Fiscal space, governance quality and inclusive growth: evidence from Africa

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Abstract

Purpose – This study aims to examine the impact of fiscal space and governance quality on inclusive growth in African countries.

Design/methodology/approach – In total, 28 African countries were analyzed from 2000 to 2020 using the generalized method of moment regression method. An inclusive growth index was developed using the principal component analysis (PCA) method. The PCA-derived index incorporates factors such as poverty, income inequality, economic participation and per capita income.

Findings – The main findings suggest that fiscal space availability (*de facto* fiscal space and fiscal balance) promotes inclusive growth. The study also showed that lagged inclusive growth, digitalization and governance indicators positively influence inclusive growth. The study concludes that fiscal space availability fosters inclusive growth, but this effect is mediated by governance quality in Africa.

Originality/value – Several studies examined the role of fiscal policy on inclusive growth. However, it is crucial to assess the fiscal space, that is, the financial capacity of the government to implement its fiscal policy without harming its financial stability. This paper, therefore, contributes to the existing literature by using *de facto* fiscal space indicator to comprehend fiscal dynamics contributing to inclusive growth. In addition, the paper uniquely constructs an inclusive growth index by including poverty severity, which considers both the incidence and depth of poverty and inequality in society.

Keywords *De facto* fiscal space, Governance quality, Inclusive growth, Poverty, Income inequality, Economic participation, Economic growth

Paper type Research paper

1. Introduction

The paper explores the impact of fiscal space and governance quality on inclusive growth in selected African countries. In recent years, the emerging inclusive growth paradigm has garnered significant attention from policymakers, researchers and government entities, particularly in developing economies. Inclusive growth is a form of economic growth that benefits all segments of society, especially vulnerable and marginalized groups

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(Ramos *et al.*, 2013; Sabir and Qamar, 2019). It involves expanding opportunities and access to resources, reducing income inequality and improving the population's well-being (Ngepah, 2017).

As the literature suggests, inclusive growth is beyond rapid economic growth (OECD, 2014; Ngepah, 2017; Alekhina and Ganelli, 2021). While rapid economic growth is undoubtedly essential for poverty reduction, it must also be equitable and broad-based across various sectors (Anand *et al.*, 2013). Unfortunately, despite rapid economic growth, income distribution disparities have increased in most developing countries. Berg and Ostry (2011) argue that escalating inequality negatively affects social cohesion and long-term economic growth, threatening political and economic stability. Considering these negative implications, the inclusive growth paradigm was introduced in the early 2000s. Its agenda was to reduce poverty, promote sustainable economic growth and increase inclusivity (Berg and Ostry, 2011).

The empirical examination of the relationship between fiscal space, governance quality and inclusive growth in the literature is scant. Fiscal space is defined as the budgetary room that the government has to finance a targeted purpose without negatively affecting the sustainability of its financial position (Aslan, 2022). It focuses on the capacity of a government to finance public expenditures, including social programs, infrastructure development and public services, without compromising its fiscal sustainability (Ekouala Makala, 2022; Heller, 2005). Governance quality, on the other hand, pertains to the effectiveness, transparency, accountability and efficiency of a country's institutions and decision-making processes. Good governance suggests that the government operates well, upholds the rule of law, fights corruption and ensures public resources are used efficiently to benefit its citizens (Kraay *et al.*, 2010).

Examining the relationship between governance quality, fiscal space and inclusive growth is critical, especially in developing economies that are finding it hard to achieve these three. First, having enough fiscal space is crucial for promoting inclusive growth. When the government has the financial capacity to invest in education, health care, infrastructure and social safety nets, it can create an enabling environment that allows all citizens to participate in and benefit from economic activities. Adequate public spending on social programs can help reduce poverty, enhance human capital and boost overall productivity, contributing to more inclusive growth. Furthermore, sound governance is a critical factor for achieving inclusive growth. When governance quality is high, public policies are more likely to be designed and implemented to benefit the entire population rather than a select few. Additionally, good governance fosters an environment that encourages investment, entrepreneurship and job creation essential for inclusive growth. Sabir and Qamar (2019) supported the need for good institutions to attain inclusive growth in Asia.

The paper explores the impact of governance quality and fiscal space on inclusive growth in selected African countries. The Keynesians view government as the main channel for bolstering production, aggregate demand, economic growth and employment through fiscal policy. However, it is crucial to assess the fiscal space, that is, the financial capacity of the government to implement its fiscal policy without harming its financial stability. This paper, therefore, examined *de facto* fiscal space indicator to understand the fiscal dynamics contributing to inclusive growth. The *de facto* fiscal space measures the number of tax years required to pay off the outstanding public debt or to finance the fiscal deficit. This is an essential step in the literature as the paper focuses on fiscal space, which is crucial in influencing the government's ability to invest in public goods and services, redistribute income and implement growth-promoting and inequality-reducing policies that inclusive

growth aims to achieve. In addition, the paper uniquely constructs an inclusive growth index by including poverty severity, which considers both the incidence and depth of poverty and inequality among the poor. This approach contributes to the existing literature and offers valuable insights for policymakers to develop effective strategies that promote inclusive growth in Africa.

2. Literature review

2.1 Theoretical literature

The term "inclusive" in the 2000s referred to pro-poor growth or participatory growth, which leaves no one behind. There are two perspectives within pro-poor growth theories: the absolute view and the relative view. The relative pro-poor view focuses on the average income of the poor growing faster than the general population's average income (Kakwani and Pernia, 2000). This theory stresses the importance of distributing growth gains and reducing income inequality. It advocates for policies that increase the absolute income of the poor and ensure they benefit more from growth than the nonpoor. This can be achieved through the government creating fiscal space, which can be facilitated through various means, including foreign aid, economic growth and reprioritizing government expenditure (Aslan, 2022). This allows for programs like targeted social spending, ensuring a wider distribution of growth benefits.

The absolute pro-poor growth theory asserts that economic growth is pro-poor if it raises the income or consumption of the poor, focusing on the absolute gains made by the poor regardless of income distribution (Ravallion and Chen, 2003). This theory expects income improvement for the poor as the economy grows, disregarding changes in inequality. Some theorists argue that the relative pro-poor growth theory, which emphasizes higher income growth for the poor than the overall population, may lead to suboptimal outcomes for both the poor and nonpoor. For instance, it would favor a scenario where the average income for the poor increases by 6% and the average population income grows by 5% over a situation where the average income for the poor improves by 7% but the average population income increases by 9%.

