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Institutional quality as a catalyst for structural transformation in African countries: What role does foreign direct investment play?

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Abstract

The socio-economic development of African countries is strongly influenced by the impact of foreign direct investment (FDI) flows and the quality of these countries' institutions. This paper examines the role played by the quality of these countries' institutions as a pillar in the process of structural transformation (ST) in African countries considering the relationship between FDI and institutional quality. This led to the completion of a thorough econometric analysis that estimated two Panel Auto Regressive Distributed Lag (ARDL) models and concentrated on the complex relationships between the study's variables. The econometric results obtained showed a negative and significant effect of FDI on the quality of institutions in the long term as reflected by two dependent variables: the degree of freedom from corruption and the degree of freedom of ownership. Thus, the results show the major constraints African countries faced in terms of property rights, corruption and the implementation of good governance practices, underscoring the need for radical institutional reform to foster these crucial dimensions of socio-economic functioning. In addition, the study's result demonstrated the crucial role that institutional quality within the African continent can play in the success of its ST process. Indeed, the positive impact of institutional quality on FDI attractiveness and the implementation of effective development policies could foster an environment conducive to achieve inclusive growth. Finally, the results of the study can help decision-makers define the policies essential to the success of the ST process in African countries.

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1. Introduction

The success of the ST process occupies a primordial place in the socio-economic plans of several African countries which aim to foster their economic power and ensure future inclusive and sustainable development. The ST process implies far-reaching changes in production and export structures emphasizing the need to make a transition from economies based on the primary sector to those based on the secondary and tertiary sectors. This shift is not only a sign of modernization but also a vital catalyst for boosting productivity,

securing decent employment and improving living conditions. In this context, several African countries continue to focus on the ST of activity sectors which can be seen as a path towards more resilient and sophisticated inclusive growth.

The need for this ST is explained by several economic and social trends. Infrastructural and public service constraints have developed due to the rapid urbanization of African countries highlighting the significance of reconsidering the relationship between urban management and urban planning. In addition, the impact of technology on production methods requires the adaptation of production factors. For example, rising population growth rates increase demand for social services and decent employment. These complex changes call for carefully thought-out policies, strategies and institutional qualities to meet the challenges of the ST process. These policies and strategies must seek to encourage good governance, strengthen transparency and ensure an environment conducive to innovation and investment to achieve sustainable and inclusive future growth (McMillan & Rodrik, 2011). There is a lack of research that addresses the role of FDI in the success of this process on the African continent despite the importance of a successful ST process. Although FDI can be seen as a stimulator of socio-economic development, providing access to capital, advanced technology and international markets, its effect on the quality of institutions is crucial to the success of ST in African countries, a subject that remains open to debate.

This paper aims to fill this gap by explaining how FDI influences the quality of institutions and consequently their role in the wider success of the ST process. The central premise guiding this study is that institutional quality mediates the relationship between the ST process and FDI in African countries. In fact, the existence of effective institutions that encourage good governance practices are characterized by political stability, respect for property rights and transparency which are indispensable for a healthy environment to attract and retain FDI which also supports sustainable development. On the other hand, the existence of exclusive and weak institutions can hinder the success of this process leading to increased corruption, legal instability and the inefficient use of various resources (Li & Liu, 2020).

The importance of this study lies in addressing overarching questions about the interactions between FDI and institutional quality in the ST process. This study aims to provide explanations for strategies and policies that could foster sustainable and inclusive development in African countries by analyzing these relationships. Thus, the econometric results of the study could help policymakers in the preparation of institutional reforms that succeed the ST process in African countries, mitigating possible negative influences of FDI on good governance practices.

To address this issue, the present paper is subdivided into three sections. The first two sections provide the theoretical underpinnings of the ST process and institutional quality. They explore the overarching terms and theoretical underpinnings that explain why ST is decisive for African countries and how institutional quality can play a pivotal role in this context. These first two sections also review the existing empirical literature on the subject, giving specific attention to the interactions between FDI, institutional quality and the ST process. This provides a robust theoretical foundation for the rest of the study. The third section of the paper focuses on the empirical study. It outlines the methodology employed, describes the data collected and elucidates the analyses conducted to examine the proposed issue. This section presents the study's findings, highlighting key trends and analyzing their significance in relation to the central theme of ST in Africa.

2. Structural Transformation Through Governance and Institutional Quality

The evolution of a country in general and a region in particular to the rank of emerging economies requires real institutional and structural transformation. It raises the fundamental question of the plans to be adopted to guide such a transformation (Ghoufrane, Hugon, & Oulmane, 2016). Indeed, this would require a shift from a closed-access society[1] to an open-access society[2] through creative destruction, openness and the rule of law (North, Wallis, Webb, & Weingast, 2013). Additionally, it would require a change in institutions from extractive[3] to inclusive[4] (Acemoglu, 2015).

Thus, the Asian experience shows that the state plays a central role in the success of the ST process. This is particularly through institutional transformation, economic diversification and the achievement of sustained, inclusive growth (Ghoufrane et al., 2016). This is why many other developing countries over the past two decades have shifted from a limited, market- and privatization-based perspective to a broader one based on institutions and their governance. The emphasis here is fundamentally on the "inclusiveness" of such institutions. This is raised by Acemoglu, one of the leading proponents of political macroeconomics who says "growth is much more likely to be inclusive (economic and political)" (Jakšić & Jakšić, 2018).

Indeed, good institutions are characterized by the protection of property rights, equal employment opportunities, social security and civil rights for all individuals. These institutions also contribute to a country's political and macroeconomic stability. Hence the importance of deconcentrating extractive

[1] Closed access company: This is a non-reactive government which does not allow access to publications and references.
[2] Open-access companies: Characterized by transparent political mechanisms.

institutions to ensure the stability and continuity of social and macroeconomic balances. This would have a negative impact on entrepreneurship and economic development as well as on the independence and institutional responsibility of the players involved. This assurance would require a sufficient level of inclusion. This inclusion combines three dimensions: personal, financial and political. Consequently, understanding the ST process would also require the introduction of the principles of independence, inclusion and accountability into its mechanisms. This would be essential to the genesis and performance of all forms of institutions governing ST (Jakšić & Jakšić, 2018).

