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Informal economy, institutional quality, and socioeconomic conditions in African countries

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Abstract

Purpose — This paper examines the impact of the informal economy and institutional quality on socioeconomic conditions in 35 African countries from 2000 to 2022.

Methods — The study employs Driscoll-Kraay, Fully Modified Ordinary Least Squares, Method of Moments Quantile Regression, Dynamic Panel Threshold, and Dumitrescu-Hurlin (D-H) Granger non-causality techniques.

Findings — The findings indicate that the informal economy significantly worsens socioeconomic conditions, whereas stronger institutional quality, evident in factors such as government stability and corruption control, enhances these outcomes. A critical institutional quality threshold of 5.282 is established, suggesting that countries with institutional quality above this level experience substantial improvements in socioeconomic conditions. Unidirectional causality from the informal economy to socioeconomic conditions and a bidirectional relationship between institutional quality and socioeconomic outcomes are also noted.

Implication — Enhancing institutional quality is essential for promoting economic development and improving overall well-being in African and similar countries. Addressing institutional weaknesses could enable these countries to exceed the quality threshold and achieve better socioeconomic outcomes.

Originality — This research differs from previous ones by investigating the effects of both informality and institutional quality within a threshold framework on socioeconomic situations in African countries. Furthermore, it includes a socioeconomic conditions index that combines three subcomponents: poverty, unemployment, and consumer confidence. Additionally, the study employs various measures of institutional quality to explore their differing impacts on socioeconomic conditions.

Keywords — informality; institutions; socioeconomic conditions; panel analysis, Africa

Introduction

The informal economy in Africa presents a multifaceted challenge intricately tied to the socioeconomic conditions across the continent (Dada et al., 2022; Hart, 2009). Informality, defined as economic activities not regulated by the state, constitutes a significant share of the African economy (Medina & Schneider, 2018). It includes a wide range of activities, from street vending to informal financial services, and has become a vital component of survival for many African families (UNDP, 2022). Despite its prevalence, the informal economy is often characterised by low

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productivity, inadequate social protection, and limited access to finance (UNDP, 2022; World Bank, 2021). As a result, informality is a complex issue that is both a consequence of and a contributor to African socioeconomic challenges.

The prevalence of informality in Africa can be examined through multiple theoretical lenses. The dualistic labor market theory, originating with Lewis (1954) and extended by Fields (1975), proposes that the informal sector acts as a residual labor market, absorbing individuals who cannot secure formal employment. Similarly, the structural articulation theory, advanced by Castells and Portes (1989), attributes informality to economic structures that cannot provide adequate formal employment opportunities (Ajide & Dada, 2024b).

In the African context, where economic diversification is limited and formal sectors struggle to absorb a growing labor force, the structural articulation theory offers a compelling explanation for the persistence of informality. Empirical studies from countries like Kenya and Ghana (Chen, 2012; Becker, 2004) establish how limited opportunities in the formal sector and economic stagnation contribute to informal activities, supporting the structural articulation argument. This phenomenon is exacerbated by high levels of underemployment and unemployment, which drive individuals into informal work as a last resort (Gómez & Irewole, 2023; Ogbonna et al., 2023). Furthermore, empirical research in South Africa (Cichello & Rogan, 2017) reveals that the informal sector functions as a buffer for unemployed individuals, reinforcing the dualistic labor market perspective.

A third perspective emanates from the neoliberal approach, which perceives informality as a voluntary choice made by individuals seeking to avoid the constraints of formal regulation (De Soto, 1989). This perspective is also applicable in Africa, where excessive regulation, corruption, and bureaucratic inefficiencies often make formalisation costly and unattractive for small businesses (Canelas, 2019; Xu et al., 2021). Consequently, many entrepreneurs opt to operate informally, where they can avoid taxes and regulatory burdens, even if it means sacrificing certain protections and benefits associated with formal employment (Dada et al., 2022).

These theories all accentuate the vital role of institutions in shaping informality (Ofori et al., 2023; Ujunwa et al., 2021). Institutions, defined as the formal and informal rules governing economic, political, and social interactions (North, 1990), impact the incentives and constraints faced by economic agents. Poor institutional quality—characterized by corruption, lack of government accountability, and weak rule of law—often leads to higher levels of informality as individuals seek ways to navigate an unpredictable environment (Olaniyi & Odhiambo, 2024).

Institutional quality is a key factor in understanding the prevalence of informality (Kırşanlı, 2023) and its impact on socioeconomic outcomes (Fagbemi et al., 2021). According to institutional theory (North, 1990), strong institutions promote trust, reduce transaction costs, and facilitate economic exchanges, encouraging formalization. On the contrary, weak institutions increase uncertainty and costs associated with formal economic activity, leading to an expansion of the informal economy. In Africa, where institutional weaknesses are widespread, informality becomes a rational response to the challenges the formal regulatory environment presents. For instance, in countries with insecure property rights, individuals may prefer to operate informally rather than risk losing assets to corrupt officials or bureaucratic inefficiencies.

Strong institutions create an environment conducive to economic growth, improve access to services, and reduce inequality (North 1990; Olaniyi & Odhiambo 2024). On the other hand, weak institutions exacerbate inequality and poverty by restraining opportunities and access to resources (Fagbemi & Asongu, 2020). In Africa, weak institutional quality is closely linked to poor socioeconomic conditions, as evidenced by low scores on socioeconomic indicators, widespread poverty, and high unemployment rates (Sarsani, 2011; Darin-Mattsson, 2017; Galal, 2024a, 2024b).

