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Governance and Domestic Investment in Africa

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Abstract. The study empirically examined the impact of governance on domestic investment in 16 African countries with a balanced panel data set, between the years 2002 and 2015. The study employed six unbundled governance indicators from the World Bank, World Governance Indicators and constructed three bundled governance indicators using the Principal Component Analysis. The Driscoll and Kraay Fixed Effects model which accounts for serial correlation, groupwise heteroskedasticity and cross-sectional dependence were employed with empirical results revealing that all the indicators of governance positively and significantly influence domestic investment in Africa, except for government effectiveness which happens to be insignificant. Also, Voice/Accountability and the Control of Corruption exert more influence on domestic investment as indicated by their coefficient values. Furthermore, economic growth is also an important factor in explaining domestic investment in Africa. Policy recommendations are discussed.

Keywords. Governance; Domestic Investment; Africa; Principal Component Analysis; Fixed Effects Model.

JEL codes: C1, E2, R5

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1. Introduction

Investment has mostly been described as a significant component of growth in economic discourse. It has been deemed essential for economies in order to enhance economic growth, increase employment and reduce poverty. Investment has been considered to be essential to the African region as it enables job creation and feed its teeming population.

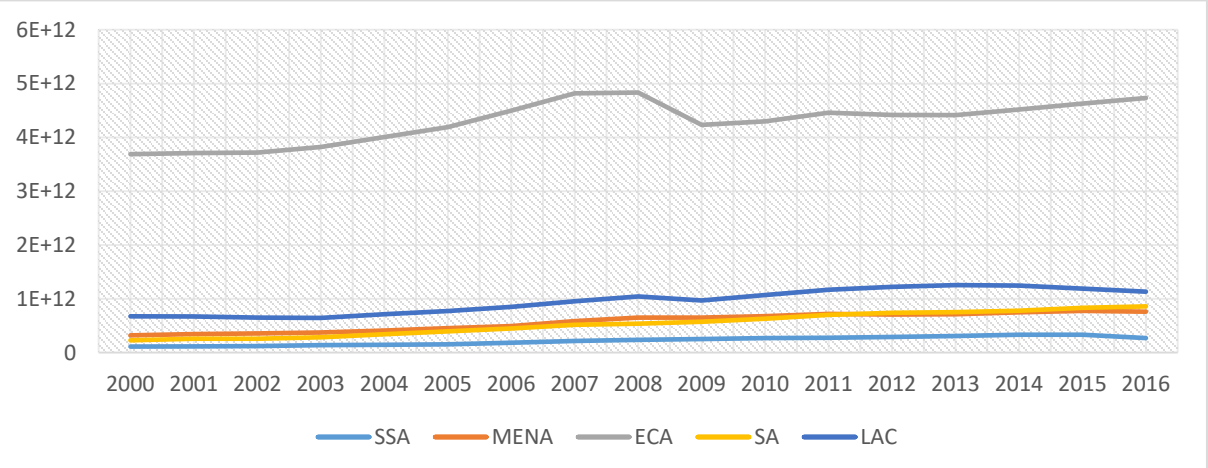
According to Ouedraogo and Kouaman (2014), an investment can improve production capacity through the acquisition of new equipment which incorporates technical progress and thus increases labour productivity. Investment can also increase productivity through the increase in aggregate demand as well as increasing employment and wages. Economic theory posits that a significant factor influencing investment is the real cost of borrowing, which adjusts for the rate of inflation, likewise economic growth. Investment is essential for economies whose priority is a consistent movement towards economic growth and development. Hamuda et al. (2013) point out that countries that have accumulated a high level of long-term investment

belong to the cadre of developed nations. Investment in machinery and buildings not only create jobs but also contributes to the current demand for capital goods and thus increases domestic expenditure. An increase in investment also prompts an increase in aggregate supply, which helps in relaxing stagflationary tendencies.

According to Lim (2014), between 1980 and 2010, gross capital formation rate ranged from 1 to 90 per cent of production in the world. This loose gap in investment activity has been connected to diverse varieties of frictions existing in many economies and has hindered the normalisation of the proceeds from investment undertakings across countries (Chuku, Onye and Ajah, 2015).

In comparison to other regions of the globe, the level of domestic investment in Africa stands low, as reported in Figure 1.1. The figure shows that sub-Saharan Africa, which of course is a subset of Africa, has the lowest level of domestic investment in the world between the years 2000 and 2016 as indicated by the region's gross fixed capital formation. Europe and Central Asia (ECA) had the highest level of domestic investment in the world. This is not farfetched as the region is made up of the most advanced countries in the world. Latin America and the Caribbean (LAC) comes just behind the ECA. In fact, the level of domestic investment in LAC is more than six times the level of domestic investment in sub-Saharan Africa and about twice the level of domestic investment in the Middle East and North Africa (MENA) in 2000. The substantial disparity between domestic investment undertaken in sub-Saharan Africa and that of LAC and ECA is also apparent across the time structure of the data observation. In sub-Saharan Africa, though the lowest among other regions, the level of domestic investment in the region has continuously increased.

