15589
Govt effectiveness	0.3093	0.17182	0.44546	-0.4086	0.49344	-0.5157
Political stability	0.17701	-0.3099	-0.103	0.65963	0.65319	0.0163
Regulatory quality	0.37178	0.4232	-0.0671	-0.2105	0.28344	0.744
Rule of law	0.52769	0.46047	-0.4645	0.26882	-0.2595	-0.3926
Voice and accountability	0.53422	-0.6916	-0.2656	-0.3841	-0.1279	0.04256
Ethiopia						
	Comp 1	Comp 2	Comp 3	Comp 4	Comp 5	Comp 6
Eigenvalue	48.7752	0.57234	0.35292	0.05198	0.02663	0.01257
Variance Prop.	0.97959	0.0115	0.00709	0.00104	0.00054	0.00025
Cumulative Prop.	0.97959	0.99108	0.99817	0.99921	0.99975	1
Eigenvectors						
Variable	Vector 1	Vector 2	Vector 3	Vector 4	Vector 5	Vector 6
Control of corruption	-0.4749	-0.7855	-0.3174	0.08518	0.22193	0.01493
Govt effectiveness	-0.3356	0.01966	0.38024	0.03291	-0.0596	-0.8589
Political stability	-0.1841	-0.026	-0.3183	-0.6014	-0.7075	-0.0435
Regulatory quality	-0.2752	-0.0632	0.61875	-0.5891	0.27555	0.33834
Rule of law	-0.4965	0.10895	0.29702	0.52697	-0.4798	0.38147
Voice and accountability	-0.5529	0.60503	-0.427	-0.0728	0.37487	0.01209

Gabon						
	Comp 1	Comp 2	Comp 3	Comp 4	Comp 5	Comp 6
Eigenvalue	10.765	0.3765	0.18377	0.04436	0.01233	#####
Variance Prop.	0.9458	0.03308	0.01615	0.0039	0.00108	0
Cumulative Prop.	0.9458	0.97887	0.99502	0.99892	1	1
Eigenvectors						
Variable	Vector 1	Vector 2	Vector 3	Vector 4	Vector 5	Vector 6
Control of corruption	-0.4431	-0.4316	0.48622	-0.6035	0.12934	8.28E-15
Govt effectiveness	-0.3656	-0.2429	-0.0882	0.44061	0.32476	-0.7071
Political stability	-0.2602	0.21895	0.63658	0.43124	-0.5414	#####
Regulatory quality	-0.3656	-0.2429	-0.0882	0.44061	0.32476	0.70711
Rule of law	-0.4458	-0.207	-0.5737	-0.1247	-0.6432	#####
Voice and accountability	-0.5195	0.7778	-0.1171	-0.2143	0.25584	3.98E-15
Gambia, The						
	Comp 1	Comp 2	Comp 3	Comp 4	Comp 5	Comp 6
Eigenvalue	17.6606	0.35169	0.13878	0.02946	3.61E-16	#####
Variance Prop.	0.9714	0.01934	0.00763	0.00162	0	0
Cumulative Prop.	0.9714	0.99075	0.99838	1	1	1
Eigenvectors						
Variable	Vector 1	Vector 2	Vector 3	Vector 4	Vector 5	Vector 6
Control of corruption	-0.3798	0.27614	0.2253	-0.2491	-0.0216	-0.8162
Govt effectiveness	-0.3798	0.27614	0.2253	-0.2491	0.71765	0.38943
Political stability	-0.236	-0.6223	0.68715	0.29146	5.25E-15	1.49E-14
Regulatory quality	-0.3798	0.27614	0.2253	-0.2491	-0.6961	0.42679
Rule of law	-0.4638	0.28452	-0.2423	0.80327	1.69E-14	5.17E-14
Voice and accountability	-0.5445	-0.5505	-0.5629	-0.2892	#####	#####
Ghana						
	Comp 1	Comp 2	Comp 3	Comp 4	Comp 5	Comp 6
Eigenvalue	54.8415	0.95493	0.33409	0.23382	0.07973	0.0143
Variance Prop.	0.97136	0.01691	0.00592	0.00414	0.00141	0.00025
Cumulative Prop.	0.97136	0.98828	0.99419	0.99834	0.99975	1
Eigenvectors						
Variable	Vector 1	Vector 2	Vector 3	Vector 4	Vector 5	Vector 6
Control of corruption	-0.4862	-0.1978	0.2297	-0.6698	0.44693	0.153
Govt effectiveness	-0.345	0.39424	0.03958	0.02554	0.10598	-0.8439
Political stability	-0.154	-0.0837	0.17221	-0.4086	-0.8744	-0.0903
Regulatory quality	-0.2493	0.83169	-0.1131	-0.0508	-0.0831	0.47318
