



Government Size, Institutional Quality and Economic Welfare in Africa

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Abstract

Purpose - Most African countries operate large government sizes but with little corresponding economic outcomes. Institutional economics however, show that strong institution is fundamental in promoting economic growth. This study examines the linkages between government size, institutional quality and economic welfare in Africa.

Design/Methodology/Approach – This study deploys the System Generalized Method of Moments estimation strategy on panel data of 52 African economies from 2000 - 2018.

Findings - The result shows that government size has a negative impact on economic welfare, while institutional quality has a positive impact on economic welfare. The interaction of government size and institutional quality shows a positive impact on economic welfare, signifying synergy and complementarity. Thus, strong institutions counteract the adverse effects of large government size on economic welfare.

Practical implications - To promote human development and economic welfare which are relevant to the journal's scope, and attain key Sustainable Development Goals such as good health and well-being, quality education, decent work and economic growth, African policy makers need to keep their government sizes at optimal levels and promote strong institutions.

Originality/value - This paper provides first-hand empirical evidence of the relevance of institutional quality in counteracting the adverse influence of large government size in Africa. It determines the thresholds of government size and uses a composite index as proxy for same. In addition, this study uses the World Governance Indicators and the Fraser Institute Economic Freedom Index as alternative measures of institutional quality and Gross Domestic Product per capita and Human Development Index as proxies for economic welfare.

1. Introduction

The debate regarding the relationship between government size and economic growth predates decades. Primarily, governments command a bulk of society's resources and hence affect growth and development as postulated in the law of increasing state activity, otherwise known as Wagner's law¹. Although government intervention is necessary, it is not sufficient for economic prosperity, especially if it leads to inefficiency in the allocation of resources (Afonso & Jalles, 2016). The natural consequence of running large government size is increased economic performance and enhanced human welfare as apparent in advanced and emerging market economies. However, while most African countries run large government sizes, the converse of the outcomes above is the case in many instances as there are **low** economic growth rates (Olaoye, Noman & Abanikanda, 2023), increasing poverty levels (World Bank, 2019) and widening income inequality (Kunawotor et al., 2022). It is worth emphasizing that the attainment of economic growth is imperative for the achievement of many Sustainable Development Goals (Asongu & Odhiambo, 2023). In line with the Sustainable Development Goal (SDG 16) of promoting quality institutions and the postulations of institutional economics (Acemoglu & Robinson, 2010), which suggests that institutional reform is the fundamental missing factor among the economic growth drivers, this study provides an empirical context by examining the linkages between government size, institutional quality and economic welfare.

The relevance of this study situates on the proposition that economic performance in Africa is low despite large government sizes and empirical studies have uncovered a negative correlation between government size and economic growth (Alimi, 2020). However, institutional reforms and quality institutions are relevant in promoting economic growth (Acemoglu & Robinson, 2010). The hypothesis derived and worth investigating in line with the theoretical predictions of institutional economics is that large government size could still yield improved economic outcomes and welfare if there are quality institutions. This study is imperative as most related studies have focused on the unitary **impact** of government size on economic growth (Whajah et al., 2019; Nirola & Sahu, 2019; Nyasha & Odhiambo, 2019; Asimakopoulos & Karavias, 2016; DiPeitro & Anoruo, 2012; Bergh & Henrekson, 2011) while others, focused on the **impact** of institutions on growth (Acquah et al., 2023; Nguyen et al., 2018; Epaphra & Kombe, 2017; Akinlo, 2016). Some studies such as Olaoye et al. (2023) and Afonso and Jalles (2016) have explained the impact of institutions in the government size and growth nexus. This study fills the missing gap in literature not only by examining the **effect** of government size and institutional quality on economic growth and welfare but also, investigates the interaction effects of government size and institutional quality on economic growth and welfare to determine relevant thresholds in Africa.

This study differs from other studies and contributes to the literature in many ways. First, the paper investigates the linkages between government size, institutional quality and economic welfare. Second, the threshold of government size at which institutional quality procures a positive impact on economic welfare is determined. Third, a composite index measures government size that encapsulates five sub-indices, unlike studies that mostly use government consumption. Fourth, the World Governance Indicators and the Fraser Institute Economic Freedom Index are used as alternative measures of

¹ Wagner's law states that as the economy develops over time, the activities and functions of the government increase. In other words, the law states that as per capita income increases, so does government expenditure or size.