Figure 1.1. Gross Fixed Capital Formation, Constant US$ (2000-2016)



Source: Authors computation from World Development Indicator, WDI (2017)

Note: SSA is Sub Saharan Africa, MENA is the Middle East and North Africa, ECA is Europe and Central Asia, SA is South Asia, and LAC is Latin America and the Caribbean

In 2005, domestic investment in sub-Saharan Africa increased to more than US$ 154 billion from about US$ 112 billion in 2000 based on WDI (2017) data. Domestic investment in sub-

Saharan Africa increased to more than US$ 269 billion in 2010 and further increased to more than US$ 332 billion in 2015, according to the data.

The quality of governance is pointed out as one of the factors that significantly affect the variations in investment activities across countries and regions. According to Khan (2007), governance has been identified as a critical factor explaining the difference in economic performance across developing countries. According to Akanbi (2010), the low quality of governance, which is mirrored by the insecure political atmosphere in most African nations has remained a key hindrance to the growth of domestic investment over time. This then has made it imperative to model investment determinants by incorporating the quality of governance (Ajide, 2013). Fayissa and Nsiah (2013) argue that good governance or the absence of sound governance adds to the gap in income per capita amongst richer and poorer African nations. Chauvet and Collier (2004) posit that countries experiencing poor governance are associated with an average of 2.3 percentage points less GDP per year relative to other developing countries. In fact, there is a current stream of African development literature which suggests that governance is essential in driving private investment (Asongu et al., 2015), growth (Asongu, 2016a), inclusive development (Asongu and Nwachukwu, 2016) and the fight against policy syndromes such as capital flight (Asongu and Nwachukwu, 2017) and terrorism (Asongu et al., 2017).

In the empirical literature, various studies have examined the determinants of investment across countries. Studies by Aysan, Gaobo and Marie-Ange (2005), Bader and Malawi (2010), Eregha (2010), Majed and Ahmad (2010) show that interest rate negatively affects investment. These conclusions support the Keynesian theory of investment where investment choices are made by relating the Marginal Efficiency of Capital (MEC) to the real interest rate. The investment would be made if the MEC is higher than the real interest rate and as such, the real interest rate is negatively associated with investment decisions. Studies by Batina (1998), Pereira (2000) and Pereira (2001) have also revealed that growth spurs investment, which supports the accelerator theory of investment. This theory asserts that increasing output drives investment. According to Gordon (2009), temporary changes in output could lead to changes in investment spending. The modified version of this theory introduced a time lag between the increase in output and the subsequent increase in investment.

Tobin (1969) developed an investment theory known as the Tobin Q theory. Tobin Q can be defined simply as the proportion of the market value of a unit of capital to its replacement cost. Q, according to Romer (2012) is said to summarise complete information about the future that is important to a firm's investment choice. Q reveals in what way an extra dollar increase in capital affects the present value of profits and so when Q is high, firms want to increase their capital stock, and when Q is low, firms reduce it.

Inquiries on the impact of governance on domestic investment are rare as most related studies focus more on Foreign Direct Investment (FDI), notably: Morisset (2000), Globerman and Shapiro (2002), Asiedu (2005), Samini and Ariani (2010) and Mengistu and Adhikary (2011). Firms invest when the investment climate is favourable, and governance quality is a

subset of the investment climate in Africa. Among the few studies on the role that governance plays in the domestic investment decision is that of Ouedrago and Kouaman (2014), which examines the role of governance in explaining private investment in sub-Saharan Africa. The study employed 38 sub-Saharan African countries from 2006 to 2011 and made use of the Generalised Method of Moment (GMM) estimation technique. The results revealed that heavy regulations disturb private investment, whereas the business environment improves investment in sub-Saharan Africa. Aysan, Nabli and Veganzones (2011) also studied the impact of governance on private investment in the Middle East and North Africa (MENA) region. Their empirical findings revealed that corruption control, bureaucratic quality, investment-friendly administrations, law and order and a stable political environment play significant roles in explaining private investment decisions. Ngov (2008), using intra-group regression investigated the impact of governance on FDI as well as promoting domestic investment along with growth performance in three different income sets of countries which include low-income countries, middle-income countries and high-income countries. The result revealed that governance is positively related to per capita growth rate in both the middle and high-income groups but not in the low-income group. The result further revealed that governance has a positive impact on total investment ratio, which is a combination of domestic investment and FDI.

In empirical examining the impact of governance on domestic investment in Africa, this study employs a balanced panel data of 16 African countries as reported by World Development Indicators (WDI, 2017) and the World Governance Indicators (WGI, 2017) of the World Bank for the year 2002 to 2015. Data availability constraints strictly guided the choice of countries. The remainder of this research is organised as follows: Section 2 presents the methodology and model specification adopted in the study. Section 3 presents the econometric results. Section 4 concludes the research with relevant policy recommendations.

2. Methodology and Model Specification

The study employed descriptive statistics, the correlation matrix and panel linear models comprising of the pooled Ordinary Least Square (OLS), the Fixed Effects (FE) model and the Random Effects (RE) model. The descriptive statistics employed the mean of each of the variables within the countries employed in the study. This would enable us to understand the distinct uniqueness of the economic and governance fundamentals employed in the model. The correlation matrix helps to understand the degrees of substitution of relationships among the variables in the model, which are particularly important in order to avoid the problems of multicollinearity and biased estimates.

