Acta Commercii - Independent Research Journal in the Management Sciences
ISSN: (Online) 1684-1999, (Print) 2413-1903

Institutional quality and foreign direct investment: Evidence from the selected sub-Saharan African countries

Check for updates

Authors:
Phakama Mthanda[1]
Kin Sibanda[2]
Rufaro Garidzirai[1]

Affiliations:
[1]Department of Business Management and Economics, Faculty of Economic and Financial Sciences, Walter Sisulu University, Mthatha, South Africa

[2]Department of Economics and Economic History, Rhodes University, Makhanda, South Africa

Corresponding author:
Phakama Mthanda,
phakamamthanda@gmail.com

Dates:
Received: 11 Aug. 2025
Accepted: 01 Apr. 2026
Published: 10 Aug. 2026

How to cite this article:
Mthanda, P., Sibanda, K. & Garidzirai, R., 2026, 'Institutional quality and foreign direct investment: Evidence from the selected sub-Saharan African countries', *Acta Commercii* 26(1), a1484. https://doi.org/10.4102/ac.v26i1.1484

Copyright:
© 2026. The Authors. Licensee: AOSIS. This work is licensed under the Creative Commons Attribution 4.0 International (CC BY 4.0) license (https://creativecommons.org/licenses/by/4.0/).

Read online:
Scan this QR code with your smart phone or mobile device to read online.

Orientation: Foreign direct investment (FDI) is vital for economic growth and development in sub-Saharan African (SSA) countries.

Research purpose: This study investigates the relationship between institutional quality and FDI in 40 SSA countries from 2000 to 2021.

Motivation for the study: Despite FDI's importance, SSA countries face institutional challenges that may deter investment. Understanding how institutional factors affect FDI is crucial for effective policy formulation.

Research design, approach and method: Using a quantitative approach, the study employs yearly panel data and the system generalised method of moments to control for endogeneity, autocorrelation and unobserved heterogeneity. Variance inflation factor checks for multicollinearity, while CD Pesaran and Friedman tests assess cross-sectional dependence.

Main findings: Institutional quality positively and significantly impacts FDI in SSA countries. Measures including rule of law, government effectiveness, control of corruption, regulatory quality, voice and accountability, political stability and corruption perceptions increase FDI, while the political rights index negatively affects it.

Practical/managerial implications: Sub-Saharan African governments should continuously reform institutional frameworks, benchmarking successful countries to remain competitive in attracting FDI.

Contribution/value-add: The study offers empirical evidence on the critical role of institutional quality in driving FDI inflows, providing nuanced insights for policymakers.

Keywords: sub-Saharan African countries; foreign direct investment; institutional quality; system generalised method of moments; dynamic panel data analysis.

Introduction

Background

Foreign direct investment (FDI) is an important factor in fostering economic growth and development in sub-Saharan African (SSA) countries (Ahmed & Rahman 2020; Bekun, Alawode & Adebayo 2023). One significant factor that influences FDI is institutional quality, which refers to the strength and effectiveness of a country's institutions, including governance, rule of law, corruption control and regulatory environment (Adegboye et al. 2020; Sabir, Rafique & Abbas 2019). Comparative international research consistently indicates that superior institutional quality decreases transaction costs and hazards for multinational corporations, hence functioning as a crucial 'location advantage' (Dunning 1977) that draws investment. This relationship has been corroborated across many areas, from mature economies with robust institutions that support stable investment environments (Sabir et al. 2019) to emerging markets where institutional reforms frequently serve as prerequisites for substantial FDI inflows. Thus, the difficulty of attracting FDI amid institutional deficiencies is a universal concern, manifesting with differing levels of severity across regions.

A country's institutional quality is mainly determined by the strength of property rights, the impartiality of law enforcement and the level of corruption (Aracil, Gómez-Bengoechea & Moreno-de-Tejada 2022). The significance of institutional quality cannot be overstated when examining the FDI in the SSA countries. The investment climate, governance structures and

regulatory frameworks play a pivotal role in attracting and sustaining FDI inflows (Chen et al. 2022). Enhancing institutional quality should remain a top priority for policymakers in these countries, as it can create an enabling environment that encourages FDI, fosters economic growth and promotes sustainable development (Aracil et al. 2022). Therefore, it is pertinent to conduct a study that examines this relationship and develops targeted policies and reforms to attract FDI to the region.

This study expands upon and critically enhances the research of Jama and Nayan (2022), who investigated the relationship between institutional quality and FDI in the SSA region utilising a restricted array of control variables such as trade openness and labour force participation (LFP). A model limited to these controls is susceptible to omitted variable bias and misspecification, as it may fail to sufficiently consider other essential determinants of FDI identified in the research, including a region's resource endowment and capital formation (Asiedu 2006). This study aims to overcome this limitation and improve model adequacy by augmenting the empirical specification with control variables specifically relevant to the SSA context, namely natural resource rents and capital investment, which are recognised determinants of investment flows (Makalima et al. 2024). Additionally, it enhances the assessment of the primary independent variable by creating a composite institutional quality index derived from six World Governance Indicators (Rule of Law [RL], government effectiveness [GVE], control of corruption [COC], regulatory quality [RQ], voice and accountability [VAC], political stability [PLS]) through principal component analysis (PCA), thereby offering a more comprehensive and rigorous measure. The study utilises the system generalised method of moments (SGMM) estimator to effectively tackle potential endogeneity, heteroscedasticity and cross-sectional dependence inherent in panel data (Sarafidis, Yamagata & Robertson 2010). This research design incorporates an extensive array of controls, an enhanced institutional variable and a sophisticated dynamic panel methodology, yielding a thorough and empirically robust analysis that offers valuable insights for policymakers and establishes a fortified foundation for future academic inquiry on this subject.

The institutional quality of SSA countries poses a significant challenge to attracting FDI inflows (Adegboye et al. 2020; Jama & Nayan 2022). Weak governance, corruption, political instability and inadequate legal frameworks have historically hindered investment and limited the economic development potential of the region (Wang et al. 2022). Although some progress has been made in improving institutional quality, significant gaps and challenges remain. According to the World Governance Indicators, SSA countries generally scored lower in institutional quality measures than global averages (World Bank 2023). Addressing the problem of poor institutional quality and its impact on FDI in SSA countries is crucial for sustainable economic development (Adegboye et al. 2020). Enhancing institutional quality through governance reforms, anti-corruption measures, strengthening the rule of law and improving the regulatory environment are essential steps to attract FDI and unlock the potential benefits it brings, such as job creation, technology transfer and market integration (Wang et al. 2022).

This study offers two significant contributions to the comprehension of institutional quality and FDI in SSA. Firstly, it enhances the methodological framework by developing an innovative, comprehensive institutional quality index (IQ) through PCA, which integrates six separate governance indicators: (1) RL, (2) GVE, (3) COC, (4) RQ, (5) VAC, and (6) PLS. This offers a more comprehensive and dependable assessment of institutional contexts than evaluating specific measures in isolation in Makalima et al. (2024). Secondly, to guarantee detailed understanding and policy precision, the study additionally examines the distinct effect of each institutional quality measure on FDI inflows. This enables a direct comparison of the individual indices to determine which exerts the strongest influence on FDI inflows. Thus, the findings provide policymakers with detailed direction, allowing them to prioritise specific institutional reforms to cultivate a more favourable and sustainable investment environment in the region.