Studies establish that countries with stronger institutional frameworks tend to have lower levels of informality, higher economic growth rates, and improved socioeconomic outcomes (Olaniyi & Odhiambo, 2024; Fagbemi et al., 2021). For example, Osinubi et al. (2023) discovered that good governance can help reduce poverty and unemployment, improving overall socioeconomic conditions. Relatively, countries like Botswana and Rwanda, which have relatively stronger institutions, experience lower levels of informality than countries with weaker institutions, such as South Sudan and Zimbabwe (Bolarinwa & Simatele, 2023).

The nexus between informality and socioeconomic outcomes and between institutions and socioeconomic outcomes has been nonlinear (Bolarinwa & Simatele, 2023; Ochi et al., 2023; La Porta & Shleifer, 2014). This implies that the effect of these factors on socioeconomic outcomes does not follow a simple linear relationship. Instead, there appears to be a threshold level of institutional quality that countries must reach before they begin to see substantial reductions in informality and improvements in socioeconomic outcomes.

While the general outlook on informality is often pejorative, it is essential to recognise the role of the informal economy as a safety net for people with low incomes. In many African countries, the informal sector provides livelihoods for millions of people who would otherwise be unemployed. It provides economic security in environments where formal employment opportunities are scarce and social safety nets are weak or non-existent. According to Bolarinwa and Simatele (2023), the informal economy plays a vital role in poverty reduction in low- and middle-income African nations despite its productivity and income stability limitations. This dual role of informality, both a consequence of institutional weakness and a source of resilience for vulnerable populations, highlights the issue's complexity and underscores the need for nuanced policy approaches. Studies by Diallo et al. (2017) and Sahnoun and Abdennadher (2019) also support the argument that the informal economy contributes to reducing unemployment for many urban poor and rural populations despite the challenges faced by the sector.

Understanding the link between socioeconomic outcomes, institutional quality, and informality in Africa is crucial in this context. Although significant research has examined the role of institutions, these studies often rely on narrow measures of institutional quality. For example, Jamil et al. (2022) and Fagbemi et al. (2021) use limited indicators like governance. Likewise, Ochi et al. (2023), Widiastuti et al. (2022), Abé Ndjié (2019), and Shabbir et al. (2019) focus on individual socioeconomic indicators such as employment or poverty. This paper argues that while these studies provide valuable insights, policy interventions could benefit from understanding a broader range of institutional quality measures and their impact on comprehensive socioeconomic conditions.

This paper aims to investigate the relationship between informality and socioeconomic outcomes on the one hand and between institutional quality and socioeconomic outcomes on the other hand in a threshold framework. To this end, the paper makes various contributions to the literature. First, it extends the work of Fagbemi et al. (2021) by using a comprehensive measure of institutional quality, encompassing five indicators: government stability, control of corruption, law and order, democratic accountability, and bureaucratic quality. This broader approach provides a detailed analysis of how these components impact African socioeconomic conditions, addressing the region's high level of informality (Ajide & Dada, 2024b; Dada et al., 2021). Second, the study examines the distributional effects of informality and institutional quality on socioeconomic conditions using Machado and Silva's (2019) quantile regression approach, which allows for heterogeneous impacts across different population segments (Olaniyi & Odhiambo, 2024). Third, it identifies the institutional quality threshold necessary to alleviate the adverse effects of informality. Finally, by considering the reverse causality between informality, institutional quality, and socioeconomic conditions (Bolarinwa & Simatele, 2023; Pham, 2022), this study offers a nuanced understanding of the complex interactions that shape the informal economy and its impact on socioeconomic outcomes.

Methods

Data

This study uses a panel dataset comprising 35 African countries[1] from 2000 to 2020, relying on quantitative methods to comprehensively analyze the effects of informality and institutional quality on socioeconomic outcomes. Data sources include the World Bank, the International Country Risk Guide (ICRG) Database, and national statistical agencies (Elgin et al., 2021). Informal output is

[1] The 35 African countries include Algeria, Angola, Botswana, Burkina Faso, Cameroon, Democratic Republic of Congo, Republic of Congo, Cote d'Ivoire, Egypt, Ethiopia, Gabon, Gambia, Ghana, Guinea, Guinea-Bissau, Kenya, Liberia, Libya, Madagascar, Malawi, Mali, Morocco, Mozambique, Namibia, Niger, Nigeria, Senegal, Sierra Leone, South Africa, Tanzania, Togo, Tunisia, Uganda, Zambia, and Zimbabwe.

measured as a percentage of official GDP using the Multiple Indicators Multiple Causes (MIMIC) model, following Elgin et al. (2021). Socioeconomic conditions are assessed using an index that measures the risk of socioeconomic dissatisfaction, ranging from 0 (highest risk) to 12 (lowest risk). An institutional quality index is constructed using five indicators: government stability, control of corruption, law and order, democratic accountability, and bureaucratic quality (Fagbemi et al., 2021). These indicators assess the overall institutional environment in each country and its impact on informality. The institutional variables are rescaled from 0 to 10, with higher values indicating stronger institutional quality (Aluko & Ibrahim, 2021; Tang et al., 2020). The institutional variables provide a comprehensive assessment of governance. Government stability reflects the government's capacity to implement policies effectively, while law and order capture the strength of legal institutions and public adherence to rules. Democratic accountability measures government responsiveness to citizens, fostering trust and compliance. Bureaucratic quality minimizes the adverse effects of political instability on public service delivery. These indicators offer a robust measure of institutional quality, facilitating a detailed analysis of how governance impacts informality and socioeconomic outcomes. The control variables include GDP (constant 2015 US$), inflation, and access to electricity to capture other macroeconomic factors that may influence informality and socioeconomic conditions. The descriptions of the variables are presented in Table 1.