Also, the study employed nine bundled and unbundled governance indicators sourced from WGI. The bundled governance indicators were constructed by exploiting Principal Component Analysis (PCA) to reduce six governance variables. Results permitted to obtain the following constructs: (1) political governance, which comprises political stability and voice/accountability, (2) economic governance, which is composed of government effectiveness and regulatory

quality, and (3) institutional governance, which includes the control of corruption and the rule of law. According to Asongu et al. (2017), the principal component analysis involves reducing a set of strongly correlated indices into an uncorrelated set of small variables known as Principal Components (PC). According to Tchamyou (2017), the PCs are said to account for most of the information in the original data set. In the PCA, it is required that only common factors that have an eigenvalue greater than one or the mean should be retained (Kaiser, 1974; Jollife, 2002).

Among the three alternative estimation techniques, the pooled OLS which is an OLS technique that is run in panel data assumes that there is no heterogeneity across cross sections and stated as;

$$lnDI_{it} = \alpha + \beta X_{it} + \theta GOV_{it} + \epsilon_{it} \quad [1]$$

where $lnDI$ is the natural logarithm of gross fixed capital formation which proxy's for domestic investment, α is the common intercept, X is a vector of control variables which comprises of the natural logarithm of Gross Domestic Product in constant US$, which proxy's for real economic growth, the natural logarithm of exchange rate for each of the individual countries' currency employed in the model to the US$, and the real interest rate which signifies the real cost of borrowing. GOV is composed of the governance indicators (both bundled and unbundled). They include political stability, voice/accountability, political governance, government effectiveness, regulatory quality, economic governance, control of corruption, rule of law and institutional governance. ϵ is the error term while i denotes the cross-sectional index, t denotes the time index.

The FE model which controls for heterogeneity across countries in the intercept parameters is expressed as;

$$lnDI_{it} = \alpha_i + \beta X_{it} + \theta GOV_{it} + \epsilon_{it} \quad [2]$$

where α_i is the regional specific parameter which denotes the fixed effect. According to Algieri and Mannarino (2013), the α_i is said to represent ignorance about every other systematic feature that predict the dependent variables other than X and GOV. The basic insight into the FE model is that α_i does not change over time. Hence any variations in the outcome variable must be due to stimuluses other than these fixed individualities (Stock & Watson, 2008). The FE model is commonly used when examining the influence of variables that change with time as it controls for fixed individual characteristics of the countries in the model.

The RE model, on the other hand, treats the heterogeneity across cross sections as random components and is stated as;

$$lnDI_{it} = \alpha + \beta X_{it} + \theta GOV_{it} + \mu_{it} + \epsilon_{it} \quad [3]$$

μ_{it} is the distinct specific error, also known as the between-entity error. The variations across units are presumed to be random and uncorrelated with the independent variables in the model. In the RE model, it is assumed that the entity error term is uncorrelated with the independent variables in the model and thus allowing time-invariant variables play a role as explanatory variables.

The choice of the study's baseline model is based on several tests. In choosing between the FE and the pooled OLS, the study applies the F-test which confirms if there is omitted variable bias in the model. A p-value of less than 5 per cent signifies that there are important country effects, which means that overlooking unobserved heterogeneity in the model can lead to estimation bias and inconsistency. The study also tests between the pooled OLS and the RE model using the Breusch-Pagan (BP)-Langragian Multiplier (LM) test. The null hypothesis of the BP-LM test is that there is no substantial variance across regions. A less than 5 per cent probability value for the BP-LM test indicates that the RE model is appropriate, and the pooled OLS is not appropriate. The Hausman χ^2 test is also performed in selecting between the FE model and the RE model. According to Algieri and Mannarino (2013), the Hausman χ^2 test is intended to identify a violation of the RE modelling assumption that the regressors are orthogonal to unit effects. This means that there is no correlation between the independent variables and the unit effect. This further implies that the estimates of the FE model should be analogous to the estimates of the RE model. While the alternative hypothesis is that the FE model is preferable to the RE model, the null hypothesis is that both the FE and the RE produce similar coefficients. According to Baek and Yang (2010), the Hausman test allows us to determine whether the appropriate error terms are fixed or drawn from a random distribution. A p-value greater than 5 per cent denotes that both the FE model and the RE model are reliable but the RE model is more efficient because it utilises a lesser degree of freedom. The study also tests for serial correlation, which biases the standard errors in linear panel data models and makes findings less efficient according to Drukker (2003). The study applies the Wooldridge (2002) test, which hypothesises a null indicating the absence of autocorrelation in the model. We also test for heteroskedasticity in the FE model using the modified Wald test developed by Lasker and King (1997). The null hypothesis of this test is that the variance of the error is similar for all countries (Amaz, Gaume and Lefevre, 2012). The study also tests for crosssectional dependence in the model employing the Pesaran (2004) CD test and the Pesaran (2004) scaled LM test. According to Baltagi, Kao and Peng (2016), cross-sectional dependence could arise as a result of unknown common shocks, spatial effects or interactions within social networks. Overlooking cross-sectional dependence could result to estimation bias. A reason for cross-sectional dependence, according to De Hoyos and Sarafidis (2006), may be due to the growing economic and financial integration of countries and financial bodies, which suggests solid interdependencies amongst cross sectional entities.