The null hypothesis (H01) for the study states that there is no significant relationship between institutional quality and FDI in the selected SSA countries for the period 2000–2021. Alternative hypothesis (H02) states that there is a significant relationship between institutional quality and FDI in the selected SSA countries from 2000 to 2021.

Literature review

Theoretical literature

There are several theories that attempt to explain the relationship between institutional quality and FDI. One of the most relevant theories explaining the link between institutional quality and FDI is the property rights theory, which was propounded by John Locke (1690) and was further refined by economists like Harold Demsetz (1967). This theory emphasises the role of secure property rights in fostering investment, innovation and economic growth (Nieman & Thies 2019). Creating and enforcing effective distribution of property rights is a key aspect of institutions and their development policy, and it should be one of their primary goals (North 1994). Countries with well-defined and enforced property rights are more likely to attract FDI because investors feel their assets are safer (Sabir et al. 2019). Nieman and Thies (2019) argue that democratic institutions have an impact on property rights in attracting FDI through offering a unified rationale to the property rights regime established in a state and ensuring a legitimate mechanism to address conflicts that develop in dynamic economies.

In the late 20th century, Douglass C. North introduced the Institutional Theory, which emphasises the impact of institutions on economic development. Alston (2008)

asserts that institutions contend that both formal and informal are the primary determinants of economic success. The Institutional Theory, established in the late 1970s by John Meyer and Brian Rowan, provided a foundational framework, which was subsequently elaborated upon by North's contributions to New Institutional Economics (NIE), both emphasising that institutions are the primary determinant of economic performance (David, Tolbert & Boghossian 2019). This theory highlights the comprehensive quality of a nation's institutions, encompassing elements such as the rule of law, governmental transparency, regulatory efficacy and the lack of corruption (Dunning 1977). It posits that superior institutional quality diminishes transaction costs and uncertainty, thus fostering a more appealing landscape for investment and sustained economic growth. Countries with strong institutional frameworks are more likely to attract FDI because they provide a stable and predictable business environment (Ray 2019). Therefore, understanding these channels is crucial for policymakers in SSA countries to comprehend the relationship between institutional quality and FDI. The NIE theory is instrumental in this regard, as it enables policymakers to enhance institutional quality, thereby attracting more FDI, fostering economic growth and promoting sustainable development.

The Eclectic (OLI) Paradigm constitutes the primary theoretical framework for this study, asserting that a firm undertakes FDI solely when it possesses ownership advantages, finds internalisation of production advantageous and recognises specific location advantages in a host country. Institutional quality is seen as a crucial element of these location (*L*) benefits, as robust institutions diminish transaction costs, safeguard investments and foster a stable business environment, thereby attracting FDI. This study delineates 'institutional quality' by integrating complementary theories: Property Rights Theory emphasises the importance of safe asset protection, whereas NIE elucidates how formal and informal regulations mitigate uncertainty. Collectively, these ideas delineate the principal quantitative dimensions, namely political stability, rule of law, control of corruption and government effectiveness that multinational corporations assess. Consequently, the OLI paradigm offers the fundamental justification for the significance of institutions in FDI, while the accompanying theories elucidate the institutional mechanisms that influence investment choices in SSA.

From a theoretical perspective, FDI in SSA can be split between resource, market and efficiency-seeking motives, each responding differently to institutional quality (Bartels, Alladina & Lederer 2009). In the extractive sector, investments in mining and energy often prove resilient to governance flaws that would typically deter more efficiency-sensitive capital.

Empirical literature

A significant body of empirical research uses panel data techniques to examine the relationship between institutional quality and FDI. This review consolidates findings from global, regional and SSA-specific studies to contextualise the current research.

Research from global and cross-regional panel studies indicates that a consistent outcome across multi-country panels is the substantial, positive influence of institutional quality on attracting FDI. Sabir et al. (2019) employed a GMM estimator on a worldwide panel spanning 1996–2016, revealing that institutional quality exerted a more significant influence on FDI in developed nations than in developing countries. Likewise, research pertaining to developing nations, as shown by Sayari (2019), including a panel of 40 countries, substantiates that institutional effectiveness is a significant factor influencing FDI inflows. The moderating influence of institutions is apparent; Dada and Abanikanda (2022) determined through a time-series analysis of Nigeria that institutional quality is essential for facilitating FDI-driven growth, whereas Huynh (2022), in a global panel of 43 developing nations, discovered that the advantageous impact of FDI on institutions may be compromised by the magnitude of the informal economy.

Panel studies focused on SSA offer essential regional insights while also identifying areas necessitating additional exploration. Jama and Nayan (2022) analysed a brief panel (2015–2019) employing a random effects (REs) model and vector autoregression, revealing beneficial impacts from government effectiveness and the rule of law. Nonetheless, their model was constrained to trade and LFP as controls, a specification that may incur omitted variable bias by ignoring other recognised determinants of FDI, such as natural resource rents and capital investment (Asiedu 2006; Makalima et al. 2024). Other SSA panel studies, such as Adegboye and Okorie (2023), which utilised various estimators including panel two-stage least squares and dynamic generalised method of moments (DGMM) on data from 2001 to 2020, affirm the positive growth impact of FDI but frequently regard institutional quality as a control or moderating variable rather than as the primary, multi-faceted construct.

The literature illustrates the advancement of econometric methods to tackle prevalent panel data issues. Initial research frequently utilised static models such as pooled regression (PR), fixed effects (FEs) and REs. Recent research emphasises dynamic models that incorporate endogeneity and persistence. The GMM, encompassing both difference and system variations, has emerged as a conventional methodology. Minh (2019) employed differenced GMM to examine provincial-level data in Vietnam, revealing that institutional quality largely accounts for variations in FDI. In the context of SSA, Awadhi, James and Byaro (2022) utilised the system GMM estimator on a panel of 45 countries from 1986 to 2015, identifying the rule of law and government effectiveness as crucial institutional determinants of FDI. Githaiga and Kilong'i (2023) employed system GMM for 34 SSA nations, demonstrating that institutional quality moderates the effect of FDI on human capital development.

The existing literature demonstrates a distinct relationship between institutions and FDI and highlights sophisticated panel estimation methods; however, a thorough study is deficient focused on SSA that concurrently: (1) develops a comprehensive, composite metric of institutional quality encompassing various dimensions, (2) utilises a dynamic panel estimator (System GMM) to effectively tackle endogeneity and (3) integrates a more extensive array of region-specific control variables such as natural resource rents and capital investment to enhance model specification and reduce omitted variable bias. This study seeks to fill this gap by enhancing and expanding upon the frameworks established by Jama and Nayan (2022) to deliver a more sophisticated and empirically sound examination of the influence of institutional quality on FDI inflows in SSA.

Research methods and design

Data sources

The data for the study were obtained from the Global Economy website, as it is one of the most credible and reliable sources of secondary data. The study employed yearly panel data for the period 2000–2021 in the 40 selected SSA nations. This time frame was used since it offers a good enough quantity of observations. The 40-country sample was selected to maximise longitudinal data availability and regional representation. All data from 'The Global Economy' was cross-verified against original World Bank and International Monetary Fund (IMF) databases to ensure consistency.