Table 1: Variables Description

Variable	Symbol	Measurement	Source
Informal Economy	IFE	Multiple indicators multiple causes model-based (MIMIC) estimates of informal output (% of official GDP)	Elgin *et al.* (2021)
Socioeconomic Conditions	SOC	"A measure of the socioeconomic pressures at work in society that could constrain government action or fuel social dissatisfaction". "The risk rating assigned is the sum of three subcomponents: Unemployment, Consumer Confidence, and Poverty and each of them has a maximum score of four points and a minimum score of zero point". A score of four points equates to very low risk and a score of zero points to very high risk". It is on a scale of 0 -12.	ICRG
Control of Corruption	COR	"A measure of corruption within the political system that is a threat to foreign investment by distorting the economic and financial environment, reducing the efficiency of government and business by enabling people to assume positions of power through patronage rather than ability, and introducing inherent instability into the political process". It is on a scale of 0-6.	ICRG
Democratic Accountability	DAC	"A measure of, not just whether there are free and fair elections, but how responsive government is to its people". It is on a scale of 0-6.	
Law and Order	LAO	"Two measures comprising one risk component. Each sub-component equals half of the total. The "law" sub-component assesses the strength and impartiality of the legal system, and the "order" sub-component assesses popular observance of the law". It is on a scale of 0-6.	
Government Stability	GOS	"A measure of both of the government's ability to carry out its declared program(s) and its ability to stay in office. The risk rating assigned is the sum of three subcomponents: Government Unity, Legislative Strength, and Popular Support". It is on a scale of 0-12.	
Bureaucratic Quality	BUQ	"Institutional strength and quality of the bureaucracy is a shock absorber that tends to minimize revisions of policy when governments change". It is on a scale of 0-4.	
Institutional Quality Index	IQI	Average of COR, DAC, LAO, GOS, and BUQ	Authors' Computations from ICRG
Economic Growth	GDP	Natural logarithm of GDP (constant 2015 US$)	WDI
Inflation	INF	Inflation, consumer prices (annual %)	
Electricity	ELE	Access to electricity (% of population)	

Model Specification

The study's analytical framework is grounded in institutional theory, which emphasizes the role of institutional quality in determining economic outcomes (North, 1990). The present study is consistent with the studies of Osinubi and Simatele (2024), Bolarinwa and Simatele (2023), Pham (2022), and Fagbemi et al. (2021) on the effects of informal economy and institutional quality on socioeconomic conditions in African countries. However, the model is modified to include a few variables that can influence socioeconomic conditions, as shown in Equation 1.

$$SOC_{it} = \gamma_0 + \gamma_1 IFE_{it} + \gamma_2 INS_{it} + \gamma_3 GDP_{it} + \gamma_4 INF_{it} + \gamma_5 ELE_{it} + \varepsilon_{it} \quad (1)$$

where SOC, IFE, INS, GDP, INF, and ELE indicate socioeconomic conditions, informal economy, different indicators of institutional quality (IQI {institutional quality index}, COR {control of corruption}, DAC {democratic accountability}, LAO {law and order}, GOS {government stability}, and BUQ {bureaucratic quality}), real GDP, inflation, and electricity, respectively. *i and t* represent the countries and the study period, γ_0 is the intercept, γ_1-γ_5 are the parameters to be estimated, and ε is the error term. Real GDP, inflation, and access to electricity are included in the model because they have been established in the literature to have significant effects on socioeconomic conditions and the informal economy (Ajide & Dada, 2024b; Bolarinwa & Simatele, 2023; Pham, 2022; Fagbemi et al., 2021; Sahnoun & Abdennadher, 2019). Most crucially, the indicators of institutional quality variables would be introduced into the equation step-by-step, estimating six alternative models, each of which would handle one of the indicators.

Method of Analysis

Equation 1 will be evaluated using Driscoll-Kraay, Fully Modified Ordinary Least Squares, and Methods of Moments Quantile Regression approaches. The study employs Machado and Silva's (2019) quantile regression approach to assess the distributional effects of informality and institutional quality on socioeconomic conditions. This approach captures heterogeneous impacts across population segments, allowing for a deeper understanding beyond average effects (Olaniyi & Odhiambo, 2024). The different methods are important because they solve the issues of endogeneity, cross-sectional dependence, serial correlation, heterogeneity, nonlinearity, and distributional effects (Olaniyi & Odhiambo, 2024).

Additionally, the study investigates the level of institutional quality needed to mitigate the adverse effects of informality on socioeconomic conditions using a dynamic panel threshold model by Seo et al. (2019) and Seo and Shin (2016). This method is better than the static method since it considers nonlinear relationships and a real-world dynamic perspective, as well as the behaviour of variables before and after the threshold (Olaniyi & Odhiambo, 2024).