Countries involved in this study include Algeria, Egypt, Gambia, Kenya, Lesotho, Liberia, Malawi, Mauritius, Mozambique, Nigeria, Rwanda, Sierra Leone, South Africa, Swaziland, Tanzania and Uganda. The time span for this study is between the years 2002 to 2015.

3. Presentation and discussion of empirical results

This section begins with a simple descriptive statistic of the variables in the model employing the mean for each cross section. Results from Table 3.1 reveal that in its natural logarithm, domestic investments are quite similar across the countries employed in the model. While Liberia has the lowest mean value of 19.18, South Africa has the highest level of domestic investment with a mean value of 24.93 for the years n view. Also, in the third column, economic growth likewise exhibits similarities across the countries in its natural logarithm. While South Africa can be seen to have the highest level of economic growth, Gambia has the lowest level of economic growth. On the average, Egypt has the strongest currency among the countries employed in the study, with an average exchange rate of 1.78 in its natural logarithm to the US$ while Sierra Leone has the weakest currency of 8.13 in natural logarithm to the US$. The real interest rate signifying the real borrowing cost is highest in Gambia and lowest in Algeria.

Table 3.1. Mean of Variables across Countries, 2002-2015

Country	Domestic Investment	Economic Growth	Exchange Rate	Real Interest rate	CC	GE	PS	RL	RQ	VA
Algeria	24.64	25.76	4.33	2.02	-0.55	-0.55	-1.27	-0.69	-0.90	-0.96
Egypt	24.25	25.99	1.78	2.11	-0.57	-0.50	-0.99	-0.22	-0.42	-1.07
Gambia	19.21	20.57	3.37	21.43	-0.62	-0.64	0.12	-0.39	-0.40	-0.99
Kenya	22.58	24.34	4.38	6.36	-0.99	-0.53	-1.25	-0.86	-0.22	-0.27
Lesotho	20.11	21.53	2.11	5.79	0.01	-0.35	0.07	-0.20	-0.55	-0.21
Liberia	19.18	20.92	4.21	7.43	-0.78	-1.36	-1.10	-1.18	-1.29	-0.53
Malawi	20.41	22.53	5.13	13.71	-0.61	-0.60	0.001	-0.22	-0.58	-0.28
Mauritius	21.46	22.95	3.41	9.68	0.49	0.79	0.87	0.95	0.76	0.85
Mozambique	21.28	22.93	3.31	12.25	-0.56	-0.56	0.14	-0.66	-0.46	-0.14
Nigeria	24.39	26.48	4.96	4.19	-1.13	-1.02	-1.93	-1.22	-0.87	-0.72
Rwanda	20.74	22.36	6.39	8.65	0.11	-0.28	-0.56	-0.47	-0.36	-1.25
Sierra Leone	19.69	21.63	8.13	10.42	-0.90	-1.23	-0.34	-1.01	-0.92	-0.34
South Africa	24.93	26.60	2.11	4.14	0.17	0.49	-0.08	0.10	0.50	0.61
Swaziland	20.29	22.17	2.11	4.58	-0.33	-0.71	-0.21	-0.58	-0.52	-1.28
Tanzania	22.76	24.08	7.19	4.63	-0.62	-0.52	-0.32	-0.42	-0.42	-0.24
Uganda	22.18	23.60	7.66	12.39	-0.90	-0.50	-1.09	-0.43	-0.16	-0.56

Source: Author's computation from WDI and WGI data.

Note: CC is the control of corruption, GE is government effectiveness, PS is political stability, RL is rule of law, RQ is regulatory quality, VA is voice/accountability.

In terms of governance indicators, of the 16 African countries employed in the model, only Lesotho, Mauritius, Rwanda and South Africa have a positive value for the control of corruption which denotes healthier control of corruption in these countries. Among these four countries, Mauritius controls corruption better as indicated by its higher value with respect to the other countries. Also, Nigeria can be seen to have the lowest level of corruption control amongst the

countries in our model with a value of -1.13. Of course, this means that corruption is prevalent in the country. Furthermore, the Table reveals that South Africa has a more effective government compared to other countries in our model while Liberia has the lowest government effectiveness. Also, Table 3.1 shows that Mauritius is more politically stable than the other countries in our model. Gambia, Lesotho, Malawi and Mozambique are the other countries that enjoy a relatively stable political environment as indicated by their positive values. Mauritius and South Africa have a strong rule of law while Nigeria has the weakest rule of law as indicated by their values. In terms of regulatory quality and voice/accountability, Mauritius also has the best of both while Liberia has the lowest, in terms of regulatory quality as an indicator of quality governance, Swaziland has the lowest level of voice/accountability. The quality of governance in Mauritius might as well be a good reason why the country has a very low rate of poverty with less than 1 per cent of its population living on $1 a day or less (see, borgenproject.org).

Table 3.2. Correlation Matrix

	DI	GDP	EXC	RI	CC	GE	PS	RQ	RL	VA
DI	1.0000									
GDP	0.9804	1.0000								
EXC	-0.1120	-0.1201	1.0000							
RI	-0.3368	-0.3489	0.1281	1.0000						
CC	-0.0073	-0.0608	-0.3887	-0.0427	1.0000					
GE	0.3368	0.2715	-0.3290	-0.0384	0.7790	1.0000				
PS	-0.3827	-0.4279	-0.2285	0.2201	0.6503	0.5355	1.0000			
RQ	0.2689	0.2330	-0.2203	0.0142	0.6351	0.8803	0.5100	1.0000		
RL	0.1046	0.0537	-0.3098	0.0652	0.7635	0.8785	0.6971	0.8117	1.0000	
VA	0.1107	0.0977	-0.0877	-0.0105	0.4102	0.5775	0.4942	0.5659	0.5547	1.0000

Source: Author's computation.