Econometric model specification

To achieve the aim of this research, which was to investigate the relationship between institutional quality and FDI in selected SSA countries, this study adopted and modified the model by Jama and Nayan (2022), who studied the relationship between institutional quality and FDI in SSA. Their model was formally specified as Model 1 as follows:

$$FDI_{it} = a + \beta_1 RQ_{it} + \beta_2 PS_{it} + \beta_3 RL_{it} + \beta_4 GE_{it} + \beta_5 V\&A_{it} + \beta_6 TRD_{it} + \beta_7 LFP_{it} + \varepsilon_{it} \quad \text{[Eqn 1]}$$

Where:

- Foreign direct investment represents FDI (that is the net inflows in the reporting economy from foreign investors, divided by gross domestic product [GDP]).
- PS is political stability.
- RL is rule of law.
- GE is government effectiveness.
- RQ is regulatory quality.
- V&A is voice and accountability.
- LFP is labour force participation.
- TRD is trade.

Jama and Nayan's (2022) model was adopted and modified into Model 2. Equation 2 represents the dynamic panel GMM specification used to examine the relationship between institutional quality and FDI. To prevent multicollinearity, each dynamic GMM model was estimated separately, with each institutional quality measure having its own slope coefficient, with Model 1 (composite institutional quality) being the baseline model. All six institutional quality measures, with a scale of −2.5 to 2.5, were used to create the composite institutional quality measure, except for the corruption perceptions index and the political rights index (POR), which have a different scale. Having different models allowed for the comparison between the baseline model and different institutional quality measures.

$$LFDI_{it} = \Phi LFDI_{it-1} + \beta_1 LINST_{it} + \beta_2 LGDP_{it} + \beta_3 LTO_{it} + \beta_4 LCI_{it} + \beta_5 LNRR_{it} + 6 LINFL_{it} + \mu_i + \varepsilon_{it} \quad \text{[Eqn 2]}$$

Where:

- $LFDI_{it}$ is the logarithm of FDI as a percentage of GDP.
- $LFDI_{it-1}$ is the lagged variable capturing persistent FDI.
- Φ is the coefficient measuring the dynamic adjustment.
- *LINST* denotes the institutional quality, which is the main explanatory variable.

It is proxied by eight indicators: (1) RL is the rule of law index (−2.5 weak; 2.5 strong); (2) GVE is the government effectiveness index (−2.5 weak; 2.5 strong); (3) COC is the control of corruption (−2.5 weak; 2.5 strong); (4) RQ is the regulatory quality index (−2.5 weak; 2.5 strong); (5) PLS is the political stability index (−2.5 weak; 2.5 strong); (6) VAC is the voice and accountability index (−2.5 weak; 2.5 strong); (7) CP is the corruption perceptions index, 100 = no corruption; and (8) POR is the political rights index, 7 (weak) – 1 (strong). The study also employed the PCA to construct a single institutional quality index from the first six proxies that range from −2.5 to 2.5. This is in line with the method used in studies by Kamah, Riti and Bin (2021) and Ha et al. (2023). The PCA preserves the most important information while reducing the number of variables in a dataset (Kamah et al. 2021). It determines the principal components, which are linear combinations of the initial variables that account for the greatest amount of variation in the data (Ha et al. 2023). As a result, the PCA simplifies the analysis and can improve computational efficiency. To allow logarithmic transformation, the institutional quality index (ranging from −2.5 to 2.5) was transformed using the inverse hyperbolic sine (IHS) transformation. As noted by Aihounton and Henningsen (2021), results using the IHS transformation can be sensitive to the units of measurement of the original variable.

$LGDP_{it}$ is the log of GDP, which is a proxy for market size. LTO_{it} is trade openness. LCI_{it} is the log of capital investment as a percentage of GDP. $LNRR_{it}$ is the natural resource rents as a percentage of GDP. $LINF_{it}$ is the inflation rate which is a measure of macroeconomic stability. μ_i is the unobserved county-specific effects eliminated in the GMM transformation. ε_{it} is the idiosyncratic error term.

The system GMM is a dynamic panel estimator developed by Arellano and Bover (1995) and extended by Blundell and Bond (1998). It estimates a system comprising equations in first differences and levels, using additional moment conditions to address endogeneity and dynamic panel bias. The model can handle endogeneity and dynamic panel bias, as it employs extra moment conditions when estimating a system of equations in first differences and levels. System generalised method of moments is most appropriate when the time dimension (*T*) is less than the cross-sectional dimension (*N*) (Arellano & Bond 1991). This permits the approach to take advantage of the data's significant cross-sectional volatility. The model should have a lagged dependent variable to account for the dependent variable's persistence across time. The approach requires significant first-order autocorrelation (AR[1]) and insignificant second-order autocorrelation (AR[2]) in the first-differenced residuals (Arellano & Bond 1991), as the absence of AR(2) indicates that the original error term is not serially correlated, thereby preserving instrument validity. This ensures the validity of the estimate tools. The instruments must be uncorrelated with the error term, which can be tested for overidentification constraints using Hansen's *J* test (Hansen & Lee 2021).

The GMM is the preferred estimator for the study to alleviate endogeneity problems since the time dimension is smaller than the *N* dimension (Arellano & Bond 1991). To verify the model's validity and robustness, several diagnostic tests were conducted. The appropriateness of the GMM and the selection of variables to be included in the model were influenced by the number of groups relative to the number of instruments, the AR(1) and AR(2) tests, which check for first- and second-order correlation, and the Hansen and Sargan tests of overidentifying restrictions, which evaluate the overall validity of instruments of the instruments (Arellano & Bond 1991; Blundell & Bond 1998; Roodman 2009). The Hansen and Sargan tests, the AR(1) and the AR(2) are anticipated to have insignificant *p*-values, confirming the validity of the instruments and the lack of first- and second-order correlation, respectively.

Ethical considerations

Ethical clearance to conduct this study was obtained from the Walter Sisulu University Research Ethics Committee (No. [2023/MCOM/EBS-4348]).

Results

Descriptive statistics

Table 1 presents the descriptive characteristics of the variables used in this study. The data show substantial variation across both economic and institutional indicators, highlighting the heterogeneity in FDI, capital investment, governance indices and macroeconomic conditions across the sample.

Correlation coefficients

The correlation matrix in Table 2 highlights strong correlations among institutional quality indicators, such as political rights, government effectiveness, control of corruption and RQ (Kaya & Kaya 2020). This high correlation suggests potential multicollinearity issues in regression analysis involving these variables. However, despite the high correlations, the individual analysis of these indicators is justified to capture their unique effects on the outcome variable accurately. Since the institutional quality indicators are highly correlated, estimating different models with each institutional quality measure is necessary. Furthermore, other variables, such as institutional quality and real GDP, capital investment and trade openness, show coefficients that are less than 0.4%, indicating that there is no linear relationship between the variables of interest, further implying that they can be employed in the regression.

TABLE 1: Descriptive statistics results.

Variable	Obs	Mean	Std. dev.	Min	Max
FDI	1056	4.407538	7.965767	-17.29	103.34
RL	1034	-0.7161896	0.6550468	-2.59	1.02
GVE	1033	-0.7917328	0.6304251	-2.44	1.15
COC	1034	-0.6358221	0.64885	-1.85	1.7
RQ	1034	-0.71794	0.6385383	-2.55	1.2
VAC	1034	-0.5844778	0.7493093	-2.23	0.98
PLS	1034	-0.5589652	0.9155106	-3.31	1.28
IQ	1033	-0.003784	2.211508	-6.002402	5.562259
CP	864	31.28588	11.60275	8	70
POR	985	4.396954	1.871315	1	7
GDP	1053	4.068063	5.322592	-36.39	63.38
TO	915	69.5489	35.24322	2.7	235.82
CI	896	22.08538	9.852811	0	76.78
NRR	1006	11.25851	10.79713	0	88.59
INFL	974	10.18963	33.8181	-16.9	557.2

Std. dev., standard deviation; FDI, foreign direct investment; GDP, gross domestic product; Rlw, rule of law; Gve, government effectiveness; Coc, control of corruption; Rq, regulatory quality; Vac, voice accountability; Pls, political stability; Cp, corruption perception; POR, political rights; TO, trade openness; CI, capital investment; NRR, natural resource rents; INFL, inflation; IQ, institutional quality; Min, minimum; Max, maximum; Obs, observations.