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3 institutional quality. Similarly, Gross Domestic Product (GDP) per capita and Human Development
4 Index (HDI) are alternatively used as proxies for economic welfare.
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6 The highlight of the results shows that, indeed, government size has a negative effect on economic
7 welfare while institutional quality has a positive effect on economic welfare. The interaction of
8 government size and institutional quality shows a positive impact on economic welfare, which signifies
9 synergy and complementarity. Strong institutions therefore counteract the negative impact of large
10 government size on economic welfare. The study proceeds with a literature review that includes both
11 theoretical and empirical reviews. The methodology and results discussion sections follow after that.
12 Finally, conclusions are drawn and some policy recommendations and study limitations are
13 highlighted.
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18 **2. Literature Review**

19 **2.1. Theoretical Review**

20 The standard Keynesian theory predicts that higher government spending can increase economic
21 output. Armeij (1995) in the hypothesis of the Armeij-curve however, argues that the growth effect of
22 government spending or government size is non-linear. According to the Armeij curve, there exists
23 an inverted U-shape relationship between government size and economic growth. There is thus a
24 positive growth effect of government size but beyond certain level or threshold, large government
25 size is harmful to economic growth. Most empirical studies however find a linear relationship which
26 is inconclusive as it could either be positive (Whajah et al., 2019; Romero-Ávila & Strauch, 2008) or
27 negative (Afonso & Jalles, 2016; DiPeitro & Anoruo, 2012; Bergh & Henrekson, 2011). Yet still, others
28 find an optimal government size (Asimakopoulos & Karavias, 2016).
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32 Several theories explain that quality institutions enhance economic growth and human development
33 among countries. A study by North (1990) emphasize the essential role institutions play in propelling
34 economic growth and human development among developing, middle-income and developed
35 countries. North (1990) in this seminal work, define institutions as “the rules of the game in a society
36 or, more formally, are the humanly devised constraints that shape human interaction”. In other words,
37 institutions help immensely to structure and shape social behaviour and collective actions, which is a
38 pre-condition for achieving sustainable development in developing, middle-income and developed
39 countries. North argues that institutional framework contributes significantly towards explaining
40 cross-country differences in economic growth depending on the country’s efficiency. Institutions act
41 as one of the central drivers of enhancing economic growth and human development. Since the study
42 carried out by North (1990), the role of institutions towards promoting economic development has
43 caught the attention of numerous researchers for example Barro (1996), Hall and Jones (1999),
44 Acemoglu et al. (2001), Rodrik et al. (2004) and others. Barro (1996) finds political variables such as
45 the rule of law, political rights and civil liberties as essential drivers of economic growth. Hall and
46 Jones (1999) posit that institutional quality has a positive effect on economic growth through total
47 factor productivity and investment. Acemoglu et al. (2001) establish that institutions account
48 significantly for contemporary cross-country income differences. The empirical work of Rodrik et al.
49 (2004) indicate that, institutional quality has more significant impact on economic growth than other
50 factors.
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Premised on the predictions of Armeiy's curve and the argument by DiPeitro and Anoruo (2012) that any theoretical threshold or optimal government size has been exceeded, and the proposition of institutional economics that institution is an essential driver of economic growth, the paper hypothesizes a negative relationship between government size and growth or welfare and a positive relationship between institutional quality and growth or welfare.

2.2. Empirical Literature Review

The empirical literature is grouped into three strands. The first group examines the interplay of government size, institution and growth. The second group gauges the impact of government size on economic growth while the last group examine the impact of institutions on economic growth. The ensuing discussions follow the pattern of these categorizations.