Thus, the socio-economic growth that every ST needs has two essential characteristics. The first is sustainability measured as durability. The second is inclusiveness measured as pro-poor growth[5]. Indeed, this ST would require growth that enables the poor to share its benefits based on their positive impact (Kakwani & Pernia, 2000). Various institutions finally represent the basis for sustainable growth and development and thus for ST as the definition of economic inclusion as an essential requirement for ST broadens to encompass not only poverty but all citizens. All social classes can profit from ST when there is inclusive growth (Klasen, 2010).

Indeed, there are two ways to define the social inclusiveness that any successful ST should provide. Firstly, a process enabling improved conditions for people and groups to take part in the creation, realization and distribution of value in society. Secondly, a process that enhances the opportunity, capacity and dignity of the disadvantaged in terms of social value. It is the various markets in which this value is realized, the mechanisms of its distribution and the spaces in which it is created that constitute the social relationships that underpin ST. These relationships are based on socio-economic services and opportunities, the capacities, skills and dignity of each individual (World Bank, 2013a).

Thus, inclusive institutions play a crucial role in the success of a country's or region's ST process and consequently in achieving and ensuring inclusive growth. Ianchovichina and Lundstrom (2009) have explained the latter using several attributes fundamental to ST. They see economic growth as a necessary condition for inclusive growth to reduce poverty. This growth would be based on both the nature of its model and its pace. It focuses on productive employment rather than income redistribution.

As a result, the emphasis here is on productivity growth not only employment growth. It gives importance to the individual as a subject of analysis alongside the company. Finally, this inclusive growth conforms to the absolute definition of pro-poor growth not the relative one. In other words, it is not defined in terms of specific objectives such as job creation under income distribution but rather in terms of potential outcomes.

Acemoglu, Johnson, and Robinson (2012) define the institutions that influence socioeconomic development in this context of inclusive growth. He contends that inclusive (political and economic) institutions are significantly more inclined to foster growth than extractive ones to ensure the success of ST. Indeed, inclusive economic institutions ensure law and order, property rights, markets and state support (regulation and public services) for markets. In addition, they are open to relatively free access by new firms, they respect contracts and they ensure access to education and opportunities for most citizens. They create the incentives for innovation and investment that would drive ST. In contrast, the author argues that inclusive institutions are completely distinct from extractive institutions. They are designed by political elites to extract resources from the rest of society.

Sustained democracy and efficient markets which would underpin healthy ST depend on the indispensable factor of growth and simultaneously on inclusive institutions that guarantee greater satisfaction of the population's needs, mainly health and education (Jakšić & Jakšić, 2018). For this reason, the correlation here is not causal rising gross domestic product (GDP) leads to improved democracy which leads to a profound explanation of ST. How does this increase in GDP improve democracy? And how does it guarantee a successful ST? The answer to these two questions lies in understanding the contributions of institutions, their democratic functioning, the flexibility of their networks and their resilience to absorbing shocks (good governance) (Acemoglu & Robinson, 2006).

However, Evans and Ferguson (2013) concluded that there is no relationship between a nation's democratic status and its ability to reduce poverty or improve GDP. Moreover, they even found that some non-democratic countries would have the capacity to achieve good growth, reduce poverty and consolidate the securitization of their development gains. They suggested that an explanation of deep democracy considers democracy beyond elections. In short, they showed that political and economic institutions are the foundation for a country or region to succeed in the TS process (Evans & Ferguson, 2013).

Consequently, they are fundamental to achieve sustainable, inclusive growth that reduces poverty. This would depend on production technology, agents' preferences and constraints and the quality of governance of institutions (Acemoglu, 2015).

Inclusive institutions allow the entire population to participate effectively in economic activities by leveraging their talents and skills. In contrast, extractive institutions fail to protect property rights, erect

[5] Pro-poor growth: enables the poor to participate actively and benefit significantly.

barriers to industry entry and limit the free operation of markets. These institutions are typically controlled by those with political power extracting resources from the rest of society (Acemoglu, 2015).

The World Economic Forum highlighted institutions' crucial role and emphasized various sustainable development indicators in its 2016 inclusive development and growth report. Firstly, the report showed that most countries and regions have room for improvement in ST and development. They focus on sound policies that can be applied on the ground. Secondly, the role of different institutions is important in realizing and facilitating the seven pillars of sustainable development. Finally, financial inclusion, human development (by reforming the wage situation) and urban development (by ensuring good infrastructure) are key factors in the success of ST processes in different geographical areas[6].

If ST requires the movement of labor from the primary sector to the most productive sectors, institutional transformation is conditional on a shift from extractive to inclusive institutions that guarantee the law, property rights, the contribution of individuals to the various economic activities and access to the publications and reports produced by these institutions. The success of the ST process in African countries would then be conditioned by the presence of strong institutions. In other words, a shift from closed-access companies to open-access companies (North and et al. 2013) or to inclusive institutions[7] instead of extractive institutions[8] (Acemoglu, 2015).

In a nutshell, a country or territory has a fair chance of avoiding political pressures that could undermine its legitimacy when it has strong institutions and low levels of corruption, control and mastery. This institutional quality (good governance) would be a catalyst for ST through the inclusive political and economic institutions that are the basis for every country's sustainable and inclusive growth. It would also send out a strong signal to foreign investors, giving an image of a territory's good institutional governance by guaranteeing all the necessary conditions for the realization of investment projects. Indeed, good institutional governance is a key factor in attracting foreign direct investment (FDI) to African countries. Moreover, institutional risk factors are significant especially for economies attracting more FDI (Jun & Singh, 1996).

A supply of reasonably priced and competent employees would be a differentiating and determining factor in the attraction of such FDI if the risk of such institutions failing is substantial especially in high value-added export output.

The narrative underscores the critical importance of inclusive institutions in the pursuit of sustainable and inclusive economic growth based on the aforementioned discussion. These institutions play a fundamental role in promoting property rights, social justice and equal opportunities for all. This perspective aligns with the notion that countries with strong governance and low corruption are more likely to attract FDI and achieve successful ST. This approach highlights the role of inclusive institutions in ensuring that growth is equitably distributed and thereby contributes to the broader well-being of society.