Inflation variance factor

To address multicollinearity concerns, variance inflation factor (VIF) values for the explanatory variables are assessed (see Table 3), and they are found to be below the threshold of 5 or 10, indicating the absence of multicollinearity. Therefore, despite the high correlations among institutional quality indicators, the VIF values suggest that multicollinearity is not a significant issue in the analysis of the independent variable components. Separate models were estimated for each variable, allowing each to have its own coefficient to handle potential multicollinearity among institutional quality metrics.

Cross-sectional dependence tests

Cross-sectional dependence tests assess whether observations from different countries are independent (Pesaran 2021). The CD Pesaran and Friedman tests provide evidence on whether the assumption of cross-sectional independence holds in the dataset (Pesaran 2021). Table 4 summarises the results of the CD Pesaran and Friedman cross-sectional dependence tests for each of the nine models. We tested the cross-sectional dependence for each

TABLE 2: Correlation coefficient results.

Variable	LFDI	LRL	LGVE	LCOC	LRQ	LVAC	LPLS
LFDI	1.0000	-	-	-	-	-	-
LRLW	0.1268*	1.0000	-	-	-	-	-
LGVE	0.1191*	0.9190*	1.0000	-	-	-	-
LCOC	0.1638*	0.8763*	0.8610*	1.0000	-	-	-
LRQ	0.0606*	0.8918*	0.9086*	0.7915*	1.0000	-	-
LVAC	0.1290*	0.8116*	0.7366*	0.7285*	0.7591*	1.0000	-
LPLS	0.1638*	0.7769*	0.6896*	0.7181*	0.6568*	0.6824*	1.0000
LIQ	0.1423*	0.9463*	0.8955*	0.8838*	0.8960*	0.8587*	0.8137*
LCP	0.1505*	0.8423*	0.8083*	0.8798*	0.7831*	0.7424*	0.6787*
LPOR	-0.1305*	-0.7363*	-0.6558*	-0.6569*	-0.6422*	-0.9325*	-0.6270*
LGDP	0.1144*	0.0900*	0.0826*	0.0670*	0.1119*	0.1240*	0.0420*
LTO	0.2405*	0.3163*	0.3480*	0.3574*	0.2692*	0.2506*	0.4609*
LCI	0.2214*	0.2577*	0.2296*	0.2320*	0.2409*	0.2314*	0.2677*
LNRR	0.0309*	-0.5528*	-0.5953*	-0.5543*	-0.5399*	-0.4720*	-0.4266*
LINFL	0.0492*	-0.0542*	-0.0321*	-0.0619*	-0.0776*	-0.0598*	-0.0963*
	LINST	**LCP**	**LPOR**	**LGDP**	**LTO**	**LCIN**	**LNRR**
LIQ	1.0000	-	-	-	-	-	-
LCP	0.8597*	1.0000	-	-	-	-	-
LPOR	-0.7617*	-0.6463*	1.0000	-	-	-	-
LGDP	0.1301*	0.0548*	-0.1220*	1.0000	-	-	-
LTO	0.3025*	0.2988*	-0.2289*	-0.0036	1.0000	-	-
LCIN	0.2769*	0.2699*	-0.1303*	0.1092*	0.4472*	1.0000	-
LNRR	-0.5552*	-0.5195*	0.4062*	0.0244*	-0.0710*	-0.0807*	1.0000
LINFL	-0.0597*	-0.1016*	0.0187	-0.0437*	-0.0956*	-0.0407*	0.0594*

FDI, foreign direct investment; RL, rule of law; GVE, government effectiveness; COC, control of corruption; RQ, regulatory quality; VAC, voice accountability; PLS, political stability; IQ, institutional quality; CP, corruption perception; POR, political rights; GDP, gross domestic product; TO, trade openness; CI, capital investment; NRR, natural resource rents; INFL, inflation.

*, $p < 0.1$.

TABLE 3: Inflation variance factor results.

Variable	VIF								
	IQ	RL	GVE	COC	RQ	VAC	PLS	CP	POR
LGDP	1.05	1.04	1.04	1.04	1.05	1.05	1.04	1.02	1.06
LTO	1.42	1.42	1.47	1.46	1.41	1.38	1.70	1.37	1.41
LCI	1.39	1.40	1.38	1.38	1.35	1.36	1.34	1.35	1.36
LNRR	1.59	1.64	1.81	1.57	1.56	1.38	1.27	1.46	1.26
LINFL	1.01	1.01	1.02	1.01	1.01	1.02	1.01	1.02	1.01
LIQ	1.08	-	-	-	-	-	-	-	-
LRLW	-	1.87	-	-	-	-	-	-	-
LGVE	-	-	2.09	-	-	-	-	-	-
LCOC	-	-	-	1.83	-	-	-	-	-
LRQ	-	-	-	-	1.70	-	-	-	-
LVAC	-	-	-	-	-	1.49	-	-	-
LPLS	-	-	-	-	-	-	1.69	-	-
LCP	-	-	-	-	-	-	-	1.74	-
LPOR	-	-	-	-	-	-	-	-	1.33
Mean	1.38	1.40	1.47	1.38	1.35	1.28	1.34	1.33	1.24

RL, rule of law; GVE, government effectiveness; COC, control of corruption; RQ, regulatory quality; VAC, voice accountability; PLS, political stability; CP, corruption perception; POR, political rights; VIF, variance inflation factor; IQ, institutional quality; GDP, gross domestic product.

TABLE 4: Summary table: Cross-sectional dependence test results.

Model	IQ	RL	GVE	COC	RQ	VAC	PLS	CP	POR
CD Pesaran Test									
T-statistic	0.123	0.181	0.319	0.472	0.195	0.092	0.495	0.483	0.121
Absolute value	0.272	0.271	0.271	0.273	0.273	0.271	0.267	0.273	0.271
p-value	0.9018	0.8565	0.7495	0.6371	0.8452	0.9268	0.6203	0.9028	0.9037
Friedman Test									
T-statistic	6.750	6.750	9.250	6.750	6.750	6.750	9.250	0.6750	4.275
Absolute value	0.639	0.638	0.643	0.640	0.643	0.637	0.638	0.637	0.640
p-value	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

Note: Cross-sectional dependence test rule of thumb: H0: There is no cross-sectional dependence; H1: There is cross-sectional dependence. $p < 0.05$: reject H0.

RL, rule of law; GVE, government effectiveness; COC, control of corruption; RQ, regulatory quality; VAC, voice accountability; PLS, political stability; CP, corruption perception; POR, political rights; CD, cross sectional dependency; IQ, institutional quality.

TABLE 5: Summary table: Determination test between dynamic generalised method of moments and system generalised method of moments.