Rule of law	-0.4644	-0.1223	0.63056	0.58089	-0.0714	0.17091
Voice and accountability	-0.5857	-0.303	-0.7111	0.20931	-0.1116	0.05689

Guinea						
	Comp 1	Comp 2	Comp 3	Comp 4	Comp 5	Comp 6
Eigenvalue	20.9456	0.29441	0.13439	0.07719	0.03082	0.00374
Variance Prop.	0.97484	0.0137	0.00626	0.00359	0.00143	0.00017
Cumulative Prop.	0.97484	0.98855	0.9948	0.99839	0.99983	1
Eigenvectors						
Variable	Vector 1	Vector 2	Vector 3	Vector 4	Vector 5	Vector 6
Control of corruption	-0.4057	0.31015	0.528	-0.2782	0.01699	0.61867
Govt effectiveness	-0.395	0.22633	-0.0648	-0.1657	-0.7901	-0.37
Political stability	-0.1852	-0.3047	0.69597	0.53315	-0.0124	-0.3226
Regulatory quality	-0.332	0.36586	-0.3776	0.74056	0.02778	0.25332
Rule of law	-0.4826	0.26715	-0.0645	-0.2281	0.61203	-0.5148
Voice and accountability	-0.5495	-0.7447	-0.2932	-0.1023	0.00525	0.21701
Guinea Bissau						
	Comp 1	Comp 2	Comp 3	Comp 4	Comp 5	Comp 6
Eigenvalue	6.83405	0.73436	0.11854	0.04359	0.00558	#####
Variance Prop.	0.8834	0.09493	0.01532	0.00563	0.00072	0
Cumulative Prop.	0.8834	0.97832	0.99365	0.99928	1	1
Eigenvectors						
Variable	Vector 1	Vector 2	Vector 3	Vector 4	Vector 5	Vector 6
Control of corruption	-0.3195	0.23669	0.05025	-0.2237	0.53787	0.70711
Govt effectiveness	-0.3195	0.23669	0.05025	-0.2237	0.53787	-0.7071
Political stability	-0.0534	-0.0911	-0.9679	-0.2281	0.00392	2.49E-15
Regulatory quality	-0.3979	0.41365	0.09931	-0.5043	-0.6374	#####
Rule of law	-0.5484	0.27212	-0.1756	0.76277	-0.1119	#####
Voice and accountability	-0.5778	-0.7966	0.13213	-0.1082	-0.0501	#####
Kenya						
	Comp 1	Comp 2	Comp 3	Comp 4	Comp 5	Comp 6
Eigenvalue	65.3807	0.71694	0.27671	0.16166	0.06968	0.00543
Variance Prop.	0.98153	0.01076	0.00415	0.00243	0.00105	8.2E-05
Cumulative Prop.	0.98153	0.99229	0.99645	0.99887	0.99992	1
Eigenvectors						
Variable	Vector 1	Vector 2	Vector 3	Vector 4	Vector 5	Vector 6
Control of corruption	0.48871	-0.1563	0.75723	0.25192	-0.2186	0.22826
Govt effectiveness	0.33458	0.31087	-0.0188	-0.1328	-0.4693	-0.7438
Political stability	0.15811	-0.2	0.23191	0.01998	0.78372	-0.5164
Regulatory quality	0.25217	0.84326	-0.0536	0.2722	0.31717	0.21853
Rule of law	0.48108	-0.0074	-0.0866	-0.8162	0.13105	0.27859
Voice and accountability	0.57375	-0.3575	-0.6017	0.42213	-0.0054	0.05195
Lesotho						
	Comp 1	Comp 2	Comp 3	Comp 4	Comp 5	Comp 6
Eigenvalue	30.2839	0.73238	0.37043	0.21181	0.10164	0.00123
Variance Prop.	0.95529	0.0231	0.01169	0.00668	0.00321	3.9E-05
Cumulative Prop.	0.95529	0.97839	0.99007	0.99676	0.99996	1

Eigenvectors						
Variable	Vector 1	Vector 2	Vector 3	Vector 4	Vector 5	Vector 6
Control of corruption	0.4063	0.10485	-0.2782	-0.5488	-0.6191	-0.2494
Govt effectiveness	0.42028	-0.0348	-0.318	0.0369	0.03878	0.84745
Political stability	0.20079	0.4122	0.36236	-0.5974	0.54647	0.05431
Regulatory quality	0.36525	-0.2919	-0.5416	0.05925	0.55198	-0.4242
Rule of law	0.48665	0.60785	0.13431	0.57856	-0.0752	-0.1878
Voice and accountability	0.49773	-0.6027	0.61551	0.04864	-0.0794	-0.0391
Liberia						