However, some studies challenge the assumption that the relationship between political systems and economic growth is necessarily linear. The work of Evans and Ferguson (2013) contradicts the hypothesis that democratic governance inherently leads to better economic outcomes or reduced poverty. This divergence calls for a more nuanced analysis of the interactions among governance, institutional quality and ST. Their argument that some non-democratic regimes can achieve significant economic growth while reducing poverty undermines the generalization that inclusive institutions are inherently superior to extractive ones. This perspective points to the need for a deeper exploration of the mechanisms that drive economic growth and the factors that contribute to successful ST in diverse political contexts.

Moreover, the critical question of causality arises. Does an increase in Gross Domestic Product (GDP) lead to improved democracy and successful ST or is it the other way around? Acemoglu and Robinson (2006) suggest that sustained democracy and efficient markets are the foundations of successful ST indicating that institutional quality plays a significant role in shaping the trajectory of economic development. However, this assumption remains contentious with some critics arguing that economic growth can occur independently of institutional quality driven by other factors such as technological innovation, global trade or natural resource endowments. This complexity suggests that inclusive institutions are crucial; they are not the sole determinants of a successful ST necessitating a broader and more comprehensive approach to understanding the dynamics at play.

3. Structural Transformation: Impact of Foreign Direct Investment on Institutional Quality (Review of Empirical Literature)

The scholarly literature includes an extensive array of studies that underscore the critical role of institutional quality as a major factor in determining FDI. Dunning and McQueen (1981) remain a seminal reference point for examining the effect of institutional quality on FDI attraction. Dunning and McQueen (1981) posit that multinational firms choose host nations where they can capitalize on advantages related to

[6] Indices for measuring an economy's inclusive institutions include the following: data bases of social development indices, world governance indicators, the human development index, the human opportunity index, and the better living indicator.
[7] Inclusive institutions: defending private property, contracts and security.
[8] Extractive institutions: against the separation of powers, without the rule of law.

ownership, location and internalization. Consequently, effective governance and strong institutions are regarded as location-specific attributes that can either stimulate or deter FDI inflows.

Several studies have highlighted the various aspects of institutional quality that positively influence FDI. We cite mainly transparency and anti-corruption measures which are considered paramount factors (Zhao, Kim, & Du, 2003) as well as trade liberalization and reforms in the banking sector (Bevan, Estrin, & Meyer, 2004). In addition, political rights, democratic accountability (Busse & Hefeker, 2007) and civil freedoms have all been recognized as essential components (Tintin, 2013). Other research has highlighted the importance of contract enforcement and intellectual property rights (Du, Lu, & Tao, 2008), executive stability (Sánchez-Martín, De Arce, & Escribano, 2014), social trust (Méon & Sekkat, 2015), macroeconomic consistency (Chenaf-Nicet & Rougier, 2016) and property rights (Xu, Voon, & Shang, 2017).

Most researchers see that high institutional quality correlates positively with attracting higher levels of FDI especially as robust institutions contribute to optimal resource allocation and lower transaction costs (Acemoglu, Johnson, & Robinson, 2005; Kaufmann, Kraay, Lora, & Pritchett, 2002; Rodrik, Subramanian, & Trebbi, 2004). On the other hand, other researchers have shown that countries with lax environmental regulations can attract FDI that targets localities to conceal their polluting activities (He, 2006). The "pollution havens" postulate that countries with low institutional quality are inclined to attract environmentally damaging FDI. This postulate is supported by evidence revealing that air pollution tends to rise with increasing FDI inflows while improving institutional quality can reduce this negative influence. Thus, this relationship appears to be non-linear when institutional quality reaches a certain threshold. Additional FDI inflows are correlated with decreases in air pollution (Huynh & Hoang, 2019).

We are interested in how FDI affects host countries' institutional quality for this paper. In fact, there isn't enough research dealing with the relationship between these phenomena. Larraín and Tavares (2004) found that FDI inflows had a positive impact on reducing corruption. Then, Dang (2013) showed that provincial institutional quality measured by the provincial competitiveness index is positively influenced by FDI inflows in 60 provinces of Vietnam. We note that this index includes property rights, competitiveness, regulation and corporate responsibility. Similarly, Long, Yang, and Zhang (2015) showed that FDI flows participate in improving local institutions in different Chinese regions creating a more conducive environment for domestic enterprises.

In fact, FDI can improve the institutional quality of host countries through a number of possible channels. Firstly, FDI can transfer regulations and institutions from the country of origin to the host country similar to spillover effects (Prakash & Potoski, 2007). Secondly, they can put pressure on local leaders through employment and tax revenues to engage in institutional reforms (Malesky, 2008). Thirdly, they can encourage competition and reduce corruption (Ades & Di Tella, 1999). Fourthly, host country authorities that benefit from significant FDI inflows may have greater autonomy to implement their institutional innovation strategies and policies (Dang, 2013).

Huynh (2022) demonstrated that FDI has a beneficial influence on the institutional quality of host countries while the underground economy has the opposite impact. The author noted that in regions where the level of the underground economy is low, the positive effect of FDI on institutional quality is robust. However, this effect tends to diminish in regions where the shadow economy occupies a significant share.

According to Simon, Witte, Eakin, Schoettler, and Ziegert (1982), Tedds and Giles (2002) and Schneider (2018), the shadow economy also known as the parallel economy or the informal sector has been the subject of extensive study. It is sometimes called the unofficial economy (Johnson et al. 1998) the black economy (Dilnot & Morris, 1981) or the parallel economy (Alm & Embaye, 2013; Elgin & Oztunali, 2012; Medina & Schneider, 2018). According to Tedds and Giles (2002), the shadow economy encompasses businesses inherently excluded from official GDP measurements.