Model	Coefficient								
	IQ	RL	GVE	COC	RQ	VAC	PLS	CP	POR
Estimator									
Pooled effect	0.482	0.481	0.482	0.482	0.483	0.483	0.483	0.490	0.480
Fixed effect	0.287	0.286	0.284	0.286	0.285	0.284	0.284	0.260	0.294
One-step DGMM	0.280	0.276	0.280	0.276	0.272	0.272	0.272	0.264	0.274
Two-step DGMM	0.276	0.282	0.283	0.274	0.268	0.273	0.273	0.265	0.291

DGMM, dynamic generalised method of moments; RL, rule of law; GVE, government effectiveness; COC, control of corruption; RQ, regulatory quality; VAC, voice accountability; PLS, political stability; CP, corruption perception; POR, political rights; IQ, institutional quality.

model because we treated the institutional quality indicators separately due to their high correlation. The first model under institutional index (inst) is the benchmark model, and the next six (RL, GVE, COC, RQ, VAC and PLS, with the same value range −2.5 weak to +2.5 strong) are the components of the institutional quality (IQ) that are treated separately. The last two (POR and CP) are also indicators of institutional quality but have different measurements or value ranges, so they are treated separately. The results from both the Pesaran CD and Friedman tests show high *p*-values (all above 0.62), indicating no statistical evidence of cross-sectional dependence across the nine model specifications.

Determining between dynamic generalised method of moments and system generalised method of moments

The determination between DGMM and SGMM involves assessing the efficiency of estimators (Blundell & Bond 1998; Bond 2001). Bond, Hoeffler and Temple (2001) suggest that, as a rule of thumb, if the DGMM estimate is less than or approximately equal to the FE estimate ($DGMM \leq FE$), the SGMM should be preferred. The SGMM estimator is the primary estimation technique used in this study to investigate the institutional quality of FDI. This is because, in comparison with other estimation techniques, it offers more accurate and consistent estimates due to its ability to handle a variety of econometric problems related to endogeneity, heterogeneity, reverse causality and simultaneous bias (Bond et al. 2001). Determination tests of the appropriate estimator between DGMM and SGMM were performed on each institutional quality indicator and also for the institutional quality index (the benchmark indicator) on each Model 1 – Model 9 Determination is based on the coefficients of the lagged dependent variables (Bond et al. 2001). Thus, each model's coefficients of the lagged dependent variables are summarised in the table.

From the results in Table 5, the DGMM coefficients are lower than those of FE, indicating that the SGMM is the appropriate and efficient estimation technique for the study. Dynamic generalised method of moments also corrects endogeneity and eliminates FEs, although it magnifies gaps in unbalanced panel data. They can produce biased and inefficient estimates because of poor instruments (Blundell & Bond 1998). However, in order to improve efficiency, SGMM corrects endogeneity through introducing extra instruments (Arellano & Bover 1995; Farzana, Samsudin & Hasan 2024). In order to make the instruments exogenous (uncorrelated with the FEs), SGMM transforms them. System generalised method of moments deducts the average of all upcoming available variable observations, in contrast to the DGMM. The method minimises gaps in data because it may be computed for every observation, and when heteroscedasticity and serial correlation are present, two-step GMM performs better (Arellano & Bond 1991; Blundell & Bond 1998; Khan et al. 2023).

According to Khan et al. (2023), the two-step GMM estimate approach can also handle endogeneity in the panel model. Endogeneity occurs when explanatory variables correlate with the error term, resulting in biased and inconsistent parameter estimates. Furthermore, by using instruments (lagged values of variables) to address endogeneity (Khan et al. 2023), the two-step GMM aids in producing consistent and unbiased estimates by using valid instruments that are correlated with the endogenous variables but uncorrelated with the error term. The two-step GMM uses moment conditions obtained from the first-differenced and lagged levels of variables as instruments. This enables more efficient use of available equipment, resulting in more accurate parameter estimates. Unlike other estimation strategies, such as FEs or RE models, the two-step GMM is consistent and efficient even in small samples, which is especially useful when working with restricted panel data sets.

Estimation procedure: System generalised method of moments

The estimation employed the SGMM to address endogeneity, serial correlation and dynamic panel bias (Arellano & Bond 1991). Given the potential multicollinearity among institutional quality measures, nine separate models were estimated, each including a single institutional quality measure as the main independent variable along with relevant control variables. The model using the composite institutional quality measure serves as the baseline specification, against which the effects of individual IQ indicators are compared. Model 1 is based on the composite institutional quality measure constructed using PCA, which serves as the baseline specification, against which the effects of individual institutional quality indicators (RL, GVE, COC, RQ, VAC, PLS, PC and POR) are compared. This approach ensures that the correlation among institutional quality indicators does not distort the estimated effects on FDI.

TABLE 6: System generalised method of moments results table.

Variable	Model_1	Model_2	Model_3	Model_4	Model_5	Model_6	Model_7	Model_8	Model_9
	IQ	RL	GVE	COC	RQ	VAC	PLS	CP	POR
Variables	Lfdi	Lfdi	Lfdi	Lfdi	Lfdi	Lfdi	Lfdi	Lfdi	Lfdi
LFDI	0.409*** (0.0573)	0.411*** (0.0171)	0.403*** (0.0175)	0.408*** (0.0174)	0.409*** (0.0171)	0.403*** (0.0176)	0.408*** (0.0169)	0.370*** (0.0155)	0.378*** (0.0185)
LGDP	0.0175* (0.0105)	0.0183* (0.0108)	0.0175* (0.0101)	0.0199* (0.0109)	0.0228** (0.0105)	0.0214* (0.0118)	0.0212* (0.0115)	0.0111 (0.0151)	0.0328** (0.0126)
DLTO	0.0485 (0.220)	0.0173 (0.0945)	0.0233 (0.0854)	0.0388 (0.0913)	0.0645 (0.0914)	0.0640 (0.0962)	-0.0375 (0.113)	-0.0438 (0.102)	0.0810 (0.0981)
LINFL	-0.0596* (0.0325)	-0.0396 (0.0309)	-0.072** (0.0344)	-0.0455 (0.0279)	-0.0629* (0.0329)	-0.0547* (0.0322)	-0.0437 (0.0593)	-0.0473 (0.0791)	0.142** (0.0696)
DLCIN	0.395** (0.0916)	0.383*** (0.0901)	0.408*** (0.0863)	0.428*** (0.0873)	0.433*** (0.0856)	0.446*** (0.0889)	0.449*** (0.0841)	0.358*** (0.0919)	0.515*** (0.0889)
LNRR	0.0799* (0.0395)	0.0930** (0.0431)	0.0924* (0.0469)	0.0586 (0.0384)	0.0653 (0.0417)	0.0416 (0.0360)	0.0581 (0.0372)	0.0878* (0.0444)	0.00847 (0.0431)
-	(0.158)	(0.0806)	(0.0812)	(0.0787)	(0.0788)	(0.0780)	(0.0803)	(0.0843)	(0.0741)
LIQ	0.0933** (0.0346)	-	-	-	-	-	-	-	-
LRLW	-	0.259*** (0.0853)	-	-	-	-	-	-	-
LGVE	-	-	0.238** (0.102)	-	-	-	-	-	-
LCOC	-	-	-	0.142** (0.0634)	-	-	-	-	-
LRQ	-	-	-	-	0.169** (0.0788)	-	-	-	-
LVAC	-	-	-	-	-	0.113* (0.0616)	-	-	-
LPLS	-	-	-	-	-	-	0.156** (0.0722)		-
LCP	-	-	-	-	-	-	-	0.364*** (0.105)	-
LPOR	-	-	-	-	-	-	-	-	-0.171** (0.0756)
Constant	-0.981* (0.505)	-0.653 (0.535)	-0.719 (0.489)	-0.897* (0.509)	-1.068** (0.489)	-1.194** (0.487)	-0.636 (0.627)	1.789** (0.655)	-1.368** (0.541)
F-stat p-value	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Resid. AR(1) p-value	0.001	0.000	0.032	0.011	0.001	0.000	0.031	0.043	0.023
Resid. AR(2) p-value	0.536	0.536	0.549	0.538	0.530	0.542	0.523	0.742	0.386
Sargan test p-value	0.087	0.084	0.083	0.089	0.086	0.065	0.086	0.122	0.034
Hansen J test p-value	0.097	0.102	0.106	0.100	0.102	0.100	0.100	0.414	0.203
Number of instruments	37	37	37	37	37	36	37	38	37
Number of countries	11	11	11	11	11	11	11	11	11
Observations	734	734	734	734	734	734	734	643	728