Note: DI is domestic investment, GDP is economic growth, EXC is exchange rate, RI is real interest rate, CC is the control of corruption, GE is government effectiveness, PS is political stability, RQ is regulatory quality, RL is rule of law, VA is voice/accountability.

Table 3.2 is the correlation analysis, which shows the correlation between the variables in our model. The table reveals that domestic investment and economic growth have a strong positive correlation to the value of 0.98. The table also shows that exchange rate, real interest rate, the control of corruption and political stability all have negative correlations with domestic investment. Furthermore, our explanatory variables do not have a strong correlation with each other, which then solves the issue of multicollinearity apart from the governance indicators which we would include in separate regressions.

The result from the principal component analysis in Table 3.3 reveals that the study retains the first PC for the three constructed governance indices since their eigenvalues are greater than one and represent 75 per cent of the information in political governance, 94 per cent of the

information in economic governance and 88 per cent of the information in institutional governance.

Table 3.3. Principal Component Analysis of Governance Indicators

Principal Component	Component Matrix(Loadings)						Proportion	Cumulative	Eigenvalue
	PS	VA	GE	RQ	CC	RL			
Political Gov									
First PC	0.7071	0.7071					0.7471	0.7471	1.4942
Second PC	0.7071	-0.7071					0.2529	1.0000	0.5057
Economic Gov									
First PC			0.7071	0.7071			0.9401	0.9401	1.8803
Second PC			0.7071	-0.7071			0.0599	1.0000	0.1197
Institutional Gov									
First PC					0.7071	0.7071	0.8818	0.8818	1.7635
Second PC					-0.7071	0.7071	0.1182	1.0000	0.2364

Source: Author's computation.

Note: PC denotes principal component. Gov denotes governance. CC is the control of corruption, GE is government effectiveness, PS is political stability, RQ is regulatory quality, RL is rule of law, VA is voice/accountability.

Tables 3.4 to 3.6 show the empirical results on the nexus between governance and domestic investment in Africa. Though the results across the various econometric techniques show that governance generally has a positive influence on domestic investment, for policy inference, the study needs to decide on the appropriate baseline model. The study estimated the F-test to choose between the pooled OLS and FE model. A significant F-test probability value indicates that the FE model is more suitable than the pooled OLS. The choice between the RE model and the pooled OLS employing the BP LM test also suggests that the RE model is more suitable while the Hausman test suggests that the FE model is more suitable in comparison to the RE model.

Our baseline model then becomes the FE model. The study then proceeds to test for heteroskedasticity with results suggesting that our models (Tables 3.4 to 3.6) all suffer from non-constant variance in the error term. Results from the serial correlation test of Wooldridge also show that all our models suffer from serial correlation while the Pesaran CD and Pesaran Scaled LM tests for cross-sectional dependence show contrary results at 5 per cent level of statistical significance. While the Pesaran CD test indicates the absence of cross-sectional dependence, the Pesaran Scaled LM test indicates its presence. However, the study account for these biases in the FE model employing the Driscoll and Kraay (1998) standard errors which correct for heteroskedasticity, serial correlation and cross-sectional dependence using a non-parametric covariance matrix estimator (see Hoechle, 2007).

Table 3.4. Political Governance and Domestic Investment in Africa

	Political Stability				Voice/Accountability				Political Governance			
	Pooled OLS	**Fixed Effects**	**Random Effects**	**Driscoll Kraay**	**Pooled OLS**	**Fixed Effects**	**Random Effects**	**Driscoll Kraay**	**Pooled OLS**	**Fixed Effects**	**Random Effects**	**Driscoll Kraay**
Constant	-2.4394[a]	-17.4543[a]	-6.9798[a]	-17.4543[a]	-1.8616[a]	-18.0391[a]	-6.4212[a]	-18.0391[a]	-1.8838[a]	-18.1185[a]	-6.5165[a]	-18.1185[a]
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
GDP	1.0329[a]	1.6622[a]	1.2081[a]	1.6622[a]	1.0085[a]	1.6978[a]	1.1860[a]	1.6978[a]	1.0085[a]	1.6978[a]	1.1861[a]	1.6978[a]
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
EXC	0.0203	0.0841	0.1295[a]	0.0841	0.0065	0.0313	0.1148[a]	0.0313	0.0065	0.0313	0.1148[a]	0.0314
	(0.138)	(0.395)	(0.000)	(0.678)	(0.628)	(0.750)	(0.005)	(0.869)	(0.628)	(0.872)	(0.005)	(0.869)
RI	-0.0005	-0.0002	0.0004	-0.0002	0.0011	0.0003	0.0011	0.0003	0.0011	0.1089[c]	0.0011	0.0003
	(0.986)	(0.932)	(0.835)	(0.942)	(0.729)	(0.872)	(0.624)	(0.877)	(0.729)	(0.058)	(0.624)	(0.877)
PS	0.1363[a]	0.1248[b]	0.2263[a]	0.1248[b]								
	(0.001)	(0.019)	(0.000)	(0.037)								
VA					0.0495	0.1769[c]	0.2121[b]	0.1769[b]				
					(0.249)	(0.058)	(0.015)	(0.028)				
Polgov									0.0306	0.1089[c]	0.1307[b]	0.1089[b]
									(0.249)	(0.058)	(0.015)	(0.028)
R^2 Overall	0.9632	0.9614	0.9553		0.9614	0.9610	0.9519		0.9614	0.9610	0.9519	
R^2 Between		0.9784	0.9706			0.9789	0.9682			0.9789	0.9682	
R^2 Within		0.7626	0.7508	0.7626		0.7603	0.7561	0.7603		0.7603	0.7561	0.7603
F-Stat	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
F-Test		0.0000				0.0000				0.0000		
Wald			0.0000				0.0000				0.0000	
Hausman			0.0350				0.0000				0.0000	
B-P LM			0.0000				0.0000				0.0000	
M.Wald		0.0000				0.0000				0.0000		
Wooldridge		0.0000	0.0000			0.0000	0.0000			0.0000	0.0000	
Pesaran CD		0.2969	0.0000			0.2969	0.0000			0.1216	0.0000	
Pesaran Scaled LM		0.0000	0.0000			0.0000	0.0000			0.0000	0.0000	
Observations	224	224	224	224	224	224	224	224	224	224	224	224