Researchers have also identified four schools of thought on the informal economy. The first is the dualism school which sees the informal economy as a result of the migration of the rural population to urban areas where the workforce is not fully absorbed into the industrial sector (Boeke, 1953; Harris & Todaro, 1970; Lewis, 1954; Williams, 2008). This perspective suggests that the informal economy emerges as a survival mechanism for those left behind by industrialization and urbanization. In contrast, the second school of structuralism attributes the rise of the underground economy to the dynamics of capitalism, labor market imperfections and globalization (Castells & Portes, 1989; Fields, 1975; Mazumdar, 1976; Stiglitz, 1974). This school of thought sees the informal economy as involving both large companies and small producers.

The third and fourth schools of voluntarism and legalism respectively present competing perspectives even though the first two schools of structuralism and dualism consider participation in the informal sector more essential than a choice. The legalism school suggests that the underground economy behaves as an alternative to the formal sector with firms choosing to operate informally to avoid compliance costs, regulatory obstacles and high institutional quality (De Soto, 2000; Demsetz, 1974; Schneider & Enste, 2000; Williams & Elgar, 2011). This perspective shows that firms may deliberately opt to operate in the informal sector because of the exaggerated regulatory burden, corrupt practices in the formal economy and high taxation.

Contrary to the voluntarism school, businesses do not necessarily attribute their informal operations to government shortcomings. According to this school of thought, they choose to participate in the shadow

economy after assessing the costs and benefits of formal versus informal operations (Giles, 1999; Maloney, 2004; Schneider, 1997). When examining these four schools of thought, it becomes apparent that the relationship between institutional quality and the shadow economy aligns with the legalistic perspective.

Proponents of the legalistic school argue that businesses and individuals turn to the informal sector to bypass complex regulations and cumbersome processes suggesting that the shadow economy is a result of feeble institutional quality. Ideal institutions reduce uncertainty (Busse & Hefeker, 2007; Hallerberg & Wolff, 2008), reduce transaction costs (Hoffman, Munemo, & Watson, 2016) and address issues of information asymmetry (Boustanifar, 2014; Dell'Ariccia & Marquez, 2004; Doblas-Madrid & Minetti, 2013). Consequently, businesses have an incentive to operate within the formal framework to benefit from the legal protections afforded by robust institutions. However, weak institutional quality drives companies into the informal sector.

Advocates of the legalistic school maintain that numerous practical studies confirm the detrimental influence of deficient institutional quality on the shadow economy. Johnson, Kaufmann, and Zoido-Lobaton (1998) demonstrated that increased corruption and a weak rule of law contribute to the expansion of underground economies particularly in transitional countries, Organization for Economic Co-operation and Development (OECD) nations and Latin American countries. Similarly, Friedman, Johnson, Kaufmann, and Zoido-Lobaton (2000) attributed the significant size of the underground economy in 69 surveyed countries to poor institutional quality marked by rampant corruption, bureaucratic inefficiencies and frail legal frameworks. According to Dreher, Kotsogiannis, and McCorriston (2009) and Torgler and Schneider (2009), other research indicates that improving institutional quality can curtail the underground economy. This improvement can be achieved through measures such as enhancing tax morale (Torgler & Schneider, 2009), implementing more flexible labor market regulations and reducing tax burdens (Fugazza & Jacques, 2004). Moreover, corruption not only fuels the expansion of the shadow economy but also undermines the effectiveness of fiscal policies aimed at its regulation (Huynh & Nguyen, 2019).

There is a consensus on the negative effect of institutional quality on the shadow economy while the reverse influence of the shadow economy on institutions has been largely overlooked in the literature. However, this aspect warrants investigation as if a feedback effect exists, it would require reconsideration of the legalism school's assumptions suggesting that institutional quality is not merely a cause but also a consequence of the underground economy.

Significant insights emerge concerning the effect of the shadow economy on institutional frameworks. Based on prior research, Loayza (1996) observed that as the underground economy grows, there is a corresponding reduction in the availability of public services. This trend forces a heavier reliance on existing services which are often less efficient. Furthermore, expanding underground economies typically leads to decreased tax revenues as highlighted by Kodila-Tedika and Mutascu (2013) which in turn, deplete state resources, impairing the government's ability to deliver robust public services (Broms, 2011).

In addition, the effect of FDI on institutional quality is still unknown in an underground economy. This theme is of significant importance as policymakers will need relevant evidence to explain the effect of FDI on institutional quality in the case of a shadow economy. Such insights are decisive in preparing real policies seeking to manage FDI inflows while supporting institutional quality especially given the frequently harmful nature of the underground economy. Nikopour, Habibullah, Schneider, and Law (2009) pointed out that a high level of underground economic activity can encourage FDI inflows. Indeed, low tax revenues from the informal sector contribute to budget deficits, prompting governments to offer additional incentives to attract foreign investors. On the other hand, Huynh, Nguyen, Nguyen, and Nguyen (2020) found that a decrease in informal economy activity led to an increase in FDI inflows suggesting that a smaller underground economy is correlated with better institutional quality making it more attractive to FDI. Similarly, Ali and Bohara (2017) showed that a larger underground economy could attract FDI as multinational firms can benefit from tax avoidance opportunities in host countries. This could compromise the quality of institutions by supporting the informal economy indicating that the optimistic impact of FDI on the quality of institutions could reduce as the underground economy grows. The aforementioned points reveal that existing empirical studies on the effect of FDI on institutional quality generally highlight the positive role of FDI in strengthening the institutional quality of host countries. However, this positive effect becomes less noticeable in countries where a significant portion of economic activity is conducted in the informal sector. Indeed, a substantial underground economy not only has a detrimental impact on institutional quality but also attracts FDI seeking to exploit regulatory loopholes and other illicit advantages. In a nutshell, the potential benefit of FDI on institutional quality tends to be inversely correlated with the size of the informal economy which could hinder the successful progress of the ST process in host countries.

4. Foreign Direct Investment, Institutional Quality and Structural Transformation: An Econometric Study

This section explores how institutional quality affects the success of the ST process in African countries with a focus on the role of FDI after exploring the conceptual basis of the relationship between FDI, institutional quality, and ST. It also presents the dataset and the econometric framework used in this study.