Inclusive growth has risen as an alternative to pro-poor growth views, primarily focusing on individuals or groups below the poverty line. While pro-poor growth emphasizes overall economic growth, inclusive growth focuses on equal opportunities and assets for wealth creation for all members of society, including improved participation of the poor in the economic growth process. This shift represents a move from focusing on the inequality of outcomes to addressing the inequality of opportunities (Klasen, 2010; Stuart, 2011; OECD, 2016).

2.1.1 Inclusive growth approaches. The literature on inclusive growth concepts and measurement approaches has expanded, with contributions from international institutions such as the World Bank (WB), Organization for Economic Cooperation and Development (OECD), UNDP, African Development Bank (AfDB) and Asian Development Bank (ADB). The WB's approach requires growth to be broad-based across all sectors, rapidly paced and inclusive of a significant part of the labor force. It also emphasizes equal opportunities, social protection and equity (Ianchovichina and Lundström, 2009).

On a different note, the ADB adopts a comprehensive approach to inclusive growth, considering factors like race, ethnicity, gender and environmental sustainability (Ngepah, 2017). The OECD bases its view on three main pillars: distributional considerations, multidimensionality and policy impact, focusing on multidimensional well-being distribution and moving beyond GDP-based measures (OECD, 2014). The AfDB argues that inclusive growth should be sustainable and equitable, underpinned by four pillars: social,

economic, political and spatial inclusions. The AfDB also includes governance, education, health, gender, infrastructure and economic diversification in its inclusive growth index (Stuart, 2011; AfDB, 2012).

In addition to the above approaches, the UNDP view emphasizes benefits sharing and participation, mainly through employment. The approach assumes that inclusive growth is present if it occurs in sectors that use the poor, happens in regions or areas where the poor live and uses unskilled labor, which, to a larger extent, comprises the poor in developing economies. A successful growth strategy must be inclusive, implying that it must focus on equality of opportunities, equity, employment transitions and protection in the market. Despite varying perspectives on the definition and measurement of inclusive growth, what is key to all these views is their potential to highly depend on the government's ability to mobilize financial resources and finance the intended development initiatives through efficient and effective institutions.

2.2 Empirical literature

Literature on the influence of fiscal space on inclusive growth remained scant, especially in the developing economies context. Li *et al.* (2023) examined the correlation between financial development's interaction with governance indicators and inclusive growth covering 48 African economies from 2000 to 2019. Using panel quantile regression and Dumitrescu and Hurlin causality tests, their results indicated that financial development and corruption control play a pivotal role in inclusive growth exclusively within middle-income economies. Furthermore, the intertwining of financial development with political stability and the absence of violence/terrorism, along with the overall interaction of financial development and governance, bear significance to inclusive growth across Africa and specifically within middle-income economies. Conversely, their study document that the interaction between financial development and voice and accountability, as well as the rule of law, are pertinent to inclusive growth across all economic classifications.

In the same vein, Alekhina and Ganelli (2021) analyzed the effect of fiscal, monetary and macrostructural reforms on inclusive growth in ASEAN. The study used a standard empirical panel cross-country regression model. Their sample comprised 11 Asian countries using time series data from 1992 to 2017. They measured inclusive growth by integrating average income per capita and the equity index growth as propounded by Anand *et al.* (2013). Anand *et al.* (2013) indicated that growth is inclusive if it increases average income, income equality or a combination of the two. The paper measured economic growth using the following pillars:

- equity in accessing social opportunities;
- expansion of economic participation; and
- sustainability of economic activities.

A macro social mobility function formed their analysis's basis for measuring inclusive growth (Anand *et al.*, 2013). Several explanatory variables were analyzed, including female labor force participation, fiscal redistribution, net FDI, productivity growth, financial deepening and digitalization. Their study findings indicated that inclusive growth could be accelerated by implementing the ASEAN's labor market and fiscal redistribution reforms. They also suggested that the COVID-19 pandemic propelled the digital divide, causing those with digital infrastructure to continue learning and working remotely, worsening the income inequality gap.

Again, in Asia, Sabir and Qamar (2019) analyzed the effect of fiscal policy on growth, employment and inequality. They indicated that fiscal policy is a variable of interest, especially in developing economies' context when examining the drivers of inclusive growth. Their study used a panel of 11 Asian countries from 1996 to 2017. GDP per capita, employment-to-population and Gini coefficient were used in constructing the inclusive growth index. Tax revenue and government expenditure as a percentage of GDP were used to capture the role of fiscal policy. Control variables incorporated in the generalized method of moment (GMM) model were human capital, trade openness and gross fixed capital formation. Their findings suggested that institutions and fiscal policy positively influence inclusive growth. Furthermore, their findings indicated that fiscal policy efficiently works when there are good-quality institutions. Although the study encompassed the role of governance quality and fiscal policy, the present study believes that fiscal policy derives its success from the availability of a budgetary room to implement it. This prompted the present study to directly link and examine the effect of fiscal space, which determines the effectiveness of fiscal policies, on inclusive growth.

Using a structural vector autoregressive model, Metu *et al.* (2019) investigated the impact of fiscal policy on inclusive growth in the Nigerian economy. The research period spanned from 1980 to 2018. Fiscal policy variables used in their research include government total tax revenue and recurrent and capital expenditures. Regarding inclusive growth variables, unemployment rate, poverty rate and income per capita growth were considered in their study. Their study concluded that inclusive growth can be achieved through government capital expenditure. However, discerning the influence of fiscal policy variables on the unemployment rate, poverty and income per capita separately differs from analyzing fiscal policy's effect on inclusive growth. Inclusive growth, by definition, is a combination of several aspects, which are poverty, economic participation, income per capita and equality. An index or averages comprising these variables had to be used in their study to gain insight into the behavior of inclusive growth variables. In this regard, their study examined how fiscal policy influences poverty, unemployment and income per capita, not inclusive growth. This means emphasizing poverty alone, leaving out the other two variables mentioned, is not enough to convey the behavior of the inclusive growth variable in Africa.