The review begins with the study by Olaoye, Noman and Abanikanda (2023) who examine if institutional development plays any role in the government expenditure and growth nexus among Economic Community of West African States from 2005 to 2017. The result shows that government spending and growth are only positively correlated and significant above a certain threshold of institutional development. Otherwise, the relationship is not significant or negative at best. Sidek and Asutay (2021) provide empirical evidence of the relationship between government consumption and growth while controlling for institutional quality. The study samples both developed and developing countries for the period 1984 – 2017. The paper finds a negative effect of government expenditure on growth. However, when government expenditure is conditioned on institutional quality, the result yields a positive effect. Nirola and Sahu (2019) investigate the impact of government size on economic growth using 23 states in India from 2005 to 2014 and conclude that a bigger government size is detrimental for state-level economic growth. The findings show that States with better quality of institutions register a lower negative impact on economic growth compared to their less-progressive counterparts for similar increase in government size. Closely related to the current study is the paper by Afonso and Jalles (2016), which investigates the link between government size, institutions and economic activity in 140 countries from 1970 – 2010. Government size is proxied with government consumption, total government expenditures, total government revenues, and total government debt, which are all expressed as percentages of GDP. The result shows a negative effect of government size on output, while institutional quality has a positive impact. The paper argues that the detrimental effect of government size on output is more potent the lower institutional quality.

In the second strand of studies, DiPeitro and Anoruo (2012) examine the impact of the size of government and public debt on real economic growth, for a panel of 175 countries. The findings show that the size of government and public debt negatively affect economic growth. Similarly, for a large country group of studies, Asimakopoulos and Karavias (2016) examine the relationship between government size and economic growth to identify the optimal government size. Data on 129 countries is used, covering the period 1980 – 2009. The findings show a non-linear relationship between government spending and economic growth. Bergh and Henrekson (2011) also found a negative relationship between government size and economic growth but sampled only developed countries. A survey of literature conducted by Nyasha and Odhiambo (2019) on the causal relationship between government size and economic growth in both developed and developing countries found empirical support for the assertion that the direction of causality between these two variables has four possible outcomes. In West Africa, Alimi (2020) studied how government size affects economic development

and the optimal government size that promotes growth. The study which covers the period 1986 – 2018 shows a negative correlation and this effect is more pronounced in countries with low levels of development. The outcomes of these prior studies differ from that of Whajah, Bokpin and Kuttu (2019) who examine the relationship between government size, public debt and inclusive growth for 54 African economies from 2000 to 2016. On the contrary, the paper finds the size of government to have a positive effect on inclusive growth while indebtedness has a negative impact. The proxy for government size used just like in other studies is government expenditure.

Nguyen, Su and Nguyen (2018) in the last strand of studies examine the effect of institutional quality on economic growth for 29 emerging economies over the period 2002-2015 and find a significant positive impact. Fabro and Aixalá, (2009) also find a similar positive impact but with a large sample of 145 countries. Similarly, but more recently, Acquah, Carbonari and Farcomeni (2023) and Hussen (2023) estimate the impact that institutions have on economic growth. The paper finds a positive relationship and concludes that institutions matter for growth. Conversely, Akinlo (2016), in the last strand of studies, examine the relationship between institution and economic growth in 30 sub-Saharan African countries from 1986 to 2013. **The rule of law is used to proxy institutions. The result shows that institution is negatively correlated with growth.**

Most of the studies reviewed either take a unitary view of the relationship between government size and economic growth or institutions and economic growth, except for Afonso and Jalles (2016), who focused on a large group of countries and Nirola and Sahu (2019), who focused on states in India. These two studies interact the size of government with institutions. This study is different from other studies in many ways. First, the study examines the interactive effects of government size and institutions in African economies besides the direct impacts of government size and institutional quality on economic growth and welfare. It also determines the thresholds of government size that should not be exceeded for institutional quality to yield optimum outcomes for economic growth and welfare. Further, it uses a comprehensive measure of government size unlike most studies that used government spending. The departure from the literature also include using the World Governance Indicators and the Fraser Institute Economic Freedom Index as alternative measures of institutional quality and Gross Domestic Product per capita and Human Development Index as proxies for economic welfare.