The variables of interest are FDI, Gross Fixed Capital Formation (GFCF) and Labor Force (L). The control variables are Gross Domestic Product per capita (GDPPC) in constant dollars, Inflation Rate (IR) and Trade Openness Rate (TOR). These variables are mainly collected from the World Development Indicators (WDI). Thus, the trade openness variable is extracted from the database and the two institutional quality variables come from the world perspective database.

The database collected enables us to study the complex interactions between FDI, institutional quality and the ST process providing important information on the effect of these variables on the socio-economic development of African countries. The exploitation of panel data and advanced econometric techniques allows us to make a rigorous analysis of trends between 2000 and 2023 producing outputs that are both indicative and robust to broader patterns in the ST of African countries.

4.1. Model Specification

We employ the theoretical framework of the Cobb-Douglas production function defined as follows:

$$DFC_{it} = F(Z_{it,} K_{it,} L_{it}) = Z_{it} K^a L^b \text{ a and b} > 0.$$

In this equation, DFC_{it} denotes the degree of freedom from corruption for country i at time t, L_{it} signifies the labor force, K_{it} refers to the stock of physical capital and Z_{it} represents total factor productivity which encapsulates the technological level of the relevant economy.

Dividing DC_{it} by L_t gives

$$\frac{DFC_{it}}{L_{it}} = \frac{Z_{it}}{L_{it}} * \frac{K_{it}^a L_{it}}{L_{it}^a} = \frac{Z_{it} K_{it}^a}{L_{it}^a}$$

By linearizing this equation, we obtain the first model.

$$LnDFC_{it} = LnZ_{it} + \alpha LnK_{it} + bLnL_{it}$$

$$With: b = 1 - a \text{ and } K_{it} = FDI + GFCF \text{ we have:}$$

$$LnDFC_{it} = LnZ_{it} + \alpha_2 LnFDI_{it} + \alpha_3 LnGFCF_{it} + bLnL_{it}$$

We proceed in the same way for the second model.

$$DFP_{it} = F(Z_{it,} K_{it,} L_{it}) = Z_{it} K^a L^b \text{ a and b} > 0.$$

In this equation, DFP_{it} signifies the degree of freedom to own property for country i at time t, L_{it} denotes the labor force, K_{it} refers to the stock of physical capital and Z_{it} represents the total factor productivity indicating the technological level of the economy in question.

Dividing DFP_{it} by L_t gives

$$\frac{DFP_{it}}{L_{it}} = \frac{Z_{it}}{L_{it}} * \frac{K_{it}^a L_{it}}{L_{it}^a} = \frac{Z_{it} K_{it}^a}{L_{it}^a}$$

By linearizing this equation, we obtain the second model.

$$LnDFP_{it} = LnZ_{it} + \alpha LnK_{it} + bLnL_{it}$$

b=1-a and K_{it} = FDI + GFCF we have

$$LnDFP_{it} = LnZ_{it} + \alpha_2 LnFDI_{it} + \alpha_3 LnGFCF_{it} + bLnL_{it}$$

In line with the literature, we include in both models' other explanatory variables such as DFC and DFP, GDPPC, IR and TOR.

- First model:

$$LnDFC_{it} = LnZ_0 + \alpha_2 LnFDI_{it} + \alpha_3 LnGFCF_{it} + \alpha_4 LnL_{it} + \alpha_5 LnGDPPC_{it} + \alpha_6 LnIR_{it} + \alpha_7 LnTOR_{it} + \varepsilon_{it}$$

- Second model:

$$LnDFP_{it} = LnZ_0 + \alpha_2 LnFDI_{it} + \alpha_3 LnGFCF_{it} + \alpha_4 LnL_{it} + \alpha_5 LnGDPPC_{it} + \alpha_6 LnIR_{it} + \alpha_7 LnTOR_{it} + \varepsilon_{it}$$

According to the results obtainable in Table 1, the variables under study are stationary, both at level and after first differencing. This implies that these variables exhibit cointegration and it would be feasible to analyze the short- and long-term dynamics of their relationship. Following the methodology offered by Pesaran, Shin, and Smith (2001), we can reformulate the above equations using two Panel Auto Regressive Distributed Lag (ARDL) models as follows:

- First model:

$$\Delta LnDFC_{it} = LnZ_0 + \sum_{i=1}^{p-1} \alpha_1 \Delta LnDFC_{it-1} + \sum_{i=1}^{q-1} \alpha_2 \Delta LnFDI_{it-1} + \sum_{i=1}^{r-1} \alpha_3 \Delta LnGFCF_{it-1} + \sum_{i=1}^{u-1} \alpha_4 \Delta LnL_{it-1} + \sum_{i=1}^{v-1} \alpha_5 \Delta LnGDPPC_{it-1} + \sum_{i=1}^{j-1} \alpha_6 \Delta LnIR_{it-1} + \sum_{i=1}^{x-1} \alpha_7 \Delta LnTOR_{it-1} + \theta_1 LnDFC_{it-1} + \theta_2 LnFDI_{it-1} + \theta_3 LnGFCF_{it-1} + \theta_4 LnL_{it-1} + \theta_5 LnGDPPC_{it-1} + \theta_6 LnIR_{it-1} + \theta_7 LnTOR_{it-1} + \varepsilon_{it}$$

- Second model:

$$\Delta LnDFP_{it} = LnZ_0 + \sum_{i=1}^{p-1} \alpha_1 \Delta LnDFP_{it-1} + \sum_{i=1}^{q-1} \alpha_2 \Delta LnFDI_{it-1} + \sum_{i=1}^{r-1} \alpha_3 \Delta LnGFCF_{it-1} + \sum_{i=1}^{u-1} \alpha_4 \Delta LnL_{it-1} + \sum_{i=1}^{v-1} \alpha_5 \Delta LnGDPPC_{it-1} + \sum_{i=1}^{j-1} \alpha_6 \Delta LnIR_{it-1} + \sum_{i=1}^{x-1} \alpha_7 \Delta LnTOR_{it-1} + \theta_1 LnDFP_{it-1} + \theta_2 LnFDI_{it-1} + \theta_3 LnGFCF_{it-1} + \theta_4 LnL_{it-1} + \theta_5 LnGDPPC_{it-1} + \theta_6 LnIR_{it-1} + \theta_7 LnTOR_{it-1} + \varepsilon_{it}$$

- Δ: The operator for the first difference.
- α_1- α_6: The representation of the error-correction model.
- θ_1- θ_6: Indicates long-term relationships.
- P-1,…, x-1: Refer to the lag numbers of the variables.