A study by Anand *et al.* (2013) integrated growth and equity using a utilitarian social welfare function. In their model, inclusive growth is defined as income distribution and growth. Anand *et al.* (2013) applied a standard panel growth regression model using a panel of 143 countries and time series data from 1970 to 2010. Their paper analyzed several variables: GDP per capita, education, trade openness, credit-to-GDP, government consumption, investment, inflation, GDP volatility, infrastructural quality, service export sophistication and goods export sophistication. The authors showed that human capital, macroeconomic stability and structural changes are key to achieving inclusive growth. FDI, globalization and trade openness fostered inclusive growth, while technological changes and financial deepening had no discernible effect on inclusive growth.

Adeosun *et al.* (2023) examine the relationship between tax resource mobilization (TRM) institutions and inclusive growth in Africa, taking into account spatial effects. The study uses panel data from 48 African countries for the period 1995–2015. The study finds that spatial dependence and interaction matter when modeling the TRM-institution-inclusive growth relationship. Their results also show that all individual proxies of African institutions dampen inclusive growth. This suggests that weak governance structures constitute huge constraints on the participatory tendencies of economic growth and reflect the institutional exclusiveness inherent in Africa. Their study also finds that existing

institutions in Africa weaken the tax administration structures in propelling TRM to actualize inclusive growth.

The empirical discussion above shows that several variables, including fiscal policy and governance quality, promote inclusive growth in many countries. A key but highly neglected variable in most of these studies is examining fiscal space, which this study deemed an enabling environment for the success of several intervention tools. The present study, therefore, intends to close the existing literature gap by exploring how *de facto* fiscal space indicator interferes with the inclusive growth variable. Furthermore, interaction effects between *de facto* fiscal space and governance quality indicators were explored to examine their combined effect on inclusive growth. The motivation behind incorporating these variables is the increasing fiscal risk and weak governance characterizing most African countries. Limited fiscal space and weak governance will likely result in rising poverty rates and income inequality, reduced economic participation and regression in general economic performance. Guided by this view, the paper intends to close the existing literature gap by empirically examining the role of fiscal space and governance quality on inclusive growth in African countries.

3. Methodology

3.1 Data and sources

The empirical study used annual data from 2000 to 2020 to analyze the determinants of inclusive growth in selected African countries. The sample consists of 28 countries, namely, Angola, Botswana, Burkina Faso, Burundi, Cabo Verde, Cameroon, Central African Republic, Congo (Republic), Cote d'Ivoire, Ethiopia, Gabon, Ghana, Guinea-Bissau, Kenya, Lesotho, Madagascar, Mali, Mauritius, Mozambique, Namibia, Rwanda, Senegal, South Africa, Sudan, Tanzania, Togo, Uganda and Zambia. The data used in this study was obtained from various sources, indicated in Table 1 below [1]. Supporting literature for each variable is also included in the table to justify their inclusion for regression analysis.

3.2 Model specification

The study explored the determinants of inclusive growth in Africa using the GMMs regression approach. The dynamic regression model is expressed as follows:

$$y_{i,t} = \beta_0 + \alpha_1 y_{i,t-1} + \vartheta X_{i,t} + \theta I_{i,t} + \pi_i + \mu_{i,t} + \varepsilon_{i,t} \tag{1}$$

where country-specific effect and transient shocks of error term are denoted by π_i and $\mu_{i,t}$, respectively. $\varepsilon_{i,t} = \pi_I + \mu_{i,t}$ is the fixed effect disintegrating the error term given the following condition:

$$E(\pi_i) = 0,\ \mathrm{E}(\mu_{i,t}) = 0,\ \mathrm{E}(\pi_i, \mu_{i,t}) = 0 \text{ and } E(\pi_i, \varepsilon_{i,t}) = 0 \tag{2}$$

Equation (1) is a level dynamic regression equation that can be further altered to be either differenced or system GMM. In the case of a first difference GMM, equations that are in the form of first difference are used; thus, the corresponding first difference version of equation (1) is as follows:

$$\Delta y_{i,t} = \alpha_1 \Delta y_{i,t-1} + \vartheta \Delta X_{i,t} + \theta \Delta I_{i,t} + \Delta \mu_{i,t} \tag{3}$$

By first differencing equation (1), the country-specific effects (fixed effects or unobserved heterogeneity) are removed. The process of first differencing equation (1) reduces the

Table 1. Study variables

Variable	Measurement	Expected relationship	Supporting literature	Source
Inclusive growth index (IGI)	An index estimated using headcount, Gini index, poverty severity, economic participation and GDP per capita variables			Authors' construct
Economic growth (GDPC)	GDP per capita growth (annual percentage)		Marrero and Servén (2022), Mitra and Das (2018)	World Bank (world development indicators)
Economic participation (ECP)	Total labor force participation rate for individuals aged 15–64 (percentage of the total population)		Sarpong and Nketiah-Amponsah (2022)	
Poverty severity (POVS)	Poverty gap squared (2017 PPP)		Kanbur and Mukherjee (2007)	World Bank (poverty and inequality platform)
Headcount (HPR)	Poverty headcount ratio (2017 PPP) (% of population)		Mitra and Das (2018), Sarpong and Nketiah-Amponsah (2022)	
Gini index (Gini)	Gini index (World Bank estimate)		Chia *et al.* (2022), Gründler and Scheuermeyer (2018), Stawska and Jabłońska (2021)	
De facto fiscal space (DFSP)	Measurement [4]	−	Aizenman and Jinjarak (2010), Aslan (2022)	Authors' construct
Fiscal balance (FSB)	Fiscal balance (percentage of GDP)	+	Karadima and Louri (2022), Putri *et al.* (2022)	
Control of corruption (CC); political stability and absence of violence/ terrorism (PS); voice and accountability (VC); rule of law (RL); regulatory quality (RQ); government effectiveness (GE)	Estimates provided	+	Oyinlola and Adedeji (2022), Sarpong and Nketiah-Amponsah (2022)	Worldwide governance indicators
Governance quality average (GQ)	Average scores for the six World Bank Governance Indicators	+	Sarpong and Nketiah-Amponsah (2022)	Author's calculation using worldwide governance indicators data set

(*continued*)

Table 1.