	Comp 1	Comp 2	Comp 3	Comp 4	Comp 5	Comp 6
Eigenvalue	45.4907	0.85765	0.20738	0.1718	0.07053	0.01448
Variance Prop.	0.97176	0.01832	0.00443	0.00367	0.00151	0.00031
Cumulative Prop.	0.97176	0.99008	0.99451	0.99818	0.99969	1
Eigenvectors						
Variable	Vector 1	Vector 2	Vector 3	Vector 4	Vector 5	Vector 6
Control of corruption	0.48506	-0.3757	0.32376	-0.5315	-0.458	-0.1627
Govt effectiveness	0.31457	-0.3351	-0.3739	0.11936	-0.0765	0.79299
Political stability	0.09345	0.11101	-0.0247	-0.6698	0.70826	0.16737
Regulatory quality	0.25312	-0.3879	-0.643	0.09182	0.22409	-0.5598
Rule of law	0.5304	-0.0905	0.51905	0.49611	0.44005	-0.0361
Voice and accountability	0.55824	0.75863	-0.2681	-0.0063	-0.1972	-0.0454
Libya						
	Comp 1	Comp 2	Comp 3	Comp 4	Comp 5	Comp 6
Eigenvalue	18.1524	0.66805	0.1844	0.10371	0.02338	#####
Variance Prop.	0.9488	0.03492	0.00964	0.00542	0.00122	0
Cumulative Prop.	0.9488	0.98372	0.99336	0.99878	1	1
Eigenvectors						
Variable	Vector 1	Vector 2	Vector 3	Vector 4	Vector 5	Vector 6
Control of corruption	-0.4223	0.23868	0.47767	-0.1925	0.70673	1.57E-14
Govt effectiveness	-0.3123	0.39021	-0.4784	-0.1421	-0.0338	-0.7071
Political stability	-0.2555	0.29882	0.15092	0.90024	-0.1105	#####
Regulatory quality	-0.3123	0.39021	-0.4784	-0.1421	-0.0338	0.70711
Rule of law	-0.507	-0.0243	0.44608	-0.2936	-0.6762	#####
Voice and accountability	-0.5516	-0.7407	-0.3039	0.16109	0.1698	2.58E-15
Madagascar						
	Comp 1	Comp 2	Comp 3	Comp 4	Comp 5	Comp 6
Eigenvalue	60.1679	0.40533	0.2519	0.1486	0.08113	0.03538
Variance Prop.	0.9849	0.00664	0.00412	0.00243	0.00133	0.00058
Cumulative Prop.	0.9849	0.99154	0.99566	0.99809	0.99942	1
Eigenvectors						
Variable	Vector 1	Vector 2	Vector 3	Vector 4	Vector 5	Vector 6
Control of corruption	0.42615	-0.1612	0.64702	0.42206	-0.3993	-0.1903
Govt effectiveness	0.41489	0.24517	0.03988	0.07848	0.07756	0.86833
Political stability	0.22228	-0.1931	-0.0503	0.47312	0.81228	-0.1647
Regulatory quality	0.32288	0.85431	-0.1016	0.0037	0.02656	-0.3935
Rule of law	0.46799	-0.2105	0.25946	-0.7656	0.25754	-0.1299
Voice and accountability	0.52306	-0.32	-0.7068	0.07553	-0.3282	-0.1046

Malawi						
	Comp 1	Comp 2	Comp 3	Comp 4	Comp 5	Comp 6
Eigenvalue	45.4725	1.26904	0.26329	0.22477	0.11922	0.01921
Variance Prop.	0.95998	0.02679	0.00556	0.00475	0.00252	0.00041
Cumulative Prop.	0.95998	0.98677	0.99233	0.99708	0.9996	1
Eigenvectors						
Variable	Vector 1	Vector 2	Vector 3	Vector 4	Vector 5	Vector 6
Control of corruption	-0.4422	0.13214	-0.7106	0.28205	-0.3987	-0.2087
Govt effectiveness	-0.3323	-0.3984	-0.0581	-0.0887	-0.1588	0.83328
Political stability	-0.1192	-0.1223	-0.3547	0.26551	0.87769	0.06485
Regulatory quality	-0.234	-0.8155	0.21076	0.11473	-0.0603	-0.4679
Rule of law	-0.4948	0.1141	-0.0446	-0.8154	0.19185	-0.1961
Voice and accountability	-0.6166	0.36159	0.5652	0.40503	0.07085	0.02294
Mali						
	Comp 1	Comp 2	Comp 3	Comp 4	Comp 5	Comp 6
Eigenvalue	51.3025	0.61511	0.37202	0.21995	0.10921	0.02707
Variance Prop.	0.97448	0.01168	0.00707	0.00418	0.00207	0.00051