4.2. ARDL Panel Model Estimation Procedure

The first step to examine for panel ARDL models is the determination of the order of cointegration ensuring that all variables are integrated between order I (0) and order I(1). The second step is to check for the existence of a long-term relationship among these variables. The third step involves applying Pesaran et al.'s (2001) test to assess cointegration following the stationarity tests for the variables under study. Unlike traditional tests such as those by Engle and Granger (1987), Johansen (1988) and Johansen (1991), Pesaran et al.'s (2001) test does not require the same order of cointegration and is particularly effective for small samples of less than 30 years which is the case for this study where some variables are stationary while others are not. Consequently, the hypothesis is formulated as follows:

H_0: $\theta_1 = \theta_2 = \ldots = \theta_6$.

Contrary to the alternative hypothesis,

H_0: $\theta_1 \neq \theta_2 \neq \ldots \neq \theta_6$.

We therefore need to compare Fisher's values with the simulated critical values. If we assume that LB is the lower bound and UB is the upper bound. we then have:

F < LB ➔ No co-integration;

F > UB ➔ Existence of co-integration;

LB < F < UB ➔ No conclusion.

Similarly, the third step is to evaluate the model's resistance using various diagnostic tests.

Table 1. Stationarity results.

Variables	Stationarity		
	ADF	PP	KPSS
LnDFC	I(1)	I(1)	I(0)
LnDFP	I(1)	I(1)	I(0)
LnFDI	I(0)	I(0)	I(0)
LnGFCF	I(1)	I(1)	I(0)
LnL	I(0)	I(0)	I(0)
LnGDPPC	I(1)	I(1)	I(0)
LnIR	I(1)	I(1)	I(0)
LnTOR	I(0)	I(0)	I(0)

5. Results and Discussion

5.1. Stationarity Test

It is crucial to assess whether the series exhibits stationarity to avoid spurious regressions when analyzing time series data. This step is vital for understanding the stochastic characteristics of the data. Three common tests are typically employed to evaluate stationarity: the Augmented Dickey-Fuller (ADF) test, the Phillippe-Perron (PP) test and the Kwiatkowski-Phillips-Schmidt-Shin (KPSS) test. These tests are widely acknowledged and straightforward to apply. Each has its own merits: the ADF test is particularly effective at detecting error autocorrelation, the PP test is suitable for identifying heteroscedasticity and the KPSS test examines the null hypothesis regarding the stationary nature of the variance in the non-stationary component of a series. Table 1 presents the results obtained from these tests.

The ADF test results indicate that the LnFDI, LnL and LnTOR series are stationary at level suggesting they lack underlying trends or significant autocorrelation. Conversely, the LnDFC, LnDFP, LnGFCF, LnGDPPC, and LnIR series appear to be integrated of order 1 (I(1)) indicating that they become stationary after differencing. The PP test corroborates these findings. It shows that the LnDFC, LnDFP, LnGFCF, LnGDPPC, and LnIR series are also integrated of order 1 while the LnFDI, LnL and LnTOR series are stationary at level. On the other hand, the KPSS test demonstrates that all series examined are stationary at

level. In light of these outcomes, the cointegration tests developed by Engle and Granger as well as the Johansen test are not suitable for this analysis. Therefore, an approach that leverages bounds testing for cointegration as proposed by Pesaran et al. (2001) is recommended for further analysis.

Table 2. Analysis of the Pesaran boundary cointegration test.

F-bounds test					
Model	**Test statistic**	**Value**	**Signif**	**I(0)**	**I(1)**
1	F-statistic	5.60	5%	3.55	4.57
2	F-statistic	5.75	5%	3.55	4.57

5.2. Cointegration Test

Table 2 presents the results of the Pesaran cointegration test which indicates the existence of a long-term relationship among the variables in this study. Indeed, the F-statistic exceeds the upper bounds for both the first and second models with values of 5.60 > 4.57 and 5.75 > 4.57, respectively at the 0.05 significance level. Consequently, the null hypothesis that there is no long-term relationship among the variables in this study is rejected.

Table 3. Long-term results.

Variables		**Coefficient**		**Std.error**		**t-statistic**		**Prob.**	
Model 1	**Model 2**	**Model 1**	**Model 2**	**Model 1**	**Model 2**	**Model 1**	**Model 2**	**Model 1**	**Model 2**
LnDFC*	LnDFP**	-0.078	-0.012	0.002	0.001	-2.143	-2.986	0.545	0.152
LnFDI	LnFDI	-0.052	-0.021	0.000	0.004	-2.001	-2.658	0.004	0.000
LnGFCF	LnGFCF	0.032	0.037	0.006	0.023	3.001	3.009	0.017	0.006
LnL	LnL	0.004	0.010	0.000	0.023	2.453	2.223	0.567	0.764
LnGDPPC	LnGDPPC	0.012	0.018	0.007	0.003	1.987	2.987	0.043	0.002
LnIR	LnIR	-0.067	-0.045	0.000	0.000	-1.564	-1.981	0.765	0.222
LnTOR	LnTOR	0.056	0.053	0.010	0.000	2.342	2.982	0.002	0.035

Note: * Dependent variable of the first model, **Dependent variable of the second model.

Table 4. Short-term results.