3. Methodology

3.1 Model Specification, Variable Measurement and Data Sources

In this study, a dynamic model is specified where the dependent variable is a function of its past variable and other explanatory variables. Specifically, economic welfare is a function of the first period lag of economic welfare, size of government and institution which are the main explanatory variables of interest, the interactive term and a vector to represent control variables that affect economic welfare.

$$Welfare_{i,t} = \alpha_0 + \alpha_1 Welfare_{i,t-1} + \alpha_2 Govtsize_{i,t} + \alpha_3 IQ_{i,t} + \alpha_4 (Govtsize * IQ)_{i,t} + \beta' X_{i,t} + \mu_i + \lambda_t + \varepsilon_{i,t}$$

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3 The variable, $welfare_{i,t}$ denotes the proxy for economic welfare in country i and at time t . This is
4 measured by two alternative indicators, i.e. Gross Domestic Product (GDP) per capita and the Human
5 Development Index (HDI). GDP per capita is measured as the natural log of GDP per capita (in
6 constant 2015 US\$) and sourced from the World Bank, World Development Indicators (WDI). HDI
7 is a composite index of education, per capita income and life expectancy and ranges from 0 – 1. The
8 data on HDI is sourced from the United Nations Development Programme (UNDP). **It is worth**
9 **noting however that GDP per capita is our primary measure while HDI is used as an alternative.** The
10 first period lag of economic welfare is denoted by $welfare_{i,t-1}$. Govtsize is the proxy for the size of
11 government, which is a composite index **computed as an average** of five main variables from the
12 economic freedom index. These variables include government consumption, transfers and subsidies,
13 government investment, top marginal tax rate and state ownership of assets. This data is gleaned from
14 the Fraser Institute Index and ranges from 0 – 10. The primary measure of government size used in
15 the literature is general government final consumption expenditure, which is just one of five indicators
16 used in this study. This makes the index more robust in measuring government size as different
17 dimensions of government activities are captured. Nonetheless, general government final
18 consumption expenditure as a fraction of GDP from WDI is used in this study as an alternative
19 measure. It is expected that government size will negatively or positively influence economic welfare.

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21 In like manner, IQ represents the proxy for institutional quality. Institutional quality is measured using
22 the mean value of Kaufman's six governance indicators, namely control of corruption, regulatory
23 quality, rule of law, voice and accountability, government effectiveness, and political stability and
24 absence of violence. The data is from the World Bank, World Governance Indicators (WGI) and
25 ranges from -2.5 (weak institution) to 2.5 (strong institution). This same indicator is used in the study
26 by Osei et al. (2024) and Kunawotor et al. (2020). Alternatively, the paper uses the economic freedom
27 index which **averages five main indicators** namely the size of government, legal system and property
28 rights, sound money, freedom to trade internationally, and regulation. It is sourced from the Fraser
29 Institute Index and ranges from 0 – 10. Institutional quality is expected to be positively correlated with
30 economic welfare. Govtsize * IQ denotes the interaction of the size of government (Govtsize) and
31 institutional quality (IQ). Irrespective of the direction of the effect of government size, it is expected
32 that institutional quality will redirect this impact and yield positive outcomes. In other words,
33 institutional quality should complement government size in promoting economic growth and welfare.

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35 **Some other variables that are known in the literature to influence economic growth and welfare are**
36 **represented by the vector 'X'.** These include gross fixed capital formation, trade openness, population
37 growth rate and inflation. Gross fixed capital formation is measured as a percentage of GDP. Trade
38 openness is the sum of exports and imports as a fraction of GDP. Inflation is measured as the annual
39 percentage of consumer prices. Population growth is annual percentage rates. All these control
40 variables are sourced from WDI. Based on literature and theory, gross fixed capital formation and
41 trade should promote economic outcome while population growth and inflation should have adverse
42 effects. U_i , λ_t , and $\epsilon_{i,t}$ represent country specific effect, time specific constant, and idiosyncratic error
43 term respectively.
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3.2 Scope of the study and Estimation Strategy