Source: Author's computation.

Note: Dependent Variable: Domestic Investment. GDP is economic growth, RI is the real interest rate, CC is the control of corruption, RL is rule of law, Polgov is political governance, B-P LM is Breusch Pagan Langragian Multiplier test, M.Wald is the Modified Wald test for heteroskedasticity. Probability values of coefficients are in parenthesis. Diagnosis and post-estimation test results presented are probability values. a, b and c denote statistical significance at 1, 5 and 10%, respectively.

Results in Table 3.4 on the relationship between political governance and domestic investment along with its elements reveals that an improvement in political stability increases domestic investment in Africa by 0.125 percentage point and this relationship is significant at 5 per cent statistical level. Similarly, voice/accountability increases domestic investment by 0.177 percentage point while an improvement in political governance increases domestic investment by 0.109 percentage point significantly.

The F-statistics probability values which are less than 5 per cent indicates that all the variables in the model together have a significant influence on domestic investment in Africa. Further results revealed that economic growth significantly spurs domestic investment while the exchange rate and the real interest rate are insignificant to domestic investment in Africa.

Table 3.5. Economic Governance and Domestic Investment in Africa

	Government Effectiveness				Regulatory Quantity				Economic Governance			
	Pooled OLS	**Fixed Effects**	**Random Effects**	**Driscoll Kraay**	**Pooled OLS**	**Fixed Effects**	**Random Effects**	**Driscoll Kraay**	**Pooled OLS**	**Fixed Effects**	**Random Effects**	**Driscoll Kraay**
Constant	-1.5102[a]	-18.5526[a]	-6.0490[a]	-18.5526[a]	-1.5957[a]	-17.4008[a]	-5.7341[a]	-17.4008[a]	-1.6685[a]	-17.4535[a]	-5.8515[a]	-17.4535[a]
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
GDP	0.9944[a]	1.7126[a]	1.1685[a]	1.7126[a]	0.9982[a]	1.6612[a]	1.1563[a]	1.6612[a]	0.9982[a]	1.6612[a]	1.1563[a]	1.6612[a]
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
EXC	0.0227[c]	0.0529	0.1149[a]	0.0529	0.0145	0.0750	0.1221[a]	0.0752	0.0146	0.0752	0.1221[a]	0.0752
	(0.094)	(0.595)	(0.004)	(0.792)	(0.274)	(0.453)	(0.002)	(0.683)	(0.274)	(0.453)	(0.002)	(0.683)
RI	0.00001	-0.0001	-0.0007	-0.0001	-0.0001	0.0001	0.0012	0.0001	-0.0001	0.0001	0.0012	0.0001
	(0.997)	(0.952)	(0.743)	(0.858)	(0.975)	(0.980)	(0.613)	(0.946)	(0.975)	(0.947)	(0.613)	(0.946)
GE	0.2086[a]	0.0079	0.1091	0.0079								
	(0.000)	(0.938)	(0.274)	(0.942)								
RQ					0.1708[a]	0.1239	0.2758[a]	0.1238[c]				
					(0.001)	(0.145)	(0.001)	(0.082)				
Ecogov									0.0905[a]	0.0656	0.1460[a]	0.0656[c]
									(0.001)	(0.145)	(0.001)	(0.082)
R^2 Overall	0.9639	0.9607	0.9556		0.9624	0.9612	0.9549		0.9632	0.9612	0.9549	
R^2 Between		0.9788	0.9727			0.9787	0.9708			0.9787	0.9708	
R^2 Within		0.7561	0.7520	0.7561		0.7586	0.7488	0.7586		0.7586	0.7488	0.7586
F-Stat	0.0000	0.0000			0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
F-Test		0.0000				0.0000				0.0000		
Wald			0.0000				0.0000				0.0000	
Hausman			0.0000				0.0000				0.0000	
B-P LM			0.0000				0.0000				0.0000	
M.Wald		0.0000				0.0000				0.0000		
Wooldridge		0.0000	0.0000			0.0000	0.0000			0.0000	0.0000	
Pesaran CD		0.1675	0.0000			0.1675	0.0000			0.2106	0.0000	
Pesaran Scaled LM		0.0000	0.0000			0.0000	0.0000			0.0000	0.0000	
Observations	224	224	224	224	224	224	224	224	224	224	224	224

Source: Author's computation.