Cumulative Prop.	0.97448	0.98617	0.99323	0.99741	0.99949	1
Eigenvectors						
Variable	Vector 1	Vector 2	Vector 3	Vector 4	Vector 5	Vector 6
Control of corruption	0.41586	-0.1187	0.49403	0.64298	-0.3419	0.1964
Govt effectiveness	0.40324	0.27401	0.03816	0.04296	0.03114	-0.8707
Political stability	0.20417	-0.2931	0.26631	0.06816	0.89131	0.04924
Regulatory quality	0.3065	0.80156	-0.2069	0.10664	0.22499	0.39846
Rule of law	0.45491	-0.0103	0.39952	-0.7539	-0.1793	0.18133
Voice and accountability	0.56735	-0.427	-0.6936	0.02048	-0.07	0.09648
Mauritania						
	Comp 1	Comp 2	Comp 3	Comp 4	Comp 5	Comp 6
Eigenvalue	54.0835	0.3788	0.16314	0.07417	0.01085	0.00484
Variance Prop.	0.98845	0.00692	0.00298	0.00136	0.0002	8.8E-05
Cumulative Prop.	0.98845	0.99538	0.99836	0.99971	0.99991	1
Eigenvectors						
Variable	Vector 1	Vector 2	Vector 3	Vector 4	Vector 5	Vector 6
Control of corruption	0.4309	0.26333	-0.0099	-0.033	0.85303	-0.127
Govt effectiveness	0.37188	0.32488	0.33754	0.44366	-0.3515	-0.5673
Political stability	0.2132	-0.0264	0.74292	-0.6096	-0.0926	0.14732
Regulatory quality	0.30917	0.40667	0.01109	0.31677	-0.1525	0.78441
Rule of law	0.48054	0.17273	-0.5778	-0.5221	-0.3418	-0.1264
Voice and accountability	0.55142	-0.7932	-0.0099	0.23973	-0.0103	0.09522
Mauritius						
	Comp 1	Comp 2	Comp 3	Comp 4	Comp 5	Comp 6
Eigenvalue	32.2703	0.42434	0.15721	0.03519	0.00187	6.40E-15
Variance Prop.	0.98119	0.0129	0.00478	0.00107	5.7E-05	0
Cumulative Prop.	0.98119	0.99409	0.99887	0.99994	1	1



Eigenvectors						
Variable	Vector 1	Vector 2	Vector 3	Vector 4	Vector 5	Vector 6
Control of corruption	0.39608	-0.1166	0.04067	-0.4617	-0.3387	0.70711
Govt effectiveness	0.39608	-0.1166	0.04067	-0.4617	-0.3387	-0.7071
Political stability	0.22371	0.73878	0.63356	0.02909	0.04375	4.83E-14
Regulatory quality	0.42865	-0.377	0.23846	-0.0887	0.78063	8.74E-13
Rule of law	0.49704	-0.251	0.10639	0.74966	-0.3415	#####
Voice and accountability	0.45321	0.47101	-0.726	0.05438	0.20659	2.37E-13
Mozambique						
	Comp 1	Comp 2	Comp 3	Comp 4	Comp 5	Comp 6
Eigenvalue	60.2145	0.76062	0.24916	0.17935	0.08047	0.00198
Variance Prop.	0.97932	0.01237	0.00405	0.00292	0.00131	3.2E-05
Cumulative Prop.	0.97932	0.99169	0.99574	0.99866	0.99997	1
Eigenvectors						
Variable	Vector 1	Vector 2	Vector 3	Vector 4	Vector 5	Vector 6
Control of corruption	0.45473	0.17855	-0.7518	0.3473	-0.0915	-0.259
Govt effectiveness	0.34847	-0.3236	-0.0705	0.00307	-0.4459	0.75505
Political stability	0.16483	0.17593	-0.1565	-0.0727	0.82885	0.47447
Regulatory quality	0.2617	-0.8514	0.07341	0.1215	0.31952	-0.2906
Rule of law	0.50478	0.0932	0.0296	-0.8262	-0.0598	-0.2222
Voice and accountability	0.56687	0.31457	0.63168	0.4203	0.01227	-0.0623
Namibia						
	Comp 1	Comp 2	Comp 3	Comp 4	Comp 5	Comp 6
Eigenvalue	29.7023	0.97632	0.53804	0.14532	0.05837	0.00326
Variance Prop.	0.94522	0.03107	0.01712	0.00463	0.00186	0.0001
Cumulative Prop.	0.94522	0.97629	0.99341	0.99804	0.9999	1
Eigenvectors						
Variable	Vector 1	Vector 2	Vector 3	Vector 4	Vector 5	Vector 6