This study focuses on 52 African countries² with annual panel data from 2000 to 2018. The choice of the period is mainly due to constraints in data availability especially with regards to institutional quality. The study deploys the system Generalized Method of Moments (GMM) estimation strategy. There are five main reasons that account for the choice of this technique. These reasons align with contemporary GMM-centric literature (see Osei et al., 2023; Kunawotor et al., 2022; Asongu et al., 2020; Kunawotor et al., 2020). First, the number of countries (52) representing the cross sections outstrip the period (19) per cross section. Second, the outcome variables (GDP per capita and HDI) exhibit persistence over time as the correlations between their first period lags and level series are both 0.9 which exceeds the threshold of 0.8 established in literature to determine persistence (Asongu et al., 2020; Tchamyou et al., 2019). Third, by the design of this technique, concerns of endogeneity are addressed. **This is addressed because GMM can control for unobserved heterogeneity by accounting for time-invariant omitted variables and also generates internal instruments that account for simultaneity bias or reverse causality.** Reverse causality is apparent between GDP per capita and institutions or government size. Fourth, because the dataset is an unbalanced panel, the empirical strategy preserves the cross-country dimensions in the estimation process. Finally, there are general difficulties in finding external instruments.

4. Empirical Results and Discussion

The summary statistics presented in Table 1 show the distribution of the variables used in the model. The average GDP per capita of the sampled African economies is \$2,422, while that of the HDI is 0.51. But for few countries such as Algeria, Botswana, Egypt, Libya, Mauritius, Seychelles, South Africa and Tunisia which have high human development above 0.7, the rest fall short of this value. The mean size of government in Africa is 6.6, and this value is higher than those of most advanced economies with remarkable HDI. This suggests that most African countries are challenged with improved economic performance and standard of living although government size has been averagely large and continues to grow. **To put this in perspective, the mean size of government in some advanced economies with very high human development above 0.9 is presented as follows³:** United Kingdom - 6.6, France - 5.3, United States - 7, Canada - 6.7, Germany - 6.2, Singapore - 6.5, Denmark - 4.8, Japan - 6.1 and Norway - 5.5. In effect, these statistics suggest that although most African countries continue to run with bloated governments and spend large sums of the tax payers' money, these activities have not translated into improvement in their economic growth outcomes and welfare unlike in the advanced economies. Institutional quality also remains weak in Africa as the mean of institution is – 0.63 for a range that could reach up to 2.5 for very strong institution. Likewise, the economic freedom index averaged at 6.

There is no concern for multicollinearity as the correlation matrix presented in Appendix 1 shows that none of the correlations between the covariates exceed 0.5, except for institutions and economic freedom. However, these two variables are used as alternative proxies for institutional quality and are not introduced into the model concurrently. All the necessary diagnoses needed for the effective deployment of the estimation strategy proved satisfactory. In particular, the Hansen test for

² The countries are listed in Appendix 2 and include all African countries except South Sudan and Somalia.

³ **The data on advanced economies is sourced from the Fraser Institute Index and United Nations Development Programme (UNDP).**

overidentifying restrictions (OIR) tests for the validity of the moment conditions and also, the test of the null hypothesis of no second-order serial correlation is performed by the Arellano–Bond test for autocorrelation (AR (2)). In addition, all the instruments are lower than the number of countries.

The main empirical result is presented in Table 2. The first-period lags of GDP per capita and HDI are positive and statistically significant in all the columns, from 1 – 6. This means that the past period's economic welfare predicts the current economic welfare. In line with the correlation matrix and theoretical prediction, government size is negatively associated with GDP per capita and HDI in column 1, 4 - 6 and statistically significant except for column 1. Also, general government final consumption expenditure which is an alternative proxy for government size appears statistically significant and negatively correlated with GDP per capita in column 2. **The findings confirm the assertion that most countries especially in Africa may be operating on the slippery side of the Armeiy curve which implies that excessive government size in Africa does not promote economic growth and living standards. This is particularly true because large governments tend to allocate significant resources to unproductive ventures, increase the potential for rent-seeking and hamper innovation and growth. Large government is also associated with the distortion of free markets, inefficiencies and crowding-out effects. Government decision-making is substituted for personal choice when government spends relative to spending by individuals, households and businesses. This may necessitate higher marginal taxes which tend to burden the populace and reduces economic freedom and welfare (Afonso & Jalles, 2016). The negative correlation between government size and economic growth is confirmed in the studies by Alimi (2020), and DiPeitro and Anoruo (2012). The paper by Sidek and Asutay (2021) also confirms this result by arguing that government consumption expenditure lowers growth in the long run.**