Note: Dependent Variable: Domestic Investment. GDP is economic growth, RI is the real interest rate, CC is the control of corruption, RL is rule of law, Ecogov is economic governance, B-P LM is Breusch Pagan Langragian Multiplier test, M.Wald is the Modified Wald test for heteroskedasticity. Probability values of coefficients are in parenthesis. Diagnosis and post-estimation test results presented are probability values. a, b and c denote statistical significance at 1, 5 and 10%, respectively.

On the relationship between economic governance (and its components) and domestic investment, empirical results, as indicated in Table 3.5 reveal that government effectiveness

has a positive but insignificant relationship with domestic investment in Africa. Regulatory quality has a positive and significant relationship with domestic investment in Africa at 10 per cent statistical level of significance and economic governance also has a positive and significant influence on domestic investment. While regulatory quality spurs domestic investment by 0.124 percentage point, economic governance enhances domestic investment by 0.066 percentage point. The result also discloses similar findings from Table 3.4 that economic growth significantly spurs domestic investment in Africa while the exchange rate and the real interest rate are insignificant in driving domestic investment.

Table 3.6. Institutional Governance and Domestic Investment in Africa

	Control of Corruption				**Rule of Law**				**Institutional Governance**			
	Pooled OLS	**Fixed Effects**	**Random Effects**	**Driscoll Kraay**	**Pooled OLS**	**Fixed Effects**	**Random Effects**	**Driscoll Kraay**	**Pooled OLS**	**Fixed Effects**	**Random Effects**	**Driscoll Kraay**
Constant	-2.0952[a]	-17.3095[a]	-6.0694[a]	-17.3095[a]	-1.7981[a]	-17.6059[a]	-5.8223[a]	-17.6059[a]	-1.9006[a]	-17.6739[a]	-5.9708[a]	-17.6739[a]
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
GDP	1.0182[a]	1.6554[a]	1.1699[a]	1.6554[a]	1.0065[a]	1.6730[a]	1.1611[a]	1.6730[a]	1.0065[a]	1.6730[a]	1.1611[a]	1.6730[a]
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
EXC	0.0309[b]	0.0906	0.1351[a]	0.0905	0.0240[c]	0.0631	0.1251[a]	0.0631	0.0240[c]	0.0632	0.1251[a]	0.0632
	(0.026)	(0.368)	(0.000)	(0.648)	(0.075)	(0.542)	(0.000)	(0.739)	(0.075)	(0.524)	(0.001)	(0.739)
RI	0.0017	-0.0002	0.0006	-0.0002	-0.0005	-0.0003	-0.0002	-0.0003	-0.0005	-0.0003	0.0002	-0.0003
	(0.573)	(0.926)	(0.840)	(0.919)	(0.879)	(0.894)	(0.917)	(0.890)	(0.879)	(0.894)	(0.917)	(0.890)
CC	0.2651[a]	0.1554[c]	0.3218[a]	0.1554[b]								
	(0.000)	(0.056)	(0.000)	(0.034)								
RL					0.2184[a]	0.1447	0.3164[a]	0.1448[b]				
					(0.000)	(0.113)	(0.000)	(0.039)				
Instgov									0.1179[a]	0.0781	0.1707[a]	0.0781[b]
									(0.000)	(0.113)	(0.000)	(0.039)
R^2 Overall	0.9648	0.9616	0.9574		0.9644	0.9626	0.9576		0.9644	0.9626	0.9576	
R^2 Between		0.9789	0.9731			0.9802	0.9735			0.9802	0.9735	
R^2 Within		0.7604	0.7476	0.7604		0.7591	0.7475	0.7591		0.7591	0.7475	0.7591
F-Stat	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
F-Test		0.0000				0.0000				0.0000		
Wald			0.0000				0.0000				0.0000	
Hausman			0.0000				0.0000				0.0000	
B-P LM			0.0000				0.0000				0.0000	
M.Wald		0.0000				0.0000				0.0000		
Wooldridge		0.0000	0.0000			0.0000	0.0000			0.0000	0.0000	
Pesaran CD		0.3692	0.0000			0.0590	0.0000			0.0590	0.0000	
Pesaran Scaled LM		0.0000	0.0000			0.0000	0.0000			0.0000	0.0000	
Observations	224	224	224	224	224	224	224	224	224	224	224	224

Source: Author's computation.

Note: Dependent Variable: Domestic Investment. GDP is economic growth, RI is the real interest rate, CC is the control of corruption, RL is rule of law, Instgov is institutional governance, B-P LM is Breusch Pagan Langragian Multiplier test, M.Wald is the Modified Wald test for heteroskedasticity. Probability values of coefficients are in parenthesis. Diagnosis

and post-estimation test results presented, are probability values. a, b and c denote statistical significance at 1, 5 and 10%, respectively.