The study employs a panel Granger non-causality approach developed by Dumitescu and Hurlin (2012) to determine the causal relationships among the informal economy, institutional quality, and socioeconomic conditions. This method is significant since it accounts for cross-sectional dependence and heterogeneity among African countries. The D-H is a bivariate causality test based on the panel vector autoregressive (VAR) modeling approach.

Results and Discussion

Cross-Sectional Dependence and Panel Unit Root Tests

Most African countries are related economically, socially, or politically. This suggests that a shock in one of the countries can spread to other related countries. As a result, the series must be adjusted for cross-sectional dependence. This is done by employing Breusch and Pagan (1980), Pesaran et al. (2008), Baltagi et al. (2012), and Pesaran (2004) CD tests. The results of the four CD tests in Table 2 show that African countries are highly interconnected. Notably, the Breusch-Pagan LM, Bias-corrected scaled LM, and Pesaran scaled LM statistics do not apply to LAO and BUQ because the values are nearly the same for each country across the study period. Thus, the study uses unit root tests and estimation procedures that account for cross-sectional dependence. Tables 3 (intercept alone) and 4 (intercept and trend) show the panel unit root tests devised by Pesaran

(2007): Im-Pesaran-Shim, cross-sectionally augmented IPS (CIPS), and cross-sectionally augmented Dickey-Fuller (CADF). The IPS test does not account for the presence of CD, but CIPS and CADF do. However, CIPS outperforms CADF when the variables are cross-sectionally dependent. Some variables are stationary at the level, while others are stationary at the first difference, according to the many tests used. As a result of the differing results from the different techniques, all the variables would be stationary at first difference. According to Olaniyi and Odhiambo (2024), the mixed orders of integration demonstrate that the variables act divergently in the short term. As a result, there is a need to investigate the presence of long-term relationships.

Table 2: Cross-Sectional Dependence Tests

Variable	Breusch-Pagan LM	Pesaran scaled LM	Bias-corrected scaled LM	Pesaran CD
SOC	2370.143***	51.459***	50.584***	7.865***
IFE	4316.867***	107.892***	107.017***	40.841***
IQI	2485.777***	54.819***	53.936***	18.385***
COR	2628.694***	58.954***	58.079***	93.410***
DAC	2718.050***	61.544***	60.669***	9.904***
LAO	NA	NA	NA	4.770***
GOS	4742.074***	120.218***	119.343***	63.182***
BUQ	NA	NA	NA	11.412***
GDP	10079.13***	274.931***	274.056***	94.410***
INF	1409.293***	23.605***	22.730***	11.084***
ELE	9303.907***	252.459***	251.584***	84.110***

Note: *** indicates significance at 0.01

Table 3. Panel Unit Root Tests (Intercept Only)

	IPS Test		CIPS Test		CADF Test	
Variable	Level	1st Difference	Level	1st Difference	Level	1st Difference
SOC	-2.444***	-12.408***	-2.795***	-3.806***	-2.173***	-3.701***
IFE	0.096	-9.091***	-1.970	-3.690***	-2.067***	-2.861***
IQI	-4.027***	-11.837***	-2.077	-3.811***	-2.236***	-3.164***
COR	-2.733***	-10.284***	-1.464	-3.430***	-1.689	-2.891***
DAC	-6.019***	-10.674***	-1.493	-3.303***	-2.019	-3.144***
LAO	-9.465***	-18.724***	-1.020	-1.611	-1.079	-1.215
GOS	-3.848***	-14.328***	-2.583***	-4.363***	-2.804***	-3.834***
BUQ	6.256	-3.271***	1.207	-0.050	-0.935	0.312
GDP	2.165	-11.955***	-2.670***	-4.921***	-2.011	-3.290***
INF	-10.965***	-16.878***	-2.957***	-4.736***	-2.565***	-3.943***
ELE	4.723	-15.858***	-2.972***	-5.594***	-2.216***	-4.311***

Note: *** indicates significance at 0.01

Table 4. Panel Unit Root Tests (Intercept and Trend)

	IPS Test		CIPS Test		CADF Test	
Variable	Level	1st Difference	Level	1st Difference	Level	1st Difference
SOC	-0.744	-10.135***	-2.880***	-3.950***	-2.909***	-3.890***
IFE	0.830	-6.589***	-1.967	-3.961***	-1.961	-3.178***
IQI	-3.364***	-9.346***	-2.449	-4.227***	-2.598**	-3.476***
COR	-2.771***	-7.148***	-2.106	-3.714***	-2.383	-3.050***
DAC	-3.907***	-9.025***	-1.936	-3.963***	-2.439	-3.650***
LAO	-8.1595***	-15.470***	-0.958	-2.762***	-1.067	-2.134
GOS	-3.359***	-10.809***	-2.857***	-4.509***	-2.968***	-3.907***
BUQ	-0.599	-3.088***	0.694	-0.685	0.376	-0.330
GDP	-2.077	-11.283***	-2.625**	-5.278***	-2.095	-3.685***
INF	-9.0558***	-18.548***	-3.345***	-4.970***	-2.863***	-4.196***
ELE	-0.136	-13.450***	-4.067***	-5.648***	-3.233***	-4.214***

Note: *** and ** indicate significance at 0.01 and 0.05 levels.