On the bright side, institutional quality promotes economic welfare as the direct effect of institution is statistically significant and positively associated with GDP per capita. This is evident in column 3, with a positive coefficient. Institutions which include control of corruption thus mitigates rent-seeking activities and promotes growth. **Acemoglu and Robinson (2010) argue that economic institutions matter for economic growth because they shape the incentives of key economic actors in society and also affect investments in both human and physical capital. Similarly, Acquah et al. (2023) aver that institutions are essential in promoting growth in low-income and middle-income countries, where markets are more dysfunctional and bureaucracies typically less efficient.**

More importantly, when the size of government is interacted with institution in column 4, the outcome shows a positive synergy and complementary effect. Thus, the result shows a positive and significant conditional or interactive effect of 0.017, while the unconditional impact of government size is -0.009. In line with contemporary interactive regressions (see Kriese et al., 2021; Asongu et al., 2020), the net effect⁴ is computed as $0.008 = -0.009 + 0.017$ (1). The core interpretation is that African economies where there exist stronger institutions, large government size positively stimulates economic growth by 0.008 percentage points. However, where institutions remain weak, large government size causes economic growth to dwindle by 0.009 percentage points. To provide more policy implications, the

⁴ To show the impact of strong or weak institutions, a dummy is created based on the average of institutions (-0.633) in Africa. This is imperative as institutions are averagely weak in Africa. Values above the mean denotes relatively strong institutions (1) while values below denote relatively weak institutions (0). Hence, the net effect is evaluated at 1 or 0 otherwise rather than the mean.

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3 threshold of government size that should not be exceeded is computed. Following recent threshold
4 literature (Asongu et al., 2020), the computation yields $5.88 = 0.100/0.017$. Thus, a government size
5 of 5.88 is the threshold that should not be exceeded for institutions to influence economic growth
6 positively.
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9 The result is robust when HDI is used as an alternative measure of economic welfare, as indicated in
10 column 6. The conditional effect of government size is -0.002 , while the unconditional effect of 0.003
11 indicates a positive synergy between government size and institution in enhancing human
12 development in Africa. The net effect yields $0.001 = -0.002 + 0.003$ (1). The interpretation is that an
13 increase in government size yields good economic fruit when institutions are relatively strong than
14 when they are weak. However, this positive synergetic effect is not apparent when a government size⁵
15 of 6 is exceeded. It may be worth reiterating that, the current average size of government in Africa is
16 6.6 which far exceeds this proposed threshold. *Quite related to this finding, Olaoye et al. (2023) in a*
17 *survey of the Economic Community of West African States argue that the effect of government*
18 *spending on economic growth depends on the level of institutional quality and it is only positive and*
19 *significant beyond a particular threshold of institutional development.*
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23 The result is also similar when economic freedom is introduced as an alternative measure of
24 institutional quality, as depicted in column 5. The unconditional effect of government size is -0.081
25 while the conditional/interactive effects is 0.013 . This implies that economic freedom complements
26 government size to promote a positive synergy on economic output. The net effect⁶ of -0.003 is
27 interpreted as economic freedom reducing the deficit impacts of excessive government size (-0.081)
28 on economic output. Similarly, a government size⁷ of 5.9 is the threshold that should not be exceeded
29 for institutions to promote economic outcomes positively. In sum, it can therefore be concluded that
30 the negative consequences of government size on economic welfare is attenuated the stronger the
31 institutional quality. *These results are very much in alignment with the findings of Afonso and Jalles*
32 *(2016) for a large group of countries that includes advanced economies, emerging markets and low-*
33 *income countries. The paper argues that the detrimental effect of government size on output is*
34 *stronger the lower institutional quality. It also found a negative effect of government size on output,*
35 *while institutional quality has a positive impact. The findings also conform to those of Nirola and*
36 *Sahu (2019). Economic freedom gives people more access to their resources and provides freedom*
37 *for personal choice rather than political choice. People are more entitled to decide what their money*
38 *is spent on. This boost economic welfare than when government decides more what these funds are*
39 *used for. In alignment to the results but quite afar back, Guseh (1997) presented a model which shows*
40 *that increases in government size has adverse effects on economic growth and this impact is three*
41 *times higher in systems with no democratic practice than ones where democracy is a norm.*
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47 Gross fixed capital formation, an indicator of the presence of physical capital is statistically significant
48 and positively associated with both GDP per capita and HDI in all columns except for column 5
49 where it is not significant. Similarly, trade openness an indicator of trade liberalization promotes GDP
50 per capita as it turned out significant and positive in columns 1 – 5. However, population growth and
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54 ⁵ The threshold is computed as $6.00 = 0.018/0.003$.