Variable	Measurement	Expected relationship	Supporting literature	Source
Foreign direct investment (FDI)	Foreign direct investment, net inflows (percentage of GDP)	+	Oyinlola and Adedeji (2022), Stawska and Jabłońska (2021)	World Bank (world development indicators)
Inflation (CPI)	Annual year-on-year percentage change of CPI	−	Aoyagi and Ganelli (2015)	
Digitalization (DGN)	Mobile cellular subscriptions (per 100 people) in log	+	Alekhina and Ganelli (2021), Anand *et al.* (2013)	

Source: Authors

omitted variable bias by controlling for unobserved factors that may be potentially correlated with the independent variables. The presence of the lagged dependent variable as one of the regressors presents an endogeneity problem in the model. However, in different GMMs, the endogeneity problem can be resolved by using instrument variables ($W_{i,t}$), which also include the value of the lagged dependent variable in the model such that the moment condition becomes:

$$E\left[W_{i,t-s}(\varepsilon_{i,t})\right] = 0 \text{ and } s > 2,\ t = 3, \ldots\ldots\ldots\ldots, T, \tag{4}$$

where:

$$W_{i,t-s} = E[y_{i,t-s}(\varepsilon_{i,t} + \varepsilon_{i,t-1})],$$

$$E\left[X_{i,t-s}(\varepsilon_{i,t} + \varepsilon_{i,t-1})\right], \mathrm{E}\left[I_{i,t-s}(\varepsilon_{i,t} + \varepsilon_{i,t-1})\right] \tag{5}$$

However, there are instances where the value of the lagged dependent variable becomes a weaker instrument in the model, which results in biased estimates (Blundell and Bond, 1998). A system GMM is applied in such instances as it uses the first difference and level equations (Sabir and Qamar, 2019). The system GMM increases the number of variables and instruments by instrumenting them by their own first differences, resulting in efficient estimates. Based on the literature, this results in system GMM having higher efficiency and lower bias than the first difference GMM estimator (Blundell and Bond, 1998; Soto, 2009). In comparison to other alternative methods, such as fixed effects or random effects, the system GMM has the advantage of yielding consistent and efficient estimates even when the error term is heteroskedastic or autocorrelated. For this reason, the present study estimated system GMM where the moment condition is:

$$E\left[W_{i,t-s}(\pi_i, \varepsilon_{i,t})\right] = 0 \text{ for } s = 1 \tag{6}$$

The changes in the instrument are expected to be uncorrelated with fixed effect given the condition that:

$$E\left[\Delta W_{i,t-s}(\pi_i)\right] = 0 \tag{7}$$

Thus,

$$W_{i,t-s} = E[(y_{i,t-s} - y_{i,t-1}(\pi_i + \varepsilon_{i,t-1}))], \mathrm{E}\left[\left(X_{i,t-s} - X_{i,t-1}(\pi_i + \varepsilon_{i,t-1})\right)\right],$$
$$\mathrm{E}\left[\left(I_{i,t-s} - I_{i,t-1}(\pi_i + \varepsilon_{i,t-1})\right)\right] \tag{8}$$

The study applied the Sargan test to test instruments' validity and the Arellano–Bond test to detect autocorrelation.

4. Empirical findings

4.1 Descriptive statistics

Table 2 shows that Central, Western and Eastern Africa have, on average, lower governance quality scores, while Southern Africa has, on average, the highest score of +0.0263. This is because countries in this region, like the Democratic Republic of Congo and the Central African Republic, often struggle with political instability, corruption and weak rule of law. For instance, the Fragile States Index (FSI) by the Fund for Peace ranks several Central African countries

VARIABLE	Obs.	Mean	Std. dev.	Min.	Max.
All sampled SSA countries					
POVS	588	0.0810	0.0733	−0.0245	0.3615
GINI	588	0.4512	0.0817	0.2981	0.6512
GDPC	588	0.0155	0.0417	−0.3678	0.1384
ECP	588	0.6670	0.1085	0.4549	0.8835
DFSP	588	4.6819	4.5012	0.2296	39.2120
FSB	588	−0.0232	0.0481	−0.1784	0.2821
GQ	588	−0.5119	0.6166	−1.7065	0.8757
Central Africa					
POVS	126	0.1066	0.0820	0.0125	0.2841
GINI	126	0.4707	0.0582	0.3329	0.5878
GDPC	126	0.0080	0.0547	−0.3678	0.1119
ECP	126	0.7214	0.0712	0.5284	0.8300
DFSP	126	6.4052	5.7349	1.0260	30.5079
FSB	126	−0.0245	0.0501	−0.1378	0.1691
GQ	126	−1.0425	0.3759	−1.7065	0.0074
Eastern Africa					
POVS	147	0.0779	0.0881	−0.0001	0.3615
GINI	147	0.3891	0.0433	0.2981	0.4744
GDPC	147	0.0218	0.0379	−0.1496	0.1036
ECP	147	0.7203	0.1310	0.4815	0.8835
DFSP	147	6.0276	5.7010	1.3668	39.2120
FSB	147	−0.0307	0.0221	−0.1095	0.0077
GQ	147	−0.5837	0.6543	−1.6660	0.8757
Eastern Africa					
POVS	126	0.0569	0.0474	−0.0245	0.2084
GINI	126	0.5602	0.0645	0.4206	0.6512
GDPC	126	0.0177	0.0383	−0.1589	0.1088
ECP	126	0.6390	0.0843	0.5413	0.8319
DFSP	126	2.2825	2.4358	0.2296	15.7172
FSB	126	−0.0101	0.0656	−0.1781	0.2821
GQ	126	0.0263	0.4406	−0.8749	0.8652
Western Africa					
POVS	189	0.0954	0.0658	0.0026	0.3080
GINI	189	0.4138	0.0417	0.3079	0.5925
GDPC	189	0.0140	0.0357	−0.1560	0.1384
ECP	189	0.6081	0.0845	0.4549	0.7772
DFSP	189	4.0858	2.1417	1.0709	10.7129
FSB	189	−0.0253	0.0465	−0.1784	0.2778
GQ	189	−0.4612	0.4920	−1.4406	0.5875

Table 2.
Descriptive statistics

Note: See methodology section for the definitions of variables
Source: Authors

among the most fragile states in the world due to issues like uneven development, economic decline and poor public services. For example, in the 2021 FSI, the Democratic Republic of Congo, the Central African Republic and Chad are ranked 6th, 7th and 8th, respectively (Fund for Peace, 2021).