Variables		**Coefficient**		**Std. error**		**t-statistic**		**Prob.**	
Model 1	**Model 2**	**Model 1**	**Model 2**	**Model 1**	**Model 2**	**Model 1**	**Model 2**	**Model 1**	**Model 2**
LnDFC*	LnDFP**	-0.456	-0.713	0.030	0.040	-1.258	-2.123	0.152	0.324
LnFDI	LnFDI	-0.035	-0.041	0.456	0.532	-2.006	-2.121	0.201	0.342
LnGFCF	LnGFCF	0.023	0.051	0.006	0.690	1.998	1.009	0.000	0.005
LnL	LnL	0.097	0.201	0.811	0.111	2.323	2.893	0.289	0.941
LnGDPPC	LnGDPPC	0.025	0.001	0.290	0.027	4.454	3.809	0.002	0.100
LnIR	LnIR	-0.121	-0.770	0.001	0.213	-1.961	-1.311	0.457	0.332
LnTOR	LnTOR	0.987	0.898	0.355	0.986	2.587	2.576	0.789	0.922
CointEq(-1)*		Model 1	-0.566	0.400		-5.310		0.000	
		Model 2	-0.655	0.897		'5.893		0.000	
R-squared		Model 1	0.675	Mean dependent var (Model 1)				0.500	
		Model 2	0.834						
Adjusted R-squared		Model 1	0.805	Mean dependent var (Model 2)				0.017	
		Model 2	0.449	S.D. dependent var (Model 1)				0.601	
S.E. of regression		Model 1	0.046	S.D. dependent var (Model 2)				0.104	
		Model 2	0.012	Akaike info criterion (Model 1)				-3.543	
Sum squared resid		Model 1	0.544	Akaike info criterion (Model 2)				-3.007	
		Model 2	0.879	Schwarz criterion (Model 1)				-2.516	
Log likelihood		Model 1	48.051	Schwarz criterion (Model 2)				-2.418	
		Model 2	45.213						
Durbin-Watson stat		Model 1	2.093	Hannan-Quinn criter.		Model 1		-2.274	
		Model 2	2.009			Model 2		-2.851	

Note: * Dependent variable of the first model, **Dependent variable of the second model.

The long-term estimation results (see Table 3) present important findings regarding the impact of different study variables on institutional quality (proxy for ST) through two dependent variables, the LnDFC and the LnDFP of African countries between 2000 and 2023. The results indicate an adverse effect of LnFDI underlining the importance of robust governance in channeling foreign investment towards sustainable development goals despite the potential of LnFDI to stimulate economic development. Indeed, a 1% increase in the share of LnFDI in Gross Domestic Product (GDP) improves the degree of freedom from corruption by 5% in African countries. On the other hand, LnGFCF and LnGDPPC have a positive effect on LnDFC highlighting the importance of investment in physical and human capital to strengthen institutions and reduce

corruption. Indeed, a 1% increase in GDP investment raises the LnDFC by 3%. Similarly, a 1% increase in LnGDPPC improves LnDFC by 1%.

The results also suggest an adverse effect of LnFDI on the LnDFP raising concerns about the economic sovereignty of African nations and underlining the need for more stringent investment and regulatory policies. Indeed, a 1% increase in the share of LnFDI in GDP improves the degree of freedom from corruption by 2% in African countries. At the same time, LnGFCF and LnGDPPC have a positive effect on the LnDFP underlining the importance of investment in physical and human capital to strengthen property rights and foster a business-friendly environment. Indeed, a 1% increase in GDP investment raises the LnDFP by 3%. Similarly, a 1% increase in LnGDPPC improves LnDFP by 1%. Other variables such as LnL, LnIR and LnTOR did not show significance in the econometric models raising the need for further research to fully understand the determinants of institutional quality in African countries.

The short-term estimation results (see Table 4) showed that the cointegration coefficient was negative and significant for both econometric models (-0.56 for the first model and -0.65 for the second model), guaranteeing a long-term relationship for the study variables. The results show a significant positive effect of LnGFCF on LnDFC. A 1% increase in the share of investment in GDP leads to a 2% improvement in the LnDFC. Similarly, a 1% increase in LnGDPPC improves LnDFC by 2% for this model. The only variable that contributes when compared to the second model is LnGFCF. Indeed, a 1% increase in the share of investment in GDP improves LnDFP by 5% in African countries. The other variables such as LnL, LnIR and LnTOR were not significant for either model.

Similarly, the results show that domestic public and private investment can play a decisive role in improving LnDFC and LnDFP. This underlines the importance of sound policies to encourage investment in infrastructure and tangible assets to support good governance and property rights in these countries.

However, it is essential to remember that other variables such as LnL, LnIR and LnTOR showed no significant relationship with LnDFC or LnDFP. This prompts us to include other variables in future scientific work. In short, variables not included could also influence these aspects of good governance and sustainable development in African countries.

Table 5. Assumption testing.

Models	Autocorrelation Breusch Godfrey	Heteroscedasticity test Breusch-Pagan-Godfrey (BPG)	Heteroscedasticity test ARCH	Normality test	Ramsey test
1	0.25 > 5%	0.46 > 5%	0.76> 5%	0.59 > 5%	0.36>5%
2	0.35 > 5%	0.54> 5%	0.93 > 5%	0.34 > 5%	0.57>5%

5.3. Panel ARDL Model Diagnostic Tests

Table 5 presents the diagnostic tests for the estimated panel ARDL models allow us to verify the robustness of both models. In fact, these tests showed the absence of autocorrelation of errors (Breusch-Godfrey test) at the 0.05 significance level for the estimated models as well as the absence of heteroscedasticity (Breusch-Pagan-Godfrey and ARCH tests) with values above the 5% threshold (0.46 and 0.76 for the first model and 0.54 and 0.93 for the second model). According to these tests, the errors are normally distributed for both models (Jarque-Bera and Anderson-Darling tests) with significant values of 0.59 and 0.34 respectively. The overall stability of the two models as confirmed by the Ramsey test showed values of 0.36 and 0.57, both above the 5% threshold indicating that the models are well-specified.

5.4. Discussion of Results

We find intriguing alignments and contrasts regarding the impact of FDI and institutional quality in African countries comparing the econometric results from this study with the empirical literature. The long-term and short-term data suggest a significant relationship between LnGFCF and institutional quality (governance) indicators such as freedom from corruption (LnDFC) and freedom of property rights (LnDFP). This observation aligns with economic theory which suggests that fixed capital investment can foster better governance by often involving infrastructure and tangible assets that promote transparency and accountability.