55 ⁶ The net effects is $-0.003 = -0.081 + 0.013(6)$ where 6 is the mean of economic freedom.

56 ⁷ The threshold is computed as $5.92 = 0.077/0.013$.
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3 inflationary pressures are impediments to economic growth and welfare. This is due to the negative
4 coefficients and they are also significant. The study by Asimakopulos and Karavias (2016) also found
5 a positive correlation between trade openness and economic growth and the same for capital
6 formation and growth. Inflation and population were however not significant in their study.
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8 **5. Conclusion, Limitations and Policy Implication**

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10 Most African economies are plagued with low economic growth rates, while human welfare is poor
11 despite operating with large government sizes. The argument has been made that any theoretical
12 threshold or optimality of government size has been exceeded by most of these countries. Hence,
13 following this line of thought, this paper hypothesized that large government size has a detrimental
14 effect on economic growth and welfare in Africa. Nonetheless, following the argument by institutional
15 economists that institution is the fundamental missing factor among the empirical growth drivers and
16 considered relevant for economic growth, the paper examines the interplay of government size,
17 institutional quality and economic welfare. The study's primary focus is to investigate the moderating
18 role of institutional quality in the government size and economic welfare mix, where thresholds are
19 also determined.
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23 The findings show that large government size is detrimental to economic welfare, while improvement
24 in institutional quality promotes economic welfare. When government size is interacted with
25 institutional quality, the result shows a positive effect on economic welfare which signifies synergy
26 and complementarity. In other words, strong institutional quality counteracts the adverse effects of
27 large government size on economic welfare. A further estimate shows that a government size of 6 is
28 the threshold that should not be exceeded for institutional quality to influence economic welfare
29 positively. These results are robust under different scenarios when the outcome variable and
30 institutional quality are altered. The principal value addition of this study to the broad literature is that,
31 it underscores the significance of institutional quality in complementing government size to yield
32 positive economic outcomes in Africa. The paper also determines relevant thresholds of government
33 size that make the outcome as mentioned earlier efficient. This is achieved using composite indices of
34 government size, institutional quality and economic welfare, unlike other studies that used unilateral
35 measures.
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39 This study is not without limitations. First, reliable data on institutions from World governance
40 indicators is only available from 1996 and was collected every other year until 2002, when it was
41 annualized. This restricted the choice of the sample period. Also, there are limitations using GDP per
42 capita and HDI as measures of economic welfare because they ignore the distribution of income and
43 wealth. Perhaps a better measure will be inclusive economic growth or income inequality which can
44 be considered in future studies.
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47 The policy implication of these findings is that to foster a better future and attain some key Sustainable
48 Development Goals such as the promotion of good health and well-being (Goal 3), quality education,
49 (Goal 4) decent work and economic growth (Goal 8), African governments need to improve
50 institutions (Goal 16) besides the need to reduce the size of their governments and operate at optimal
51 levels.
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Tables

Table 1: Summary Statistics

Variables	Obs	Mean	Std. Dev.	Min	Max	Skewness	Kurtosis
GDP per capita	936	2422.061	2951.246	255.1	16110.985	2.299	8.214
HDI	975	.508	.117	.262	.801	.536	2.732
Size of government	872	6.566	1.224	1.87	9.58	-.548	3.479
Government consumption	840	15.407	7.658	.952	73.576	2.694	17.199
Institution	987	-.633	.583	-1.85	.88	.426	2.777
Economic freedom	766	6.001	.814	3.26	8.26	.0202	3.007
Population growth	988	2.378	1.016	-5.28	5.785	-1.101	9.026
Fixed capital formation	859	21.691	9.112	1.097	81.021	1.457	8.153
Trade openness	888	70.674	38.761	7.629	347.997	2.209	11.573
Inflation	905	7.689	18.583	-16.86	359.937	13.982	243.048