In addition, Table 2 further indicates that Southern Africa has better fiscal space relative to other African countries. The region records the lowest *de facto* fiscal space value of

2.2825, whereas Central Africa exhibits the highest value of 6.4052. The results indicate that, on average, Southern African countries require 2.3 tax years to clear their public debt or finance their fiscal deficit. On the other hand, Central African countries require longer tax years of 6.4 to clear public debt. This means Central African countries have limited fiscal space relative to their peers in the Southern African region. This is because Southern African countries, particularly South Africa and Botswana, have relatively well-developed financial sectors and a history of fiscal discipline.

In the same vein, the study observed that Central Africa has a higher poverty rate than other African regions. The region has the highest poverty severity index of 0.1066, indicating that more people live in poverty. The prevalence of poverty is also greater relative to other regions. The high poverty rates result from heavy dependence on unprocessed natural resources, particularly oil. This dependence makes the region vulnerable to global commodity price fluctuations, hence the need for economic diversification to reduce poverty and improve living standards in the region. Namazi and Mohammadi (2018) assert that countries heavily dependent on natural resource exports, especially oil and lack innovation risk falling into a resource curse zone.

Regarding income inequality, Table 2 shows that Southern Africa has a higher Gini index of 0.5602 than other regions in Africa, indicating a higher level of income inequality. This means that income is distributed unevenly, with a smaller proportion of the population holding a larger proportion of this region's total income or wealth. The factors contributing to the higher income inequality in Southern Africa compared to other regions include the apartheid system in South Africa, which resulted in social and economic disparities (Leibbrandt *et al.*, 2010). The other factor leading to higher income inequality in Southern Africa is labor market failures evidenced by high wage inequality, with a small proportion of high-wage earners and a large number of low-wage earners (Bhorat *et al.*, 2016).

4.2 Principal component analysis

The study created an inclusive growth index using principal component analysis (PCA), and a set of variables, including headcount, per capita income, Gini index, poverty severity and economic participation were used. These variables underwent a data normalization process to generate normalized values, which were then used to construct the inclusive growth index [2]. PCA was chosen as the appropriate method for this study as it reduces data set dimensionality while preserving essential relationships and structures. This simplifies and compresses the data set (Abdi and Williams, 2010). Table 3 presents various tests conducted during the PCA. The Horn's parallel analysis and the scree plot (Figure 1) suggest that we retain two components in the analysis. This suggestion is based on the fact that two adjusted components are greater than 1 in Table 3. Similarly, Figure 1 suggests that only two components plot above the scree plot, leading us to retain two components for this study.

Moreover, we conducted tests to determine if the variables used in constructing the inclusive growth index are intercorrelated, using the Bartlett test of sphericity. Given that the p-value is less than 0.05, we dismissed the null hypothesis that the variables are uncorrelated. Consequently, we concluded that they are intercorrelated, suggesting correlations within the data, making it suitable for PCA. Additionally, we implemented the Kaiser–Meyer–Olkin measure of sampling adequacy to verify if the application of the PCA was justified. As the coefficient exceeds the 0.5 threshold, the results endorsed using PCA in constructing the inclusive growth index (Kaiser, 1974).

The PCA output in Table 4 suggests that the first, second, third, fourth and fifth components account for 44.27%, 22.65%, 19.29%, 11.78% and 2.02% of the standardized variations, respectively.

4.3 Multicollinearity test

The issue of multicollinearity can seriously undermine the reliability of regression results, as it significantly impacts *p*-values and standard errors. To prevent this problem, a Pearson correlation matrix was created to determine whether the variables are highly correlated. Multicollinearity test results are shown in Table 5.

The test results indicate that the correlation coefficient for all variables under study is less than the 0.8 threshold suggested in the literature. Therefore, we conclude that these variables do not exhibit a multicollinearity problem.

4.4 Regression results

The panel data estimation methods require that the data set undergo unit root testing, as nonstationary time series data may possess a time-dependent structure that could make the data unsuitable for estimations. However, this approach was challenged by Okafor *et al.* (2015)

Table 3. Components, correlation and sampling adequacy tests

Component or factor	Adjusted eigenvalue	Unadjusted eigenvalue	Estimated bias
Horn's parallel analysis for principal components			
1	2.0692	2.2133	0.1441
2	1.0608	1.1324	0.0716
Bartlett test of sphericity			
Chi-square	1,134.218		
Degrees of freedom	10		
p-value	0.0000		
Kaiser–Meyer–Olkin measure of sampling adequacy			
KMO	0.590		

Source: Authors

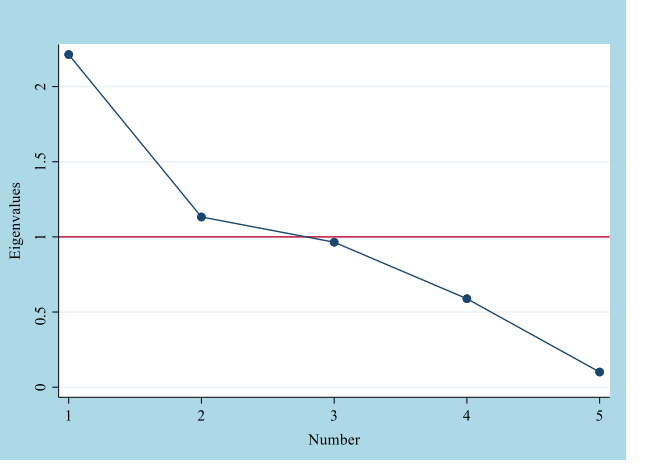

Figure 1. Scree plot of eigenvalues after PCA

Source: Authors

and Sarpong and Nketiah-Amponsah (2022). They proposed that in situations where the sample size is small, but the number of observations exceeds the periods under study ($N > T$), the nonstationarity of any variable does not undermine the reliability of the estimates. This is due to the reduction of serial correlation under these conditions. Based on this perspective, we did not perform a stationarity testing procedure since $N > T$ in our sample.

4.4.1 De facto fiscal space, governance quality and inclusive growth. Initially, we analyzed the impact of fiscal space on inclusive growth using *de facto* fiscal space (DFSP) indicator. It is imperative to emphasize that the *de facto* fiscal space (DFSP) indicator quantifies the average number of tax years required to offset public debt or fund the fiscal deficit. A lower value of this indicator signifies greater fiscal space. Thus, when assessing the impact of the DFSP, the negative/positive sign of the coefficients are interpreted as having an increasing/decreasing effect on inclusive growth, respectively.