AR, autocorrelation; RL, rule of law; GVE, government effectiveness; COC, control of corruption; RQ, regulatory quality; VAC, voice accountability; PLS, political stability; CP, corruption perception; POR, political rights; Resid, residual; IQ, institutional quality; FDI, foreign direct investment; GDP, gross domestic product; TO, trade openness; CI, capital investment; NRR, natural resource rents; INFL, inflation.

*, $p < 0.05$, **, $p < 0.01$ and ***, $p < 0.01$ denote threshold significance at 10%, 5% and 1% respectively.

TABLE 7: Diagnostics.

F-stat *p*-value	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Resid. AR(1) *p*-value	0.001	0.000	0.032	0.011	0.001	0.000	0.031	0.043	0.023
Resid. AR(2) *p*-value	0.536	0.536	0.549	0.538	0.530	0.542	0.523	0.742	0.386
Sargan test *p*-value	0.087	0.084	0.083	0.089	0.086	0.065	0.086	0.122	0.034
Hansen *J* test *p*-value	0.097	0.102	0.106	0.100	0.102	0.100	0.100	0.414	0.203
Number of instruments	37	37	37	37	37	36	37	38	37
Number of countries	40	40	40	40	40	40	40	40	40
Observations	734	734	734	734	734	734	734	643	728

Resid, residual; AR, autocorrelation.

System generalised method of moments results

Table 6 presents the empirical results based on SGMM. Results are presented in nine models, where Model 1 shows the impact of the generated institutional quality index (the index consists of six Inst components, namely: (1) RWL, (2) GVE, (3) COC, (4) RQ, (5) VAC, (6) PLS on FDI. Model 2 – Model 7 show the impact of each institutional quality indicator and/or component on FDI. Model 8 and Model 9 present the effectiveness of CP and POR on FDI. Corruption perception and political rights were separated from the other six institutional quality indicators because they have different measurements (Arellano & Bond 1991).

Arellano and Bond's (1991) dynamic panel GMM estimator is utilised for difference GMM estimations, whereas Arellano and Bover's (1995) system GMM estimations are employed. The foundation of both models is two steps. Parenthetical figures represent standard errors. The logarithm is used for all variables. The system GMM results present the estimated coefficients for various models. Each model evaluates the impact of different institutional quality indicators and other variables on FDI. The coefficients provide insights into the magnitude and direction of these effects.

These findings align with economic theory, such as the NIE Theory by North and empirical evidence indicating that strong institutional frameworks characterised by the rule of law, government effectiveness, control of corruption, RQ, voice and accountability, political stability, control of public corruption and control of porosity provide a conducive environment for attracting foreign investment. Investors are generally more willing to invest in countries with well-functioning institutions as they provide greater predictability, stability, protection of property rights and reduced risk of corruption, which are essential factors for successful long-term investments.

According to the results in Table 6, the only institutional quality measure that shows a negative coefficient is the POR. The negative association with FDI suggests that greater political rights may lead to lower FDI inflows. The negative political rights coefficient suggests some investors may prioritise policy stability and regime continuity over democratic contestation. In certain SSA contexts, capital owners may perceive centralised control as a lower risk to long-term investment than political volatility. This effect may be particularly pronounced in countries with immature democracies or undergoing political transitions, where greater political rights could signal higher levels of uncertainty and volatility, deterring investors seeking stability. Therefore, while political rights are crucial for societal development, addressing associated challenges alongside economic reforms is vital for attracting foreign investment and promoting sustainable growth.

Diagnostic checks

The study tested the validity of the instruments utilised by applying the Hansen test of overidentifying constraints. The $p > 0.05$ indicates that the null hypothesis (H0) cannot be rejected, validates the model's instrument selection. The test findings (see Table 7) show that all regressions match the specification tests, indicating that the variables in the study are valid, as the Hansen test's *p*-value was determined to be insignificant. The number of cross sections (40) is also greater than the number of instruments (37 & 38). The number of instruments remains lower than the number of cross sections, mitigating concerns of instrument proliferation and ensuring the validity of the overidentification tests. The conclusions are strengthened by the substantial *F*-statistic significant probability value of 0.000 that the diagnostic tests show. The lag of FDI should have a significant *p*-value. Across all models in the study, the lagged dependent variable was significant. In system GMM, the AR(2) test examines whether the differenced errors exhibit second-order serial correlation; a non-significant AR(2) statistic confirms that the moment conditions are valid, and the instruments are appropriate. Therefore, the instruments are appropriately stated, and there is no serial correlation if H0 cannot be rejected. At the 5% level of significance, the model also satisfied this requirement.

All diagnostic tests confirm the robustness of the model. The Hansen test of overidentifying restrictions, along with other diagnostic tests, indicates that the selected instruments are valid, enhancing the reliability of the model estimates. Furthermore, the insignificant *p*-value in the Hansen test suggests that all regressions meet the specification tests, demonstrating the validity of the variables in the study. Additionally, with the number of instruments (37 & 38) being less than the number of cross sections (40), the model's results are further reinforced, underlining its robustness. The significant *F*-statistic probability value of 0.000 further solidifies the results. Hence, the diagnostic tests collectively affirm the model's validity and reliability.

In summary, the *F*-statistic's low *p*-value suggests that the overall model from models 1 to 9, respectively, is statistically significant. There is some evidence of residual autocorrelation

at lag 1 (p = 0.001, 0.000, 0.032, 0.011, 0.001, 0.000, 0.031, 0.043, 0.023), but not at lag 2 (p = 0.536, 0.536, 0.549, 0.538, 0.530, 0.542, 0.523, 0.742, 0.386). The Sargan test suggests that overidentification restrictions may not be violated (p = 0.087, 0.084, 0.083, 0.089, 0.086, 0.065, 0.086, 0.122, 0.034). The Hansen J test also indicates that the instruments used in the model are valid (p = 0.097, 0.102, 0.106, 0.100, 0.102, 0.100, 0.100, 0.414, 0.203).

Discussion

This study aimed to investigate the relationship between institutional quality and FDI in the selected SSA countries for the period 2000–2021 using the SGMM econometric technique. The study aimed to provide robust and efficient estimates of the relationship, considering potential endogeneity issues and dynamic interactions.