Finally, from Table 3.6 on the relationship between institutional governance and its constituents on domestic investment, empirical outcomes reveal that the control of corruption positively and significantly drives domestic investment in Africa, Improvements in controlling corruption in Africa increases domestic investment by 0.155 percentage point and this relationship is statistically significant at 5 per cent level. Rule of law also positively and significantly drive domestic investment by 0.145 percentage point while institutional governance positively and significantly increases domestic by 0.078 percentage point. Economic growth from Table 3.6 remains a driving factor for domestic investment in Africa, while the exchange rate and real interest rate remain insignificant.

4. Conclusions and recommendations

The quality of governance in Africa has been generally understood to be poor as political crises, corruption, absence of the rule of law abound in most countries in the region. It has also been argued that governance performs a central role in explaining the dynamics of macroeconomic aggregates both in developed and developing economies. This study thereby accessed the impact of governance on domestic investment in Africa employing unbundled and bundled governance indicators for 16 African countries between 2002 and 2015 and adopting the Driscoll and Kraay FE model which accounts for most biases in panel econometric modelling. The results revealed that all the indicators of governance employed in this study have positive and statistically significant influences on domestic investment in Africa except for government effectiveness which has a positive but insignificant influence on the outcome variable. The results further revealed that voice/accountability and the control of corruption have the most significant impact on domestic investment in Africa, as indicated by their coefficient values. It can thus be said that the quality of governance is a significant factor in explaining the level of domestic investment in Africa. Also, economic growth has a strongly positive and significant impact on domestic investment in the continent.

The recommendations of this study are straightforward: African leaders should as a matter of urgency endeavour to improve the quality of governance by ensuring political stability. Political stability can be achieved through engagement, empowerment and education of the youths in order to curb any potential civil unrest. Youths are specifically mentioned here due to the ‘youth bulge’ existing on the African continent. Poverty also has a strong potential for generating political instability. A reduction in povertyis necessary to ensure a more stable political environment in Africa. Inclusive growth policies must be adopted in order for the poor to participate in the growth process. There also have to be development and implementation of economic development policies in the areas of health, education, nutrition and sanitation, which ultimately leads to the reduction in poverty. Moreover, for there to be an increase in domestic

investment in Africa, citizens should be able to partake in choosing their governments as well as enjoy the liberty to express themselves. If citizens can choose the leaders they want, devoid of electoral malpractices, this does not only lead to a more stable political environment but also a more stable economic environment which ensures domestic investment activities.

Furthermore, African governments should implement sound monetary and fiscal policies that are in line with current economic realities to promote the private sector and increase domestic investment. Again, there is a need to curb corruption in Africa. This can be achieved through sanctions, i.e. the punishment of corrupt political office holders. Public sector reforms are also necessary to improve financial management in the public sector. Citizens as well have a role to play by holding their governments accountable. There has to be an improvement in the quality of contract enforcement, property rights and a reduction in crime and violence for domestic investment to increase in Africa. Economic policies should also be targeted towards improving economic growth in Africa, which will precipitate an increase in domestic investment.

In conclusion, future studies can assess how the established findings withstand scrutiny within the comparative framework of the Washington Consensus versus the Beijing Model. It is important to note that governance indicators employed are prioritised differently by the two contemporary paradigms of development. While the Washington Consensus prioritises political governance, the Beijing Model emphasizes economic governance. More insights into the dynamics of the paradigms are apparent in recent literature on the subject (Asongu and Ssozi, 2016; Asongu, 2016b).

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Appendix

Table A1: Definition of Governance Variables

Variable	Functional Definition
Control of corruption	According to the World Governance Indicator (2017), the control of corruption is the viewpoint of the degree to which public power is used for private gain, comprising both minor and grand forms of corruption, as well as the capture of the state by elites and private interests.
Government effectiveness	According to the World Governance Indicator (2017), government effectiveness captures perceptions of the quality of public services, the quality of the civil service and the extent of its independence from political forces, the quality of policy design and execution, and the reliability of the government's commitment to such policies.
Political stability/absence of violence and terrorism	According to the World Governance Indicator (2017), this captures perceptions of the chances of political instability and/or politically-motivated violence, including terrorism.
Rule of Law	According to the World Governance Indicator (2017), the rule of law reveals perceptions of the extent to which agents have confidence in and abide by the guidelines of society, and specifically, the quality of contract enforcement, property rights, courts and the police, as well as the chances of crime and violence.
Regulatory Quality	Regulatory Quality captures perceptions of the capability of the government to design and execute sound policies and rules that allow and promote private sector development (World Governance Indicator, 2017).
Voice/Accountability	According to the World Governance Indicator (2017), voice and accountability capture insights to the extent to which a country's citizens are able to partake in choosing their government, as well as liberty to express, freedom of association, and a free media.
Political Governance	According to Asongu *et al* (2017), this is defined as the election and replacement of political leaders. This index is measured with two indicators, which are political stability/no violence and voice/accountability.
Economic Governance	According to Asongu *et al* (2017), economic governance is defined as the formulation and implementation of policies that deliver public commodities. This index is measured with two indicators which are regulatory quality and government effectiveness.
Institutional Governance	According to Asongu *et al* (2017), institution governance is defined as the respect by the State and citizens of institutions that govern interactions between them. This index is measured with two variables: corruption-control and the rule of law