The results in Table 6 pertain to the impact of *de facto* fiscal space, governance indicators, and their interaction effect on inclusive growth. The study shows that the *de facto* fiscal space coefficient is negative and statistically significant at 1% in Model 1. These results suggest that inclusive growth improves as the *de facto* fiscal space variable decreases. This implies that as the number of tax years needed to pay off public debt decreases (indicating an improvement in fiscal space), inclusive growth improves. This improvement can be attributed to the redirection of resources that were previously allocated to servicing public debt, now being used to fund projects that generate employment, augment economic participation and stimulate economic growth. Consequently, as fiscal space improves, so does inclusive growth.

Furthermore, we averaged all governance indicators to assess the global effect of governance quality (GQ) on inclusive growth and document a positive and significant effect

Principal component analysis output

Eigenvalues: ($N = 588$; Trace = 5; no. of components = 2)					Eigenvectors (loadings)		
Component	Eigenvalue	Difference	Proportion	Cumulative	Variable	Comp1	Comp2
Comp1	2.21326	1.08081	0.4427	0.4427	HPR	0.6324	0.0344
Comp2	1.13245	0.16783	0.2265	0.6691	ECP	0.4393	−0.4021
Comp3	0.964621	0.375852	0.1929	0.8621	GDPC	0.048	−0.4543
Comp4	0.588769	0.487866	0.1178	0.9798	POVS	0.6282	0.1565
Comp5	0.100903		0.0202	1	GINI	0.1006	0.7786

Source: Authors

Table 4. Principal component analysis output

Variable	IGI	DFSP	FSB	FDI	CPI	DGN	GQ
IGI	1						
DFSP	0.0279	1					
FSB	0.0267	−0.0884	1				
FDI	0.1009	−0.0229	−0.0123	1			
CPI	−0.0188	0.189	−0.0003	0.1155	1		
DGN	−0.2283	−0.278	−0.1319	0.019	−0.041	1	
GQ	−0.187	−0.4678	−0.0904	0.0542	−0.1661	−0.0057	1

Source: Authors

Table 5. Multicollinearity testing

Table 6.
Regression results

Dependent variable: Inclusive growth	(1) Index	(2) Index	(3) Index	(4) Index	(5) Index	(6) Index	(7) Index	(8) Index
IGI(−1)	1.0071*** (0.0243)	0.9048*** (0.0347)	1.0303*** (0.0258)	0.9630*** (0.0247)	0.9110*** (0.0387)	0.9294*** (0.0381)	0.9922*** (0.0227)	0.9649*** (0.0243)
DGN	0.05279*** (0.0108)	0.02483** (0.0124)	0.05489*** (0.0095)	0.05308*** (0.0103)	0.01039 (0.0111)	0.01042 (0.0115)	0.06800*** (0.0111)	0.05916*** (0.0103)
FDI	0.4916*** (0.1764)	0.1317 (0.3988)	0.2521** (0.1222)	0.7111*** (0.1821)	0.01835 (0.3955)	0.1220 (0.3865)	0.5581*** (0.1549)	0.6684*** (0.1579)
CPI	0.4160*** (0.0394)	0.4225*** (0.0383)	0.4824*** (0.0273)	0.3850*** (0.0323)	0.4781*** (0.0386)	0.4647*** (0.0309)	0.3922*** (0.0307)	0.3807*** (0.0339)
GQ	0.03907*** (0.0019)							
DFSP	−0.005555*** (0.0021)							
DFSP*VC		−0.0009625 (0.0016)						
DFSP*PS			−0.008502*** (0.0013)					
DFSP*GE				−0.004313** (0.0018)				
DFSP*RQ					−0.005992*** (0.0021)			
DFSP*RL						−0.006090*** (0.0017)		
DFSP*CC							−0.004708*** (0.0015)	
DFSP*GQ								−0.009027*** (0.0019)
CONSTANT	−0.3942*** (0.0785)	−0.2338** (0.0925)	−0.4139*** (0.0660)	−0.4313*** (0.0715)	−0.1232 (0.0824)	−0.1237 (0.0846)	−0.5232*** (0.0772)	−0.4745*** (0.0711)
Observations	560	560	560	560	560	560	560	560
Prob > Chi^2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
AR(1)	0.0057	0.0081	0.0046	0.0068	0.0081	0.0077	0.0062	0.0065
AR(2)	0.0523	0.0522	0.0593	0.0621	0.0513	0.0513	0.0589	0.0583
Sargan (*p*-value)	0.9939	1.0000	0.9788	0.9985	1.0000	1.0000	0.9960	0.9988

Notes: Levels of significance: (***) 1 and (**) 5%. Standard errors are in parenthesis; See methodology section for the definitions of variables
Source: Authors

of governance quality on inclusive growth in Model 1. The variable is statistically significant at 1%. The finding indicates that improvement in all aspects of governance, that is, regulatory quality, political stability and absence of violence, control of corruption, voice and accountability, rule of law and government effectiveness, promotes inclusive growth, hence the need to prioritize good governance in Africa.

We further explored the interaction effect between *de facto* fiscal space and each of the governance indicators, including the averaged governance indicator variable, on inclusive growth. Our observations revealed that the combined effect of governance quality and *de facto* fiscal space is statistically significant and negative in Models 3–8, except for Model 2. These results suggest that while the availability of fiscal space facilitates inclusive growth in Africa, this effect is moderated by governance quality, specifically in terms of regulatory quality, political stability and absence of violence, control of corruption, rule of law and government effectiveness.

4.4.2 Fiscal balance, governance quality and inclusive growth. The above analysis relates to the effect of *de facto* fiscal space on inclusive growth. We further examined the effect of fiscal balance, governance and their interaction effect on inclusive growth to check whether our findings are consistent. The paper documents that fiscal balance positively correlates with inclusive growth in Model 9, as shown in Table 7, and this variable is statistically significant at the 5% level. This nexus implies that a greater fiscal balance promotes government expenditure on public goods, proportionately affecting the poor and resulting in more inclusive growth.