The study presented a thorough analytical framework for investigating the relationship between FDI and institutional quality in selected SSA nations. It adhered to a positivist research philosophy, emphasising the objective study of reality using empirical evidence. An econometric research design based on panel secondary data was used to investigate this relationship. Using a quantitative approach, the study collected and analysed yearly panel data from the Global Economy Database from 2000 to 2021 to evaluate the hypothesis that there is no significant relationship between institutional quality measures and FDI in SSA countries. To address potential endogeneity difficulties and ensure reliable results, the SGMM technique was used. The model's validity and reliability were confirmed by post-estimation diagnostic tests such as serial correlation tests, the Sargan and/or Hansen test for overidentification constraints and instrument validity checks.

The findings of the study show that all institutional quality measures (RWL, GVE, COC, RQ, VAC, PLS) had a positive effect on FDI in SSA countries, except for the POR, which had a negative impact. Institutional quality, capital investment, GDP, trade openness, inflation and natural resource rents are significant drivers of FDI. Inflation hurts FDI, emphasising the adverse effects of inflation on FDI inflows. Institutional quality has positive effects on FDI, highlighting the importance of effective governance and institutions.

Implications and recommendations

The results of this investigation provide substantial theoretical support and enhancement. The robust, affirmative impact of several institutional factors on FDI substantiates the fundamental principles of NIE and the Eclectic (OLI) Paradigm. It experimentally substantiates that institutional quality serves as a fundamental location-specific (L) advantage by diminishing transaction costs and alleviating risk, which are pivotal mechanisms in these theories. The contradictory adverse effect of the POR, however, adds significant complexity to the theoretical comprehension of governance and FDI in precarious environments. It indicates that in settings with underdeveloped institutions, specific formal political freedoms may be associated with short-term instability or policy unpredictability that surpass their long-term theoretical advantages for investors. This discovery prompts additional theoretical exploration into the distinct impacts of diverse political regime attributes on investment choices, advocating for a more nuanced concept of 'political stability' that differentiates peaceful continuity from other democratic elements.

This report offers a definitive, actionable decision-making methodology for multinational companies (MNCs) and investors assessing prospects in SSA. Practitioners must emphasise host country due diligence that transcends conventional economic metrics, incorporating a comprehensive evaluation of institutional integrity, with significant consideration given to regulatory soundness, contract enforcement and corruption control in their site selection frameworks. The pronounced deterrent impact of inflation offers a distinct, measurable risk parameter for financial planning, underscoring the necessity for investments in nations with reliable central banking policies. Moreover, the advantageous impact of domestic capital investment indicates that investors ought to identify areas with strong public and private capital formation, since this reflects superior complementary infrastructure and a more vibrant local economy. The adverse indication from the POR cautions investors to meticulously differentiate between democratic principles and actual political predictability, emphasising the importance of the stability of the operational environment rather than the kind of political rivalry.

For governments in SSA, the findings translate into a direct and urgent policy agenda focused on enhancing competitiveness. Competitiveness is defined here by a state's ability to mitigate regional structural constraints, such as infrastructure gaps and fragmented markets. This approach moves beyond abstract global benchmarks to focus on the practical 'cost of doing business' within the African context. Firstly, a holistic and integrated institutional reform programme is paramount. Policies must simultaneously strengthen the RWL (through judicial training and anti-corruption agencies), improve regulatory efficiency (via one-stop business shops and transparent licensing) and bolster government effectiveness (through civil service meritocracy). Secondly, macroeconomic stability, specifically inflation control through disciplined monetary and fiscal policy, must be treated as a non-negotiable pillar of the national investment promotion strategy. Thirdly, the positive link between domestic capital investment and FDI calls for policies that crowd in private investment, such as public–private partnerships for infrastructure and incentives for local capital markets. Finally, governments should strategically leverage natural resource revenues, not as a sole attraction, but as capital to fund the institutional and infrastructural upgrades that will attract diversified, value-added FDI for long-term, sustainable development.

Conclusion

The study used aggregate FDI inflows as the dependent variable. In the context of SSA countries, investment is often heterogeneous, encompassing market, efficiency and resource-seeking motivations. The dominance of the extractive sector may mask the institutional influence, as the extractive sector normally bypasses governance weaknesses. The observed influence of institutional quality may be distorted by the requirements of extractive sectors, such as mining and energy, which dominate FDI in many of the tested countries. We recommend future studies to disaggregate FDI data to determine the effect of institutional quality across different motives. We also acknowledge that the reliance on formal governance indicators overlooks the 'informal' institutions, such as kinship networks that often drive investor certainty in the SSA context.

Acknowledgements

Competing interests

The authors, Phakama Mthanda; Kin Sibanda and Rufaro Garidzirai, declare that they have no financial or personal relationships that may have inappropriately influenced them in writing this article.

CRediT authorship contribution

Phakama Mthanda: Conceptualisation, Data curation, Formal analysis, Investigation, Methodology, Resources and Writing – original draft. Kin Sibanda: Conceptualisation, Formal analysis, Investigation, Methodology, Supervision, Writing – original draft and Writing – review & editing. Rufaro Garidzirai: Conceptualisation, Formal analysis, Investigation, Methodology, Supervision and Writing – original draft. All authors reviewed the article, contributed to the discussion of results, approved the final version for submission and publication and take responsibility for the integrity of its findings.

Funding information

The authors received no financial support for the research, authorship and/or publication of this article.

Data availability

Data sharing is not applicable to this article as no new data were created or analysed in this study.

Disclaimer

The views and opinions expressed in this article are those of the authors and are the product of professional research. They do not necessarily reflect the official policy or position of any affiliated institution, funder, agency or that of the publisher. The authors are responsible for this article's results, findings and content.

References

Adegboye, F.B. & Okorie, U.E., 2023, 'Fragility of FDI flows in sub-Saharan Africa region: Does the paradox persist?', *Future Business Journal* 9(1), 8–19. https://doi.org/10.1186/s43093-023-00184-6

Adegboye, F.B., Osabohien, R., Olokoyo, F.O., Matthew, O. & Adediran, O., 2020, 'Institutional quality, foreign direct investment, and economic development in sub-Saharan Africa', *Humanities and Social Sciences Communications* 7, 38. https://doi.org/10.1057/s41599-020-0529-x

Ahmed, A.T. & Rahman, I.U., 2020, 'The impact of FDI and foreign aid on the economic growth: Empirical evidence from sub-Saharan African countries', *International Journal of Science and Business* 4(6), 53–70. https://doi.org/10.5281/zenodo.3870562

Aihounton, G.B. & Henningsen, A., 2021, 'Units of measurement and the inverse hyperbolic sine transformation', *The Econometrics Journal* 24(2), 334–351.

Alston, L.J., 2008, 'New institutional economics', in M. Vernengo, E.P. Caldentey & J. Ghosh (eds.), *The new Palgrave dictionary of economics*, pp. 1–11, Palgrave Macmillan, London.

Asiedu, E., 2006, 'Foreign direct investment in Africa: The role of natural resources, market size, government policy, institutions and political instability', *World Economy* 29(1), 63–77.