Control of corruption	-0.3936	-0.0488	-0.2161	-0.8849	-0.0416	-0.106
Govt effectiveness	-0.4061	-0.2059	-0.2092	0.13328	0.26034	0.81448
Political stability	-0.1841	0.12668	0.14041	0.05255	-0.9263	0.26379
Regulatory quality	-0.2998	-0.8294	-0.0631	0.2456	-0.1538	-0.3664
Rule of law	-0.4471	0.45603	-0.6017	0.35921	-0.0101	-0.3178
Voice and accountability	-0.5971	0.20812	0.72373	0.0842	0.22072	-0.1435
Niger						
	Comp 1	Comp 2	Comp 3	Comp 4	Comp 5	Comp 6
Eigenvalue	30.4688	0.54396	0.2248	0.05104	0.01116	0.00579
Variance Prop.	0.97327	0.01738	0.00718	0.00163	0.00036	0.00019
Cumulative Prop.	0.97327	0.99065	0.99783	0.99946	0.99982	1
Eigenvectors						
Variable	Vector 1	Vector 2	Vector 3	Vector 4	Vector 5	Vector 6
Control of corruption	-0.3971	0.25475	0.44404	0.6957	-0.2999	-0.0795
Govt effectiveness	-0.3884	0.252	0.05376	0.00044	0.86187	-0.1999
Political stability	-0.1949	-0.0618	0.75025	-0.6179	-0.1165	-0.0012
Regulatory quality	-0.3086	0.44233	-0.1844	-0.1591	-0.0705	0.80301
Rule of law	-0.4492	0.29609	-0.4197	-0.3237	-0.3856	-0.5301
Voice and accountability	-0.5971	-0.7645	-0.1642	0.06446	0.00343	0.16702

Nigeria						
	Comp 1	Comp 2	Comp 3	Comp 4	Comp 5	Comp 6
Eigenvalue	59.4592	0.82246	0.26491	0.21747	0.04193	0.02741
Variance Prop.	0.97741	0.01352	0.00436	0.00358	0.00069	0.00045
Cumulative Prop.	0.97741	0.99093	0.99529	0.99886	0.99955	1
Eigenvectors						
Variable	Vector 1	Vector 2	Vector 3	Vector 4	Vector 5	Vector 6
Control of corruption	0.49035	0.1988	0.61091	-0.575	-0.0579	0.11355
Govt effectiveness	0.33374	-0.3406	0.01967	0.07823	-0.4192	-0.7684
Political stability	0.1567	0.13952	-0.1391	-0.1423	0.83532	-0.4676
Regulatory quality	0.24765	-0.8325	-0.1898	-0.2332	0.20839	0.3343
Rule of law	0.47317	-0.022	0.33263	0.76588	0.2066	0.18904
Voice and accountability	0.58173	0.36255	-0.6785	-0.0456	-0.1925	0.17497
Rwanda						
	Comp 1	Comp 2	Comp 3	Comp 4	Comp 5	Comp 6
Eigenvalue	37.4	0.57756	0.29603	0.18604	0.01402	0.00553
Variance Prop.	0.97195	0.01501	0.00769	0.00484	0.00036	0.00014
Cumulative Prop.	0.97195	0.98696	0.99466	0.99949	0.99986	1
Eigenvectors						
Variable	Vector 1	Vector 2	Vector 3	Vector 4	Vector 5	Vector 6
Control of corruption	-0.438	-0.2665	0.61067	-0.5743	0.17777	-0.0526
Govt effectiveness	-0.3329	-0.2617	0.05202	0.54886	0.17562	-0.6971
Political stability	-0.1614	0.41768	0.63009	0.51327	-0.1815	0.32571
Regulatory quality	-0.2627	-0.4344	-0.1953	0.28717	0.48437	0.6221
Rule of law	-0.4953	-0.2767	-0.2361	0.00238	-0.7784	0.1285
Voice and accountability	-0.5975	0.64866	-0.3654	-0.1517	0.25314	-0.0411
Sao Tome						
	Comp 1	Comp 2	Comp 3	Comp 4	Comp 5	Comp 6
Eigenvalue	7.71756	0.46429	0.17843	0.04291	0.01348	8.76E-16
Variance Prop.	0.91694	0.05516	0.0212	0.0051	0.0016	0
Cumulative Prop.	0.91694	0.9721	0.9933	0.9984	1	1
Eigenvectors						
Variable	Vector 1	Vector 2	Vector 3	Vector 4	Vector 5	Vector 6
Control of corruption	-0.3229	0.46678	0.15906	-0.3875	0.04938	-0.7071
Govt effectiveness	-0.3229	0.46678	0.15906	-0.3875	0.04938	0.70711
Political stability	-0.1981	-0.6558	0.61821	-0.3509	0.15933	5.97E-15