Regarding governance quality, where fiscal balance is the proxy for fiscal space in the model, the results coincide with those reported in Model 1. Model 9 reports a positive and significant effect of governance quality on inclusive growth. We also examined the interaction effect of fiscal balance and all governance indicators, including their averages on inclusive growth. The study revealed that the interaction effect between fiscal balance and governance indicators on inclusive growth is statistically significant and positive in Models 10–16. The results suggest that improvement in fiscal balance, combined with favorable changes in governance indicators, such as the rule of law, regulatory quality, political stability, control of corruption and voice and accountability, promote inclusive growth in Africa. The results also imply that the presence of greater fiscal balance and good institutions is a precondition for inclusive growth. Kumeka *et al.* (2023) emphasized the importance of good governance in promoting inclusive growth in Africa.

4.4.3 Subsample regression results. To ensure the results are robust and efficient, a subsample regression analysis was performed to verify the results obtained in Table 6, using *de facto* fiscal space indicator as our proxy for fiscal space. Similar to the findings reported in Model 1, the results reported in Models 17–20 show a significant and negative nexus between the *de facto* fiscal space indicator and the inclusive growth index in Central, Eastern, Southern and Western Africa. These findings suggest that growth inclusiveness is enhanced as more fiscal space is created through fewer tax years required to clear public debt. To achieve inclusive growth, these results require African countries to minimize public debt accumulation to ensure a lower *de facto* fiscal space indicator, which translates to improved fiscal space.

Subsample regressions in Table 8 also confirmed that improvement in governance quality promotes growth inclusiveness in Central, Eastern, Southern and Western Africa. The coefficient for governance quality (GQ) is positive and statistically significant in Models 17–20. These results suggest that improvement in governance quality results in more inclusive growth.

Table 7.
Regression results

Dependent variable Inclusive growth	(9) Index	(10) Index	(11) Index	(12) Index	(13) Index	(14) Index	(15) Index	(16) Index
IGI(−)	1.0340*** (0.0344)	1.0157*** (0.0396)	1.0489*** (0.0367)	1.0092*** (0.0257)	1.0121*** (0.0266)	1.0342*** (0.0367)	1.0274*** (0.0416)	1.0046*** (0.0257)
DGN	0.07487*** (0.0124)	0.08709*** (0.0132)	0.07883*** (0.0146)	0.08418*** (0.0097)	0.08407*** (0.0101)	0.07204*** (0.0134)	0.08789*** (0.0144)	0.08269*** (0.0097)
FDI	0.2966 (0.1940)	0.2123 (0.1443)	0.4839***(0.1728)	0.2093 (0.1901)	0.2073 (0.2101)	0.4126*** (0.1400)	0.2895*** (0.1057)	0.2418 (0.1993)
CPI	0.3488*** (0.0430)	0.3514*** (0.0399)	0.3583*** (0.0281)	0.3613*** (0.0316)	0.3597*** (0.0326)	0.3614*** (0.0285)	0.3460*** (0.0384)	0.3528*** (0.0315)
GQ	0.02173*** (0.0033)							
FSB	0.5424** (0.2511)							
FSB*VC		0.9842*** (0.1391)						
FSB*PS			0.8093*** (0.1897)					
FSB*GE				0.4053* (0.2441)				
FSB*RQ					0.5151* (0.3021)			
FSB*RL						0.8076*** (0.0957)		
FSB*CC							0.7800*** (0.1163)	
FSB*GQ								0.6560*** (0.2522)
CONSTANT	−0.5773*** (0.1012)	−0.6540*** (0.0891)	−0.6168*** (0.1011)	−0.6350*** (0.0688)	−0.6343*** (0.0714)	−0.5672*** (0.0910)	−0.6667*** (0.0983)	−0.6286*** (0.0685)
Observations	560	560	560	560	560	560	560	560
Prob > Chi^2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
AR(1)	0.0046	0.0052	0.0050	0.0053	0.0054	0.0049	0.0049	0.0054
AR(2)	0.0586	0.0611	0.0804	0.0533	0.0579	0.0658	0.0655	0.0610
Sargan (pvalue)	0.9976	0.9958	1.0000	0.9944	0.9949	1.0000	0.9951	0.9939

Notes: Levels of significance: (***) 1, (**) 5 and (*) 10%. Standard errors are in parenthesis. See methodology section for the definitions of variables
Source: Authors

Regarding the effect of other variables, the paper indicates that the coefficient for the lagged inclusive growth index is positive and significant at the 1% level across all models, that is, Models 1–20. This implies that an augmentation in inclusive growth during a specific period propels its advancement in the succeeding period, thus suggesting that its future direction is dependent on its condition in the previous period. The pragmatic inference drawn from this observation is that central governments in African countries should champion for policies that incessantly promote a positive transition in inclusive growth.

Our research has observed that digitalization impacts inclusive growth. The variable is positive and statistically significant in all models except in Models 5 and 6, where the variable is statistically insignificant. Digitalization impacts inclusive growth from several perspectives. First, digitalization democratizes access to information and services, thereby fostering social inclusivity. It can provide opportunities for people irrespective of their geographical location. It can also create new job opportunities, stimulate entrepreneurship and innovation and contribute to economic growth. Digitalization can also enhance the quality of education and make it accessible to a larger population, including those in remote areas. Digitalization can improve productivity, increasing the goods and services consumed by societies. This finding, therefore, requires the governments in Central, Eastern, Southern and Western Africa to promote usage and improve investment in digital infrastructure that benefits all. Kouladoum (2023) and Oyinlola and Adedeji (2022) arrived at similar conclusions regarding the need for governments to invest more in digital infrastructure development.

Results reported in Models 1–20 revealed that inflation is positively associated with inclusive growth. Existing literature suggests that inflation can positively influence inclusive growth if it remains moderate, implying that high inflation could otherwise negatively impact inclusive growth. To further examine the role of inflation on inclusive growth, we used Seo *et al.* (2019) dynamic panel threshold regression approach [3] to identify whether the effect is linear or nonlinear in a parsimonious framework. This implies that we determined threshold level of inflation as well as its effect below and above the identified threshold, and the results are reported in Table 9.