Slope Homogeneity and Cointegration Tests

The next step is to check for slope homogeneity and cointegration among variables. Table 5 shows Pesaran and Yamagata's (2008) slope homogeneity test findings. From the table, the null hypothesis of slope homogeneity is rejected, implying the existence of slope heterogeneity across African countries. Table 6 illustrates the cointegration test results using the method described by Persyn and Westerlund (2008). This test controls heterogeneity and cross-sectional dependence. Three of the statistics corroborate the existence of cointegration, meaning that the variables will converge with time.

Table 5. Slope Homogeneity Test

Model	$\hat{\Delta}$	$\hat{\Delta}_{adj}$
SOC = f(IFE, IQI, GDP, INF, ELE)	11.863***	14.529***
SOC = f(IFE, COR, GDP, INF, ELE)	12.251***	15.004***
SOC = f(IFE, DAC, GDP, INF, ELE)	12.561***	15.384***
SOC = f(IFE, LAO, GDP, INF, ELE)	11.819***	14.475***
SOC = f(IFE, GOS, GDP, INF, ELE)	10.429***	12.772***
SOC = f(IFE, BUQ, GDP, INF, ELE)	10.686***	13.088***

Note: *** indicates significance at 0.01

Table 6. Panel Cointegration Test

Statistic	Value	Z-value	p-value	Robust p-value
Gt	-2.885***	-3.779	0.000	0.000
Ga	-10.781***	1.071	0.858	0.000
Pt	-14.938***	-2.791	0.003	0.000
Pa	-9.044	-0.107	0.457	0.200

Note: *** indicates significance at 0.01

Empirical Findings and Policy Recommendations

The study employs Driscoll-Kraay regression to account for cross-sectional dependence and heterogeneity (see Table 7), Fully Modified Least Squares regression in Table 8 to take care of serial correlation and endogeneity, and Method of Moments Quantile Regression (see Table 9) to account for heterogeneous distribution effects across quantiles. Also, the study uses a Dynamic Panel Threshold Regression as shown in Table 10 to investigate the threshold value of institutional quality in the association between informal economy and socioeconomic conditions in African countries.

The estimates from the three methodologies reveal that the informal economy has a considerable and negative impact on African socioeconomic conditions, whether using bundle or unbundle measures of institutions. Specifically, the quantile regression estimates show that greater informal economic activity damages socioeconomic conditions across the quantiles (Q10-Q90). Studies by Osinubi and Simatele (2024), Gasparini and Torbarolli (2009), Loayza et al. (2009), and Krstić and Sanfey (2007) support this finding by indicating that increased informal economic activities result in lower socioeconomic conditions. The negative impacts of the informal economy on socioeconomic results have significant consequences for policy development. The results demonstrate that elevated levels of informality correlate with inadequate earnings, inconsistent incomes, and restricted access to basic services. Consequently, mitigating informality should be a primary policy aim for African countries. Attention must be on formalizing informal businesses by implementing targeted incentives, including streamlined registration procedures, tax advantages, and access to financing. Also, enhancing social protection systems for informal workers may lessen the adverse effects of informality by bolstering job security and income stability. Development organizations and NGOs could be instrumental in formulating and executing initiatives that enable the transition from informality to formality, ensuring that marginalized groups are not overlooked.

A strong institution is expected to create a conducive environment and provide the resources needed to improve socioeconomic conditions. From the three estimations, institutional

quality, irrespective of its measurement, significantly affects African socioeconomic conditions. The finding aligns with Fagbemi et al. (2021), who argue that strong governance can help improve socioeconomic conditions by lowering unemployment, inequality, and poverty levels. The significant relationship between institutional quality and socioeconomic outcomes indicates that prioritizing investment in institutional development is essential for African countries. The results suggest that enhancements in factors such as governmental stability, corruption control, law enforcement, democratic accountability, and bureaucracy effectiveness substantially improve socioeconomic conditions.

Table 10 shows the findings for the threshold effect of institutional quality in the relationship between the informal economy and socioeconomic conditions. The linearity tests indicate the presence of nonlinearity and thresholds of institutional quality in the relationship between the informal economy and socioeconomic conditions, as the null hypothesis of linearity is rejected for all measures of institutional quality. The overall institutional quality, often known as the institutional quality index, has a threshold value of 5.282. Other indices of institutional quality have threshold values of 4.035, 3.330, 3.499, 7.610, and 2.929, for corruption control, democratic accountability, law and order, government stability, and bureaucratic quality, respectively. According to the findings, the thresholds for overall institutional quality, corruption, and government stability are higher than their average values, 4.843, 3.406, and 6.878, respectively. In contrast, those for democratic accountability, law and order, and bureaucratic quality are lower, 5.505, 5.140, and 3.239, respectively.

The threshold of institutional quality yields results like those of Olaniyi and Odhiambo (2024), who discovered a threshold of 5.281 before institutional quality can enhance natural resource rents in spurring renewable energy transitions in resource-rich African nations. Considering that the average IQI in the data is 4.483, achieving and maintaining institutional quality levels beyond established criteria, such as the IQI threshold of 5.282, is essential for significantly enhancing socioeconomic outcomes. Development organizations can facilitate these initiatives by offering technical and financial help to improve governance frameworks and public sector capabilities. The nonlinear correlation between institutional quality and socioeconomic outcomes, characterized by thresholds, indicates that a one-size-fits-all approach may be ineffective. Policymakers must customize their tactics according to their country's existing level of institutional quality. Countries operating below the established thresholds should prioritize foundational enhancements, including the development of law and order and the mitigation of corruption, to foster a stable and predictable environment. Countries that have exceeded these criteria should implement strategies to maintain and enhance institutional quality to promote equitable growth. These distinct tactics will assist nations in optimizing the advantages of institutional development and strengthening the overall socioeconomic environment.