Table 2: Effects of Government size and Institutional quality on Economic outcomes

Variables	1	2	3	4	5	6
Dependent variable: GDP per capita/HDI						
GDP per capita (-1)	0.918*** (0.029)	0.971*** (0.012)	0.947*** (0.023)	0.911*** (0.027)	0.936*** (0.030)	---
HDI (-1)	---	---	---	---	---	0.909*** (0.023)
Gov't size	-0.003 (0.004)	---	---	-0.009* (0.005)	-0.081*** (0.020)	-0.002* (0.001)
Gov't consumption	---	-0.0009* (0.000)	---	---	---	---
Institution	---	---	0.009** (0.004)	-0.100** (0.040)	---	-0.018** (0.007)
Economic freedom	---	---	---	---	-0.077*** (0.025)	---
Gov't size * Institution	---	---	---	0.017*** (0.006)	---	0.003*** (0.001)
Gov't size * Economic freedom	---	---	---	---	0.013*** (0.003)	---
Population growth	-0.035** (0.014)	-0.014** (0.006)	-0.014** (0.005)	-0.036*** (0.013)	0.012 (0.009)	-0.004** (0.002)
Capital formation	0.001* (0.001)	0.001* (0.001)	0.001** (0.001)	0.001* (0.001)	0.000 (0.000)	0.000*** (0.000)
Trade openness	0.001** (0.000)	0.000** (0.000)	0.001** (0.000)	0.001** (0.000)	0.000** (0.000)	0.000 (0.000)
Inflation	-0.000* (0.000)	-0.000*** (0.000)	-0.000*** (0.000)	-0.000 (0.000)	-0.000** (0.000)	-0.000* (0.000)
Constant	0.642*** (0.221)	0.225*** (0.083)	0.378** (0.162)	0.729*** (0.210)	0.913*** (0.192)	0.063*** (0.017)
Thresholds	---	---	---	5.88	5.92	6.00
Net effects	---	---	---	0.008	-0.003	0.001
Observations	721	709	766	721	657	713
Countries	43	47	47	43	43	43
Instruments	10	10	8	12	10	13
AR (1)	0.001	0.003	0.193	0.001	0.005	0.006
AR (2)	0.081	0.072	0.486	0.068	0.224	0.903
Sargan OIR	0.892	0.015	0.268	0.643	0.194	0.403
Hansen OIR	0.985	0.052	0.282	0.680	0.175	0.061

Note: Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1. The observations differ due to the unbalanced nature of the panel data. Figures in the table are derived from the System GMM estimator

Appendix 1

Correlation matrix

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(1) GDP per capita	1.000							
(2) Size of government	-0.086	1.000						
(3) Institutions	0.159	-0.025	1.000					
(4) Economic freedom	0.317	0.430	0.503	1.000				
(5) Population growth	-0.235	0.122	-0.157	-0.181	1.000			
(6) Capital formation	0.338	-0.089	0.019	0.130	0.054	1.000		
(7) Trade openness	0.514	-0.147	0.113	0.191	-0.178	0.396	1.000	
(8) Inflation	-0.077	0.027	0.030	-0.224	0.031	-0.024	-0.055	1.000

Appendix 2

List of countries

1. Algeria	2. Angola	3. Benin	4. Botswana	5. Burkina Faso	6. Burundi
7. Cabo Verde	8. Cameroon	9. CAR	10. Chad	11. Comoros	12. DRC
13. Congo Republic	14. Côte D'Ivoire	15. Djibouti	16. Egypt	17. Equatorial Guinea	
18. Eritrea	19. Eswatini	20. Ethiopia	21. Gabon	22. Gambia	23. Ghana
24. Guinea					
25. Guinea Bissau	26. Kenya	27. Lesotho	28. Liberia	29. Libya	30. Madagascar
31. Malawi	32. Mali	33. Mauritania	34. Mauritius	35. Morocco	36. Mozambique
37. Namibia	38. Niger	39. Nigeria	40. Rwanda	41. Sao Tome and Principe	
42. Senegal	43. Seychelle	44. Sierra Leone	45. South Africa	46. Sudan	47. Tanzania
48. Togo	49. Tunisia	50. Uganda	51. Zambia	52. Zimbabwe	