Regulatory quality	-0.4123	0.05596	0.37309	0.47776	-0.6778	#####
Rule of law	-0.5567	-0.0103	-0.0712	0.50573	0.65508	1.40E-14
Voice and accountability	-0.5219	-0.3618	-0.6503	-0.3043	-0.2849	#####
Senegal						
	Comp 1	Comp 2	Comp 3	Comp 4	Comp 5	Comp 6
Eigenvalue	49.9046	0.705	0.33559	0.19022	0.03932	0.02662
Variance Prop.	0.97467	0.01377	0.00655	0.00372	0.00077	0.00052
Cumulative Prop.	0.97467	0.98844	0.995	0.99871	0.99948	1

Eigenvectors						
Variable	Vector 1	Vector 2	Vector 3	Vector 4	Vector 5	Vector 6
Control of corruption	0.47794	0.34294	0.77632	-0.0892	0.14377	0.15058
Govt effectiveness	0.37104	-0.3249	0.10188	0.15554	-0.0224	-0.8495
Political stability	0.17014	0.28733	-0.0411	0.50277	-0.793	0.07245
Regulatory quality	0.27002	-0.7734	0.13412	-0.2109	-0.3265	0.39976
Rule of law	0.47213	-0.099	-0.3268	0.58378	0.47985	0.29912
Voice and accountability	0.556	0.29376	-0.5104	-0.5743	-0.1149	-0.0328
Seychelles						
	Comp 1	Comp 2	Comp 3	Comp 4	Comp 5	Comp 6
Eigenvalue	10.772	0.41082	0.27306	0.14484	0.02431	#####
Variance Prop.	0.92662	0.03534	0.02349	0.01246	0.00209	0
Cumulative Prop.	0.92662	0.96196	0.98545	0.99791	1	1
Eigenvectors						
Variable	Vector 1	Vector 2	Vector 3	Vector 4	Vector 5	Vector 6
Control of corruption	-0.3229	0.26743	0.47766	-0.2071	0.23057	0.70711
Govt effectiveness	-0.3229	0.26743	0.47766	-0.2071	0.23057	-0.7071
Political stability	-0.2718	-0.3094	-0.3634	-0.8354	-0.0194	3.89E-16
Regulatory quality	-0.3911	0.43068	-0.1028	0.03125	-0.8062	#####
Rule of law	-0.5355	0.23136	-0.5759	0.32811	0.46954	3.45E-15
Voice and accountability	-0.5272	-0.7227	0.26348	0.32802	-0.1512	#####
Sierra Leone						
	Comp 1	Comp 2	Comp 3	Comp 4	Comp 5	Comp 6
Eigenvalue	35.5406	0.82596	0.38261	0.09081	0.03697	0.005
Variance Prop.	0.96363	0.0224	0.01037	0.00246	0.001	0.00014
Cumulative Prop.	0.96363	0.98603	0.9964	0.99886	0.99986	1
Eigenvectors						
Variable	Vector 1	Vector 2	Vector 3	Vector 4	Vector 5	Vector 6
Control of corruption	-0.4807	-0.3257	-0.7116	0.18375	-0.3034	0.17526
Govt effectiveness	-0.285	-0.3462	0.14818	0.15837	0.78478	0.36877
Political stability	-0.1067	-0.1532	-0.2587	-0.8692	0.25069	-0.2825
Regulatory quality	-0.2315	-0.4183	0.55812	-0.3189	-0.4786	0.35949
Rule of law	-0.4844	-0.1854	0.29136	0.25204	-0.005	-0.7632
Voice and accountability	-0.6229	0.7357	0.09156	-0.1429	0.01382	0.2043
Somalia						
	Comp 1	Comp 2	Comp 3	Comp 4	Comp 5	Comp 6
Eigenvalue	9.66047	0.7909	0.23697	0.09099	0.07407	0.02854
Variance Prop.	0.88775	0.07268	0.02178	0.00836	0.00681	0.00262
Cumulative Prop.	0.88775	0.96043	0.98221	0.99057	0.99738	1

Eigenvectors						
Variable	Vector 1	Vector 2	Vector 3	Vector 4	Vector 5	Vector 6
Control of corruption	-0.4934	0.33537	0.46835	0.14214	-0.5683	0.28566
Govt effectiveness	-0.3753	0.14205	-0.0934	-0.3067	-0.167	-0.8416
Political stability	-0.1563	-0.1137	0.75536	-0.0775	0.60848	-0.1259
Regulatory quality	-0.2162	0.25283	-0.1785	-0.805	0.19626	0.41335
Rule of law	-0.3045	0.60283	-0.3122	0.46208	0.4825	0.00804