Finally, the study confirms a one-way causality from the informal economy to socioeconomic conditions and a two-way causality between institutional quality and socioeconomic conditions, as displayed in Table 11. The one-way causal relationship supports evidence from Makame and Christine (2024), Sahnoun and Abdennadher (2019), Diallo et al. (2017), Loayza et al. (2009), and Krstić and Sanfey (2007). For the case of institutional quality, the findings are in tandem with the study of Fagbemi et al. (2021), who observed that socioeconomic factors influence governance and vice versa.

Alternative Control Variables

To further strengthen our estimates, we employ other control variables in investigating the effects of the informal economy and institutional quality on socioeconomic conditions. The variables are foreign direct investment, urban population, and sanitation, which have been documented in the literature as factors that can influence socioeconomic conditions, especially poverty, unemployment, and income inequality (Bolarinwa & Simatele, 2023; Gómez & Irewole, 2023; Ochi et al., 2023; Pham, 2022; Fagbemi et al., 2021). The estimates from the three techniques, as shown in Tables A and B in the appendix, are consistent with the earlier findings that the informal economy and institutional quality worsen and improve socioeconomic conditions, respectively, in African countries.

Table 7. Driscoll and Kraay Estimates

Variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
IFE	-0.076***	-0.104***	-0.106***	-0.104***	-0.062**	-0.108***
IQI	0.384***					
COR		0.039**				
DAC			0.061***			
LAO				0.126***		
GOS					0.168***	
BUQ						0.061
GDP	-0.109	-0.283	-0.334	-0.223	0.173	-0.339
INF	-0.0002	-0.0001	0.0001	-0.0001	0.0002	0.0001
ELE	0.006	0.005	0.005	0.004	0.008	0.005
Constant	7.068	14.134*	15.191**	12.200*	0.486	15.534**
F-statistic	65.160***	44.880***	28.750***	28.400***	30.76***	42.99***
Number of observations	735	735	735	735	735	735
Number of groups	35	35	35	35	35	35

Note: ***, **, and * indicate significance at 0.1, 0.5, and 0.10 levels.

Table 8. Fully Modified Least Squares Estimates

Variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
IFE	-0.033**	-0.050***	-0.062***	-0.059***	-0.070***	-0.061***
IQI	0.805***					
COR		0.471**				
DAC			0.135*			
LAO				0.302***		
GOS					0.386***	
BUQ						0.171**
GDP	-0.242***	-0.196*	-0.297**	-0.207**	-0.233	-0.263**
INF	-0.002	-0.002	0.002	-0.0001	0.001	0.002
ELE	0.027***	0.028***	0.034***	0.024***	0.028***	0.029***
Constant	5.679***	7.283***	10.770***	8.405***	7.840***	10.297***

Note: ***, **, and * indicate significance at 0.1, 0.5, and 0.10 levels.

Table 9. Method of Moments Quantile Regression Estimates

Variable	Location	Scale	Quantiles								
			Q10	Q20	Q30	Q40	Q50	Q60	Q70	Q80	Q90
MODEL 1											
IFE	-0.044***	-0.016***	-0.019***	-0.028***	-0.035***	-0.040***	-0.046***	-0.050***	-0.056***	-0.061***	-0.068***
IQI	0.692***	-0.003	0.698***	0.696***	0.695***	0.693***	0.692***	0.691***	0.690***	0.689***	0.687***
GDP	-0.197***	0.045***	-0.271***	-0.245***	-0.225***	-0.210***	-0.193***	-0.181***	-0.166***	-0.152***	-0.131***
INF	-0.0004	-0.001**	0.001	0.0003	0.00001	-0.00002	-0.00004	-0.001	-0.001*	-0.001**	-0.001**
ELE	0.023***	-0.004***	0.031***	0.028***	0.026***	0.025***	0.023***	0.022***	0.020***	0.019***	0.017***
Constant	5.660***	0.424	4.956***	5.200***	5.393***	5.534***	5.696***	5.807***	5.949***	6.086***	6.278***
MODEL 2											
IFE	-0.056***	-0.011***	-0.038***	-0.044***	-0.049***	-0.053***	-0.057***	-0.061***	-0.064***	-0.068***	-0.073***
COR	0.313***	-0.007	0.325***	0.321***	0.318***	0.315***	0.313***	0.311***	0.309***	0.307***	0.304***
GDP	-0.154***	0.009	-0.169***	-0.164***	-0.160***	-0.156***	-0.153***	-0.150***	-0.147***	-0.144***	-0.140***
INF	-0.001**	-0.001**	0.0001	0.0004	0.001	-0.001**	-0.001**	-0.002***	-0.002***	-0.002***	-0.002***
ELE	0.024***	-0.002*	0.027***	0.026***	0.025***	0.024***	0.024***	0.023***	0.023***	0.022***	0.021***
Constant	7.383***	1.094**	5.524***	6.138***	6.669***	7.089***	7.478***	7.834***	8.153***	8.519***	9.027***
MODEL 3											
IFE	-0.069***	-0.011***	-0.049***	-0.056***	-0.061***	-0.065***	-0.069***	-0.073***	-0.076***	-0.081***	-0.087***
DAC	0.090***	-0.007	0.102***	0.098***	0.095***	0.092***	0.089***	0.087***	0.085***	0.082***	0.078***
GDP	-0.206***	0.017	-0.235***	-0.225***	-0.218***	-0.212***	-0.205***	-0.200***	-0.195***	-0.188***	-0.179***
INF	-0.001	-0.001***	0.003***	0.002***	0.002***	0.001**	0.001	0.0001	0.003	0.001*	0.002***
ELE	0.026***	-0.003***	0.032***	0.030***	0.028***	0.027***	0.026***	0.025***	0.024***	0.022***	0.020***
Constant	9.596***	1.073***	7.760***	8.377***	8.865***	9.249***	9.675***	9.992***	10.324***	10.780***	11.346***
MODEL 4											
IFE	-0.068***	-0.009***	-0.051***	-0.057***	-0.062***	-0.066***	-0.069***	-0.071***	-0.074***	-0.078***	-0.084***
LAO	0.270***	-0.011	0.290***	0.283***	0.277***	0.272***	0.269***	0.266***	0.263***	0.258***	0.252***
GDP	-0.150***	0.009	-0.166***	-0.160***	-0.55***	-0.152***	-0.149***	-0.147***	-0.144***	-0.141***	-0.136***
INF	-0.0004	-0.001**	0.002*	0.001	0.001	0.001	0.0003	0.0001	0.0001	0.0003	0.001
ELE	0.021***	-0.003***	0.026***	0.024***	0.022***	0.021***	0.020***	0.019***	0.019***	0.017***	0.016***
Constant	7.589***	1.069**	5.674***	6.300***	6.920***	7.368***	7.675***	7.957***	8.287***	8.698***	9.305***