The findings from Model 21 suggest a threshold value of 10.69% and that the effect of inflation is positive below the threshold and negative above the threshold level. This implies that results obtained from Models 1–20 coincide with the below the threshold regression results. The positive effect can be interpreted as follows: First, moderate inflation can encourage spending. When consumers expect prices to rise in the future, they are more likely to spend their money now. This increased spending can stimulate economic growth, leading to more job opportunities and wage increases, which contribute to inclusive growth. Finally, according to the Phillips Curve, inflation and unemployment have an inverse relationship. Higher inflation can lead to lower unemployment, contributing to inclusive growth by providing more people with income and reducing income inequality. Studies that reported the negative effect of inflation on inclusive growth are Anand *et al.* (2013) and Sarpong and Nketiah-Amponsah (2022).

5. Conclusions

The anecdote of this study is to examine the impact of fiscal space and governance on inclusive growth in Africa. An analysis was conducted on a panel of 28 African countries from 2000 to 2020. We developed an inclusive growth index using the PCA, which includes factors such as poverty severity, Gini index, economic participation, headcount ratio and income per capita. The findings suggest that Southern African countries have superior governance and fiscal space compared to other African regions included in the study. However, the region suffers from high-income inequality, as indicated by a high Gini index. It was also observed that Central African countries have the highest incidence of poverty

Table 8.
Regression results

Dependent variable inclusive growth	(17) Central Africa	(18) Eastern Africa	(19) Southern Africa	(20) Western Africa
IGI(−1)	0.6527*** (0.1354)	0.3255*** (0.0854)	0.5152*** (0.0934)	0.7363*** (0.0474)
DGN	0.5647*** (0.1415)	0.1630*** (0.0277)	0.3397*** (0.0951)	0.1222*** (0.0341)
FDI	−2.7958** (1.2538)	0.4641 (1.2487)	2.6867** (1.0863)	−0.6904 (0.9537)
CPI	0.4476** (0.1953)	0.2506** (0.1102)	0.6603*** (0.0515)	0.9759* (0.5300)
GQ	1.2767*** (0.3387)	0.9879*** (0.1926)	0.9628** (0.4300)	0.6252*** (0.2312)
DFSP	−0.04234*** (0.0147)	−0.009404* (0.0053)	−0.08630***(0.0313)	−0.03985***(0.0117)
CONSTANT	2.6921*** (0.9737)	0.3527* (0.1914)	2.4880*** (0.6870)	0.4518* (0.2575)
Observations	120	140	120	180
Prob > Chi^2	0.0000	0.0000	0.0000	0.0000
AR(1)	0.0083	0.0243	0.0060	0.0297
AR(2)	0.6924	0.7869	0.2851	0.7941
Sargan (*p*-value)	0.9994	1.0000	0.9994	1.0000

Notes: Levels of significance: (***) 1%, (**) 5% and (*) 10%. Standard errors are in parenthesis. See methodology section for the definitions of variables
Source: Authors

Dependent variable Inclusive growth	(21) Index
IGI(−1)_B	1.0834*** (0.0400)
CPI_B	2.8811* (1.5033)
CONSTANT_D	−0.2615 (0.2260)
IGI (−1)_D	−0.0976 (0.0879)
CPI_D	−2.7885* (1.5039)
R	0.1069*** (0.0105)
Observations	28
Bootstrap *p*-value for linearity test	0.0000

Notes: Levels of significance: (***) 1 and (*) 10%. Standard errors are in parenthesis. See methodology section for the definitions of variables
Source: Authors

Table 9.
Regression results

and weak governance. The study used the system GMMs estimation technique to identify the determinants of inclusive growth. The results implied that factors such as lagged inclusive growth, digitalization, fiscal balance and governance indicators positively influence inclusive growth, while the effect of *de facto* fiscal space indicator on inclusive growth is negative. The study found that improvements in the interaction between fiscal space indicators (fiscal balance and *de facto* fiscal space) and governance factors such as the rule of law, regulatory quality, control of corruption, political stability and government effectiveness promote inclusive growth in Africa and its subregions. Based on these findings, the study recommends that African countries limit public debt accumulation and/or broaden their tax bases to ensure a lower *de facto* fiscal space value, which translates to increased fiscal space availability. Furthermore, it is suggested that African Governments invest more in digital infrastructure and promote good governance. This could be achieved by reviewing and amending governance frameworks to allow governments to operate well by upholding the rule of law, fighting corruption and ensuring public resources are used efficiently to benefit its citizens. The primary limitation of our study was the inability to include all African countries due to data unavailability. Future researchers can expand focus by incorporating more fiscal space indicators from government debt sustainability, balance sheet composition, external and private debt and market perception categories to have an in-depth understanding of the role of fiscal space on inclusive growth.

Notes

1. Missing data was generated using linear interpolation techniques. The technique uses the following formulae:

   $y = y_1 + \frac{(x-x_1)(y_2-y_1)}{(x_2-x_1)}$

   Where:

   y is the estimated value at the missing point (x);

   x is the point where the value is missing; and

   (x_1, y_1) and (x_2, y_2) are the two known points surrounding the missing point.

2. The data normalization process rescales the original values into a range of [0, 1] or [−1, 1]. This process is also termed min-max scaling. The formula for normalization is:

$X_{NV} = \left(\frac{X - X_{min}}{X_{max} - X_{min}}\right)$

where:

X_{NV} = estimated normalized value;

X is = original value;

X_{min} = minimum value of the variable; and

X_{max} = maximum value of the variable.

3. The specific parsimonious regression model for establishing the inflation threshold and direction of influence based on Seo *et al.* (2019) framework is:

$$IGI_{it} = \delta(CPI_{it} - \gamma)\mathbb{I}\{CPI_{it} \geq \gamma\} + \alpha_i + \varepsilon_{it}$$

where:

IGI_{it} = dependent variable, namely, *de facto* fiscal space for country i in period t;

γ = the unknown threshold value;

i = a cross-sectional index;

t = the time period;

$\varepsilon_{i,t}$ = an independent and identically distributed (iid) error term; and

θ_{it} = is the threshold variable denoted by inflation (CPI). The threshold parameter (γ) will be endogenously determined (estimated) by the model.

4. $De\ facto\ fiscal\ space\ (DFSP) = \frac{Fiscal\ deficit\ or\ public\ debt\ (percentage\ of\ GDP)}{De\ facto\ tax\ base\ (percentage\ of\ GDP)}$.

where:

$De\ facto\ tax\ base\ (percentage\ of\ GDP) = Average\ tax\ revenue(percentage\ of\ GDP)_{t-4\ to\ t}$.

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