Voice and accountability	-0.6722	-0.6535	-0.2684	0.13455	0.08723	0.1529
South Africa						
	Comp 1	Comp 2	Comp 3	Comp 4	Comp 5	Comp 6
Eigenvalue	7.71756	0.46429	0.17843	0.04291	0.01348	8.76E-16
Variance Prop.	0.91694	0.05516	0.0212	0.0051	0.0016	0
Cumulative Prop.	0.91694	0.9721	0.9933	0.9984	1	1
Eigenvectors						
Variable	Vector 1	Vector 2	Vector 3	Vector 4	Vector 5	Vector 6
Control of corruption	-0.3229	0.46678	0.15906	-0.3875	0.04938	-0.7071
Govt effectiveness	-0.3229	0.46678	0.15906	-0.3875	0.04938	0.70711
Political stability	-0.1981	-0.6558	0.61821	-0.3509	0.15933	5.97E-15
Regulatory quality	-0.4123	0.05596	0.37309	0.47776	-0.6778	#####
Rule of law	-0.5567	-0.0103	-0.0712	0.50573	0.65508	1.40E-14
Voice and accountability	-0.5219	-0.3618	-0.6503	-0.3043	-0.2849	#####
Sudan						
	Comp 1	Comp 2	Comp 3	Comp 4	Comp 5	Comp 6
Eigenvalue	19.5954	0.45814	0.20809	0.12587	0.02328	0.01982
Variance Prop.	0.95912	0.02242	0.01019	0.00616	0.00114	0.00097
Cumulative Prop.	0.95912	0.98154	0.99173	0.99789	0.99903	1
Eigenvectors						
Variable	Vector 1	Vector 2	Vector 3	Vector 4	Vector 5	Vector 6
Control of corruption	-0.434	-0.2535	-0.4658	0.52894	0.20712	-0.4558
Govt effectiveness	-0.3772	-0.3419	0.30534	-0.368	-0.5608	-0.4446
Political stability	-0.1437	0.09423	0.62897	0.70807	-0.2145	0.16585
Regulatory quality	-0.2335	-0.544	0.39122	-0.1765	0.64756	0.21442
Rule of law	-0.4236	-0.2102	-0.3642	-0.0098	-0.3509	0.72151
Voice and accountability	-0.6441	0.68542	0.09241	-0.2284	0.23271	-0.0217
Swaziland						
	Comp 1	Comp 2	Comp 3	Comp 4	Comp 5	Comp 6
Eigenvalue	15.1106	0.39887	0.25197	0.05855	0.01338	#####
Variance Prop.	0.95435	0.02519	0.01591	0.0037	0.00085	0
Cumulative Prop.	0.95435	0.97954	0.99546	0.99916	1	1
Eigenvectors						
Variable	Vector 1	Vector 2	Vector 3	Vector 4	Vector 5	Vector 6
Control of corruption	-0.4492	0.11832	0.27813	0.00037	0.84076	1.79E-14
Govt effectiveness	-0.335	-0.0906	0.36606	0.40368	-0.2875	-0.7071
Political stability	-0.1945	-0.7931	-0.4982	0.23517	0.17237	3.34E-15
Regulatory quality	-0.335	-0.0906	0.36606	0.40368	-0.2875	0.70711
Rule of law	-0.5228	-0.2203	0.09531	-0.7687	-0.2795	#####
Voice and accountability	-0.5125	0.54046	-0.6304	0.16692	-0.1414	#####

Tanzania						
	Comp 1	Comp 2	Comp 3	Comp 4	Comp 5	Comp 6
Eigenvalue	54.4799	1.02293	0.26752	0.16864	0.12254	0.01485
Variance Prop.	0.97153	0.01824	0.00477	0.00301	0.00219	0.00027
Cumulative Prop.	0.97153	0.98977	0.99454	0.99755	0.99974	1
Eigenvectors						
Variable	Vector 1	Vector 2	Vector 3	Vector 4	Vector 5	Vector 6
Control of corruption	-0.4475	0.1897	-0.804	0.31485	0.03925	-0.1292
Govt effectiveness	-0.3354	-0.3927	-0.0675	-0.0991	0.19838	0.82434
Political stability	-0.1427	0.00551	-0.157	-0.4674	-0.8544	0.08109
Regulatory quality	-0.2427	-0.8212	0.09694	0.24676	-0.1569	-0.4146
Rule of law	-0.4974	0.05372	0.1	-0.6765	0.40225	-0.3468
Voice and accountability	-0.6004	0.36409	0.5523	0.3925	-0.2068	0.07132
Togo						
	Comp 1	Comp 2	Comp 3	Comp 4	Comp 5	Comp 6
Eigenvalue	24.1122	0.67568	0.32881	0.09815	0.02879	0.01337