Variable	Location	Scale	Quantiles								
			Q10	Q20	Q30	Q40	Q50	Q60	Q70	Q80	Q90
MODEL 5											
IFE	-0.070***	-0.011***	-0.050***	-0.057***	-0.063***	-0.067***	-0.071***	-0.074***	-0.078***	-0.082***	-0.087***
GOS	0.266***	0.023	0.225***	0.240***	0.251***	0.260***	0.267***	0.273***	0.283***	0.290***	0.300***
GDP	-0.173***	-0.009	-0.157***	-0.163***	-0.167***	-0.171***	-0.174***	-0.176***	-0.180***	-0.183***	-0.187***
INF	-0.0002	-0.001***	0.002**	0.001	0.0003	0.0001	0.0002	0.001	0.001**	0.001***	0.002***
ELE	0.025***	-0.001	0.026***	0.025***	0.025***	0.025***	0.025***	0.025***	0.024***	0.024***	0.024***
Constant	7.586***	1.308***	5.256***	6.113***	6.772***	7.283***	7.659***	8.027***	8.572***	9.020***	9.561***
MODEL 6											
IFE	-0.061***	-0.008***	-0.048***	-0.052***	-0.056***	-0.058***	-0.061***	-0.064***	-0.067***	-0.070***	-0.074***
BUQ	0.192***	-0.004	0.200***	0.197***	0.195***	0.194***	0.192***	0.191***	0.189***	0.187***	0.185***
GDP	-0.219***	0.043**	-0.289***	-0.264***	-0.245***	-0.233***	-0.220***	-0.205***	-0.188***	-0.171***	-0.149***
INF	-0.001	-0.002***	0.002***	0.001**	0.0004	0.0001	0.001	0.001***	0.002***	0.003***	0.004***
ELE	0.022***	-0.004	0.028***	0.026***	0.024***	0.023***	0.022***	0.020***	0.019***	0.017***	0.015***
Constant	9.639***	0.272***	9.191***	9.351***	9.471***	9.547***	9.632***	9.728***	9.830***	9.938***	10.079***

Note: ***, **, and * indicate significance at 0.1, 0.5, and 0.10 levels.

Table 10. Dynamic Panel Threshold Estimates

	IQI	COR	DAC	LAO	GOS	BUQ
Lower Regime ($INS_{it} \leq \rho$)						
Lagged SOC	0.883***	0.396***	0.310***	0.655***	0.893***	1.250***
IFE	-0.161***	-0.041	-0.050***	-0.156***	-0.004	1.163***
IQI	-0.383					
COR		-0.205***				
DAC			-0.185*			
LAO				-0.256***		
GOS					0.219***	
BUQ						1.122*
Upper Regime ($INS_{it} > \rho$)						
Lagged SOC	-0.751***	0.724***	0.317***	0.196	-0.328***	-0.205**
IFE	-0.041**	0.009	0.016	0.101***	-0.128***	-0.228***
IQI	0.968**					
COR		0.692***				
DAC			0.147			
LAO				2.543***		
GOS					-0.341***	
BUQ						-1.781**
Constant	-0.056	-6.567***	-0.1772***	-11.535***	8.415***	15.844***
Threshold Value	5.282***	4.035***	3.330*	3.499***	7.610***	2.929
Linearity Test (Bootstrapped p-value)	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***

Note: ***, **, and * indicate significance at 0.1, 0.5, and 0.10 levels. 1000 bootstrap iterations are used to compute its p-values.