The positive impact of LnGDPPC on LnDFC and LnDFP (the two indicators of institutional quality) over the long term shows that wealthier countries are better placed to invest in anti-corruption measures and strong institutions. This finding confirms the results found in previous studies. These have highlighted the role of economic prosperity in countries' ability to allocate resources to institutional development. However, the negative long-term influence of FDI on indicators of institutional quality is counter-intuitive. This suggests that FDI could be related to corrupt practices possibly due to collusion between multinational firms and local elites which can compromise good governance practices and erode the confidence of individuals and corporate bodies in institutions.

The empirical literature review provides a broader context for these findings documenting the positive influence of institutional quality on FDI inflows. Thus, the empirical review indicates that factors such as

political stability, transparency and contract enforcement attract FDI. Furthermore, Dunning and McQueen's (1981) eclectic theory also shows the necessity of factors such as location, internationalization and ownership in determining FDI flows suggesting that good governance plays a primary role in attracting multinationals. This finding is consistent with the positive long-term effect of LnGDPPC on both indicators of institutional quality corroborating the idea that strong institutions are essential to attract FDI.

On the other hand, some empirical research shows that low institutional quality in the context of the underground economy can also attract FDI particularly when multinational firms aim to use it to avoid taxation or regulatory loopholes. This is consistent with the negative long-term influence of FDI on institutional quality highlighting that FDI may bring privileges; it could also foster unwelcome practices in the absence of strong institutional controls.

Moreover, short-term econometric results reveal an identical positive relationship between LnGFCF and institutional quality reinforcing the idea that encouraging infrastructure investment promotes good governance practices. However, the absence of significant effects from other variables such as LnL, LnIR and LnTOR suggests that short-term fluctuations may not be as critical as LnGFCF in the long term.

In general, the comparison reveals that FDI can have a positive and significant effect on institutional quality through various mechanisms such as institutional pressure and spillover effects. So FDI can present risks when related to a growing underground economy and corrupt practices. This point to the need for a sensible approach to FDI with strategies and policies that encourage beneficial flows while mitigating risks to institutional integrity. The results also suggest that increased promotion of fixed capital investment and rising levels of wealth could play a significant role in improving the quality of institutions in African countries thereby supporting the major goal of sustainable ST.

In relation to African countries, the econometric results obtained highlight the complexity of FDI dualism. On the one hand, FDI can be a powerful force for significant, positive change improving the quality of institutions through spillover effects and institutional pressure. These instruments facilitate the transfer of technology, knowledge and best practices from multinational firms to host-country institutions. In addition, they can help increase accountability and transparency and build capacity. This is especially critical for African countries where institutional frameworks generally require improvement to support sustainable development. The inflow of 'FDI can catalyze inclusive growth create decent jobs, facilitate technology transfer and also participate in a broader ecosystem of innovation and development.

However, the risks associated with FDI particularly when characterized by corrupt practices or the growth of underground economic activities must be taken into consideration. In some African host countries, the absence of effective governance and robust regulatory frameworks can generate conditions conducive to collusion between local elites and foreign investors compromising institutional integrity and eroding public confidence. The spread of the underground economy can compound these risks by encouraging illicit activities that negatively impact formal regulatory systems. This highlights the need for African policymakers to adopt balanced FDI strategies and policies ensuring that while beneficial flows are encouraged, measures are put in place to reduce the risks of exploitation, corruption and the erosion of good governance.

To achieve this balance, African economies need to implement strategies and policies that both attract reputable FDI and ensure that the benefits of these investments contribute to future, sustainable and inclusive growth. This requires strengthening legal institutions creating transparent regulatory frameworks and promoting good governance to boost investor confidence while combating corruption. The findings suggest that promoting fixed capital investment and raising wealth levels could play an important role in improving good governance practices across African countries in line with the broader purpose of ST. Building on these areas African countries can harness the positive aspects of FDI while reducing risks paving the way for more resilient and sustainable economies.

6. Conclusion

This paper examines the role played by institutional quality as a catalyst in the process of structural transformation in 25 African countries paying particular attention to the mediating role that foreign direct investment can play. Through an in-depth econometric study, we explored the links that might exist between institutional quality, foreign direct investment and the structural transformation process in the context of African countries estimating two Panel ARDL econometric models to analyze the short- and long-term relationships of these three phenomena.

Our econometric results reveal several important points. First, we found that institutional quality captured by two dependent variables, the degree of freedom from corruption and the degree of property freedom is a decisive determinant of structural transformation in African countries. Indeed, better institutional quality seems to foster an environment conducive to inclusive growth and decent job creation, thus contributing to the diversification, sophistication and modernization of African countries.

Furthermore, they revealed a negative effect of foreign direct investment in these countries on long-term institutional quality. This finding raises profound questions about the overall implications of foreign direct investment on property rights and the adoption of good governance within these countries. Indeed, the

negative effects observed on the two dependent variables (the degree of freedom from corruption and the degree of property freedom) show the complexity of this dynamic and the need for in-depth evaluation.

Furthermore, the results show the paramount importance of understanding the underlying mechanisms governing the interaction between foreign direct investment and institutional quality. They also highlight the urgent need for more in-depth analysis to fully grasp the implications of this complex relationship. Indeed, it is essential to recognize that foreign direct investment can have both positive and negative influences on the good governance of institutions in African countries calling for a holistic and integrated approach to assessing its overall effect. Therefore, it seems important that development players and policymakers in Africa take these outputs into account when preparing strategies and policies aimed at promoting institutional quality and structural transformation in African countries. This requires a balanced approach that encourages foreign investment while ensuring that it plays a serious part in improving the good governance of institutions on the continent.

The results obtained highlight the role of investment in infrastructure and in improving wealth levels in promoting institutional quality and consequently, the success of the structural transformation process in African countries. These factors appear to play a crucial role in creating an environment conducive to investment and entrepreneurship, thus facilitating the achievement of long-term sustainable development.

Finally, the results underline that foreign direct investment is not necessarily the main driver of structural transformation in Africa and other factors such as institution-building and domestic public and private investment could play a more important role in the success of this process. These findings underline the importance of development policies and strategies that promote both foreign direct investment and domestic investment by strengthening institutional quality to support positive and sustainable structural transformation in Africa.

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