Variance Prop.	0.95467	0.02675	0.01302	0.00389	0.00114	0.00053
Cumulative Prop.	0.95467	0.98143	0.99445	0.99833	0.99947	1
Eigenvectors						
Variable	Vector 1	Vector 2	Vector 3	Vector 4	Vector 5	Vector 6
Control of corruption	-0.4325	-0.0125	-0.8156	0.37299	-0.0357	-0.0848
Govt effectiveness	-0.3928	0.04031	-0.0288	-0.3427	-0.1645	0.83593
Political stability	-0.2118	-0.4839	-0.1863	-0.7262	0.20978	-0.339
Regulatory quality	-0.3447	0.52699	0.12271	-0.2633	-0.5939	-0.4079
Rule of law	-0.4807	0.41368	0.24589	0.04667	0.7277	-0.075
Voice and accountability	-0.5138	-0.5614	0.47302	0.38028	-0.2131	-0.0841
Uganda						
	Comp 1	Comp 2	Comp 3	Comp 4	Comp 5	Comp 6
Eigenvalue	63.8922	0.84957	0.33722	0.20848	0.07751	0.01003
Variance Prop.	0.97732	0.013	0.00516	0.00319	0.00119	0.00015
Cumulative Prop.	0.97732	0.99031	0.99547	0.99866	0.99985	1
Eigenvectors						
Variable	Vector 1	Vector 2	Vector 3	Vector 4	Vector 5	Vector 6
Control of corruption	0.47237	0.47204	0.47351	-0.5409	-0.1053	-0.1619
Govt effectiveness	0.33824	-0.2986	0.16478	-0.1193	0.25669	0.83017
Political stability	0.15967	0.13345	-0.1323	0.2187	-0.8898	0.31575
Regulatory quality	0.25369	-0.805	0.03811	-0.2871	-0.2777	-0.3558
Rule of law	0.47358	-0.0474	0.3847	0.74946	0.12749	-0.2181
Voice and accountability	0.5902	0.14127	-0.7627	-0.0358	0.19492	-0.1037
Zambia						
	Comp 1	Comp 2	Comp 3	Comp 4	Comp 5	Comp 6
Eigenvalue	47.6698	0.72116	0.38538	0.19543	0.06518	0.02558
Variance Prop.	0.97161	0.0147	0.00786	0.00398	0.00133	0.00052
Cumulative Prop.	0.97161	0.98631	0.99417	0.99815	0.99948	1
Eigenvectors						
Variable	Vector 1	Vector 2	Vector 3	Vector 4	Vector 5	Vector 6
Control of corruption	-0.4562	-0.4403	-0.5514	0.47466	0.00911	0.26186

Govt effectiveness	-0.3593	0.26248	-0.179	0.15854	-0.1875	-0.8424
Political stability	-0.1518	-0.2005	-0.1858	-0.4409	0.81158	-0.2219
Regulatory quality	-0.2617	0.79525	-0.0485	0.23823	0.35746	0.335
Rule of law	-0.4754	0.12433	-0.1974	-0.6979	-0.4156	0.24463
Voice and accountability	-0.5876	-0.2216	0.76686	0.10698	0.07505	0.02208
<b>Zimbabwe</b>						
	<b>Comp 1</b>	<b>Comp 2</b>	<b>Comp 3</b>	<b>Comp 4</b>	<b>Comp 5</b>	<b>Comp 6</b>
Eigenvalue	43.6282	0.37813	0.23857	0.14482	0.04048	0.02123
Variance Prop.	0.98148	0.00851	0.00537	0.00326	0.00091	0.00048
Cumulative Prop.	0.98148	0.98999	0.99535	0.99861	0.99952	1
<b>Eigenvectors</b>						
<b>Variable</b>	<b>Vector 1</b>	<b>Vector 2</b>	<b>Vector 3</b>	<b>Vector 4</b>	<b>Vector 5</b>	<b>Vector 6</b>
Control of corruption	0.44395	-0.3746	0.80135	0.01799	0.05534	0.1306
Govt effectiveness	0.32439	-0.4166	-0.2544	0.1072	0.10564	-0.7962
Political stability	0.18354	0.18027	0.07816	-0.0598	-0.9447	-0.1779
Regulatory quality	0.26024	-0.5463	-0.4798	0.23896	-0.2119	0.54919
Rule of law	0.48575	0.12496	-0.2193	-0.8192	0.13131	0.10971
Voice and accountability	0.60026	0.58275	-0.0937	0.50638	0.17648	0.0612

Source: Author's construct from world development indicators (World Bank Group, 2012).



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