Table 11. Causality test

	Wald statistics	P-value	Decision
IFE does not Granger cause SOC	2.459***	0.000	Reject
SOC does not Granger cause IFE	1.164	0.493	Accept
IQI does not Granger cause SOC	2.863***	0.000	Reject
SOC does not Granger cause IQI	2.150***	0.000	Reject

Note: *** indicates significance at 0.01

Conclusion

The study investigates the effects of informal economy and institutional quality on socioeconomic conditions in 35 African countries between 2000 and 2022, with the view to determining the threshold of institutional quality in the relationship between informal economy and socioeconomic conditions and the direction of causality between the variables. The study employs Driscoll-Kraay, Fully Modified Ordinary Least Squares, Method of Moments Quantile Regression, Dynamic Panel Threshold, and Dumitrescu-Hurlin non-causality Granger techniques. The findings from the first

three estimation techniques show that the informal economy has a negative and significant effect on African socioeconomic conditions. In contrast, institutional quality, regardless of how it is measured, has a substantial and positive impact on African socioeconomic conditions. As a result, the study concludes that the informal economy and institutional quality retards and improves socioeconomic conditions, respectively.

Thus, this study provides strong evidence for the importance of institutional quality in influencing the informal economy and its impact on African socioeconomic situations. Identifying a precise threshold for institutional quality is a helpful guide for policymakers looking to eliminate informality and improve socioeconomic results. Institutional strengthening, improved governance, economic stability promotion, and infrastructure service enhancement are critical measures for attaining inclusive growth and lowering informality across the continent. However, one drawback of the study is that it did not test for the interactive effect of institutions and informality, which could provide more insight into how these variables influence socioeconomic outcomes. Furthermore, the study is based on aggregated data, which may mask key micro-level differences and limit the analysis's granularity. Future studies might examine the interaction effects of institutional quality and informality and the function of other potential moderators like education and technological advancement in defining the informal sector. Addressing these shortcomings could contribute to a complete understanding of the interactions between institutions, informality, and socioeconomic development in Africa.

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Appendix

Table A. Driscoll, Kraay, and Fully Modified OLS Estimates

Variable	Driscoll and Kraay						Fully Modified OLS					
	Model 1	**Model 2**	**Model 3**	**Model 4**	**Model 5**	**Model 6**	**Model 1**	**Model 2**	**Model 3**	**Model 4**	**Model 5**	**Model 6**
IFE	-0.079**	-0.076**	-0.069**	-0.082***	-0.104***	-0.073**	-0.032*	-0.049**	-0.084***	-0.062***	-0.078***	-0.080***
IQI	0.368***						0.997***					
COR		0.039*						0.682***				
DAC			0.058***						0.039			
LAO				0.132***						0.439***		
GOS					0.127***						0.543***	
BUQ						0.031						0.212**
Control variables	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Constant	4.870***	6.366***	5.835***	6.057***	6.882***	6.269***	1.755	4.747**	8.002***	5.352***	4.193***	6.886***

Note: *** p<0.01; ** p<0.05; * p<0.1

Table B. Method of Moments Quantile Regression Estimates

Variable	Location	Scale	Quantiles				Variable	Location	Scale	Quantiles			
			Q10	**Q30**	**Q50**	**Q90**				**Q10**	**Q30**	**Q50**	**Q90**
IFE	-0.062***	-0.011**	-0.042**	-0.055***	-0.063***	-0.079***	IFE	-0.084***	-0.006***	-0.073***	-0.080***	-0.084***	-0.094***
IQI	0.727***	0.058**	0.623***	0.691***	0.733***	0.815***	LAO	0.313***	0.011	0.294***	0.306***	0.314***	0.330***
Control Variables	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	Control Variables	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Constant	3.169***	0.939***	1.481***	2.589***	3.278***	4.615***	Constant	5.845***	1.011***	4.134***	5.163***	5.914***	7.405***
Variable	**Location**	**Scale**	**Quantiles**				**Variable**	**Location**	**Scale**	**Quantiles**			
			Q10	**Q30**	**Q50**	**Q90**				**Q10**	**Q30**	**Q50**	**Q90**
IFE	-0.076***	-0.012***	-0.056***	-0.067***	-0.076***	-0.095***	IFE	-0.091***	-0.010***	-0.074***	-0.083***	-0.091***	-0.106***
COR	0.329***	0.003	0.323***	0.326***	0.329***	0.334***	GOS	0.256***	0.014	0.234***	0.247***	0.257***	0.277***
Control Variables	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	Control Variables	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Constant	6.212***	1.395***	3.953***	5.156***	6.224***	8.324***	Constant	6.119***	1.262***	4.065***	5.207***	6.143***	8.028***
Variable	**Location**	**Scale**	**Quantiles**				**Variable**	**Location**	**Scale**	**Quantiles**			
			Q10	**Q30**	**Q50**	**Q90**				**Q10**	**Q30**	**Q50**	**Q90**
IFE	-0.092***	-0.011***	-0.075***	-0.083***	-0.091***	-0.108***	IFE	-0.076***	-0.009***	-0.060***	-0.070***	-0.076***	-0.090***
DAC	0.038*	0.017	0.011	0.025	0.038*	0.064**	BUQ	0.233***	0.040***	0.165**	0.204***	0.233***	0.292***
Control Variables	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	Control Variables	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Constant	7.636***	1.392***	5.464***	6.561***	7.613***	9.743***	Constant	6.150***	1.066***	4.318****	5.381***	6.137***	7.739***

Note: *** p<0.01; ** p<0.05; * p<0.1