Aracil, E., Gómez-Bengoechea, G. & Moreno-de-Tejada, O., 2022, 'Institutional quality and the financial inclusion-poverty alleviation link: Empirical evidence across countries', *Borsa Istanbul Review* 22(1), 179–188. https://doi.org/10.1016/j.bir.2021.03.006

Arellano, M. & Bond, S., 1991, 'Some tests of specification for panel data: Monte Carlo evidence and an application to employment equations', *Review of Economic Studies* 58(2), 277–297. https://doi.org/10.2307/2297968

Arellano, M. & Bover, O., 1995, 'Another look at the instrumental variable estimation of error-components models', *Journal of Econometrics* 68(1), 29–51. https://doi.org/10.1016/0304-4076(94)01642-D

Awadhi, M., James, M. & Byaro, M., 2022, 'Does institutional development attract foreign direct investments in sub-Saharan Africa? A dynamic panel analysis', *African Journal of Economic Review* 10(1), 1–21.

Bartels, F.L., Alladina, S.N. & Lederer, S., 2009, 'Foreign direct investment in sub-Saharan Africa: Motivating factors and policy issues', *Journal of African Business* 10(2), 141–162. https://doi.org/10.1080/15228910903187791

Bekun, F.V., Alawode, A.A. & Adebayo, T.S., 2023, 'Renewable energy consumption in sub-Saharan Africa: The role of human capital, foreign direct investment, financial development, and institutional quality', *Energy Reports* 10, 3383–3393. https://doi.org/10.1016/j.egyr.2023.10.025

Blundell, R. & Bond, S., 1998, 'Initial conditions and moment restrictions in dynamic panel data models', *Journal of Econometrics* 87(1), 115–143.

Bond, S.R., Hoeffler, A. & Temple, J.R., 2001, 'GMM estimation of empirical growth models', *SSRN* 37, viewed 16 April 2024, from https://ssrn.com/abstract=290522.

Chen, Y., Zhang, D., Wu, F. & Ji, Q., 2022, 'Climate risks and foreign direct investment in developing countries: The role of national governance', *Sustainability Science* 17, 1723–1740. https://doi.org/10.1007/s11625-022-01199-8

Dada, J.T. & Abanikanda, E.O., 2022, 'The moderating effect of institutions in foreign direct investment led growth hypothesis in Nigeria', *Economic Change and Restructuring* 55(1), 903–929. https://doi.org/10.1007/s10644-021-09332-w

David, R.J., Tolbert, P.S. & Boghossian, J., 2019, 'Institutional theory in organization studies', in D.D. Bergh (ed.), Oxford Research Encyclopedia of Business and Management, 1st edn., Oxford University Press, New York, NY. https://doi.org/10.1093/acrefore/9780190224851.013.158

Demsetz, H., 1967, 'Toward a Theory of property rights', *The American Economic Review* 57(2), 347–359.

Dunning, J.H., 1977, 'Trade, location of economic activity and the MNE: A search for an eclectic approach', in B. Ohlin, P.O. Hesselborn & P.M. Wijkman (eds.), *The international allocation of economic activity*, pp. 395–418, Palgrave Macmillan, London.

Farzana, A., Samsudin, S. & Hasan, J., 2024, 'Drivers of economic growth: A dynamic short panel data analysis using system GMM', *Discover Sustainability* 5(1), 1–16. https://doi.org/10.1007/s43621-024-00612-9

Githaiga, P.N. & Kilong'i, A.W., 2023, 'Foreign capital flow, institutional quality and human capital development in sub-Saharan Africa', *Cogent Economics and Finance* 11(1), 1–17. https://doi.org/10.1080/23322039.2022.2162689

Ha, V.T., Doan, T., Holmes, M.J. & Tran, T.Q., 2023, 'Does institutional quality matter for foreign direct investment and human development?', *Evaluation Review* 48(4), 610–635. https://doi.org/10.1177/0193841X231195798

Hansen, B.E. & Lee, S., 2021, 'Inference for iterated GMM under misspecification', *Econometrica* 89(3), 1419–1447. https://doi.org/10.3982/ECTA16274

Huynh, C.M., 2022, 'How does the impact of foreign direct investment on institutional quality depend on the underground economy?', *Journal of Sustainable Finance and Investment* 12(2), 553–569. https://doi.org/10.1080/20430795.2020.1788851

Jama, A.B. & Nayan, S., 2022, 'The nexus between institutional quality and foreign direct investment', *International Journal of Economics and Finance* 14(8), 1916–9728. https://doi.org/10.5539/ijef.v14n8p11

Kamah, M., Riti, J.S. & Bin, P., 2021, 'Inclusive growth and environmental sustainability: The role of institutional quality in sub-Saharan Africa', *Environmental Science and Pollution Research* 28, 34885–34901. https://doi.org/10.1007/s11356-021-13125-z

Kaya, I. & Kaya, O., 2020, 'Foreign aid, institutional quality and government fiscal behaviour in emerging economies: An empirical investigation', *The Quarterly Review of Economics and Finance* 76, 59–67. https://doi.org/10.1016/j.qref.2019.08.004

Khan, H., Dong, Y., Bibi, R. & Khan, I., 2023, 'Institutional quality and foreign direct investment: Global evidence', *Journal of the Knowledge Economy* 16(2), 521–547. https://doi.org/10.1007/s13132-023-01508-1

Locke, J., 1690, *Second Treatise of Government*, Hackett Publishing Company, Indianapolis, IN.

Makalima, S.O., Nduna, S. & Kapingura, F.M., 2024, 'Determinants of foreign direct investment in SADC region: Case of financial development, institutions and openness', *South African Journal of Economic and Management Sciences* 27(1), 1–10.

Minh, C.H., 2019, 'Institutional quality and foreign direct investment inflows: The case of Vietnam', *Asian Economic and Financial Review* 9(5), 630–641. https://doi.org/10.18488/journal.aefr.2019.95.630.641

Nieman, M.D. & Thies, C.G., 2019, 'Property rights regimes, technological innovation, and foreign direct investment', *Political Science Research and Methods* 7(3), 451–469. https://doi.org/10.1017/psrm.2017.46

North, D.C., 1994, 'Economic performance through time', *The American Economic Review* 84(3), 359–368, viewed 25 May 2024, from https://www.jstor.org/stable/2118057.

Pesaran, M.H., 2021, 'General diagnostic tests for cross-sectional dependence in panels', *Empirical Economics* 60, 13–50. https://doi.org/10.1007/s00181-020-01875-7

Roodman, D., 2009, 'How to do xtabond2: An introduction to difference and system GMM in Stata', *The Stata Journal* 9(1), 86–136.

Sabir, S., Rafique, A. & Abbas, K., 2019, 'Institutions and FDI: Evidence from developed and developing countries', *Financial Innovation* 5(8), 1. https://doi.org/10.1186/s40854-019-0123-7

Sarafidis, V., Yamagata, T. & Robertson, D., 2010, 'A test of cross-section dependence for a linear dynamic panel data model with regressors', *Journal of Econometrics* 148(2), 149–161. https://doi.org/10.1016/j.jeconom.2008.10.006

Sayari, K., 2019, 'Institutional efficiency and attraction of foreign direct investment to developing countries', *International Journal of Economics and Finance* 11(7), 54–60. https://doi.org/10.5539/ijef.v11n7p54

Wang, M.L., Ntim, V.S., Yang, J., Zheng, Q. & Geng, L., 2022, 'Effect of institutional quality and foreign direct investment on economic growth and environmental quality: Evidence from African countries', *Economic Research* 35(1), 4065–4091. https://doi.org/10.1080/1331677X.2021.2010112

World Bank, 2023, *The World Bank in Africa*, World Bank, viewed 11 June 2023, from https://www.worldbank.org/en/region/afr/overview.