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Institutions moderating effect on capital flows for economic resilience in Nigeria, South Africa and Egypt

Efecto moderador de las instituciones en los flujos de capital para la resiliencia económica en Nigeria, Sudáfrica y Egipto

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Abstract

In order to strengthen economic resilience in Egypt, South Africa, and Nigeria, the current study aims to investigate how institutions moderate capital flows in these countries. This study constructs economic resilience index to ascertain the direction and magnitude from the interaction of governance quality to foreign direct investment, foreign portfolio investment and official development assistance. It is clear from the results of the bivariate model for Egypt that the interaction of governance quality with foreign direct investment and foreign portfolio investment produced positive and negative effects, as well as a significant relationship with economic resilience. However, those of Nigeria and South Africa show that only foreign portfolio investment and official development assistance interacted with governance quality to exhibit negative and positive effects, as well as a significant relationship with economic resilience.

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JEL Code: E02, F3, F63
Keywords: institutional quality; foreign direct investment; foreign portfolio investment; official development assistance; economic resilience

Resumen

Para fortalecer la resiliencia económica en Egipto, Sudáfrica y Nigeria, el presente estudio tiene como objetivo investigar cómo las instituciones moderan los flujos de capital en estos países. Este estudio construye un índice de resiliencia económica para determinar la dirección y magnitud de la interacción entre la calidad de la gobernanza y la inversión extranjera directa, la inversión extranjera en cartera y la asistencia oficial para el desarrollo. Los resultados del modelo bivariado para Egipto muestran que la interacción de la calidad de la gobernanza con la inversión extranjera directa y la inversión extranjera en cartera produjo efectos positivos y negativos, así como una relación significativa con la resiliencia económica. Sin embargo, los resultados para Nigeria y Sudáfrica muestran que solo la inversión extranjera en cartera y la asistencia oficial para el desarrollo interactuaron con la calidad de la gobernanza, mostrando efectos negativos y positivos, así como una relación significativa con la resiliencia económica.

Código JEL: E02, F3, F63
Palabras clave: calidad institucional; inversión extranjera directa; inversión en cartera extranjera; asistencia oficial para el desarrollo; resiliencia económica

Introduction

Domestic resources are limited because of poor tax revenue and low-saving levels among others. Specifically, Nigeria, Kenya, and South Africa's tax-to-GDP ratios in 2020 were 5.5%, 15.3%, and 25.2% respectively. Set against the IMF and African Countries in Revenue Statistics in Africa benchmarks of 15% and 16% (IMF, 2022), only Kenya meets both. Similarly, South Africa, Kenya, and Nigeria's savings to GDP ratios at 16.7%, 14%, and 29% all fall below the IMFs criteria of 30 percent (Aslam, Delepierre, Gupta & Rawlings, 2022). This evidence shows that foreign capital inflows can be advantageous because they open up new opportunities for capital accumulation and speed up economic development in countries with inadequate capital. This is anticipated to assist the growth of infrastructure, technology, and human capital as well as the development of a knowledge-based economy with the ability to expand export goods (Phimmavong, 2017).

African economies have attracted significant capital inflows over the years (Nyang`oro, 2017; IMF, 2019; Olaoye, Eluwole, & Lakhani, 2022), The top recipients on the continent in 2020 according to World Investment Report (2021) were Nigeria, South Africa and Egypt. Despite these inflows, the continent and these countries still grapple with high levels of poverty, weak development of human capital, structural imbalances, weak institutions, and inadequate infrastructure (Ogbonna, Ogbuabor, Afamefuna & Ugwuoke, 2021). For instance, infrastructural stock as a percentage of GDP amounted to 23.73%, 80.19%, and 88.74% in Nigeria, South Africa, and Egypt in 2021 (Statista, 2021). However, only

Nigeria falls short of the international benchmark of 70% set by the World Bank. As it stands, Africa's economic growth rate was 4.8% in 2021, falling to 3.8% in 2022 (AfDB, 2023). Also in 2021, about 37.9% of the sub-Saharan Africa population lived on less than $1.90 a day (UNSTATS, 2022). For Egypt, it stood at 31.9%, Nigeria at 42.0%, and South Africa at 32.63% in 2020.

There is no consensus on the drivers of economic performance between nations and across regions, (Nchofoung & Asongu, 2022; Vachuiden & Ngouhouo, 2022). Reasons put forward by empirical studies for these prevailing realities include the small and inefficient industrial bases and institutional failure (Schmieg, 2015; Santos, 2015; Sule, 2020; Nchofoung, 2022). Other reasons are the widespread ineffective capital inflows and weak institutional frameworks (Alfraro et al., 2008; Agloyor et al., 2016; Sule, 2019; Achuo et al., 2021; Nchofoung et al., 2021). Also, because of their less diverse exports, high reliance on primary products, and rising prevalence of poverty, developing nations, particularly those in the SSA sub-region, are sensitive to shocks (UNCTAD 2018). More recently, the Covid-19 pandemic and the interruptions to global supply chains brought on by the Russia-Ukraine have resulted in economic and non-economic shocks that have threatened the resilience of African nations. In this spirit, the IMF promoted measures to increase the resiliency of this subregion's fragile economies (Ngouhouo & Nchofoung, 2021). Indeed, economic literature covers aspects of the dynamics around shocks and resilience nexus (Martin & Sunley, 2015; Martin, Sunley, Gardiner, & Tyler, 2016) noting especially that these shocks could hinder capital inflows and economic activities generally.

This topic is imperative given that these emerging economies face increasing global economic uncertainties, climate change impacts, and the need for sustainable development, making institutional quality a key factor in attracting and effectively utilizing foreign investments for long-term economic stability (Adeleye, Osabuohien & Bowale, 2017; Asongu & Odhiambo, 2021). Nigeria, South Africa, and Egypt as it stands today would need to seek some capital inflows to bridge the resource gaps in their drive for reconstruction and consolidation and they need to ensure that the resources are utilized effectively as results are imperative for transformative recovery. This inquiry will contribute to bringing clarity into discussions on the influence of institutions on the relationship between capital flows and economic recovery. This study is an effort to investigate among Nigeria, South Africa, and Egypt, how institutional quality can influence the way that foreign financial flows build economic resilience. Specifically, it will examine the moderating effect of institutions on capital inflows and its impact on economic resilience. The hypothesis to be tested is that institutional quality does not significantly moderate the relationship between capital inflows and economic resilience in Egypt, Nigeria, and South Africa.

In addition to this introductory section, the rest of the paper is structured as follows: Section 2 provides a brief literature review on the subject matter; Section 3 presents the methodology; Section 4

centre on the results and discusses the findings of the study; and Section 5 present the conclusion and policy remarks.

Brief literature review

Capital inflows is used interchangeably with external financing in this study. The World Bank (2003) viewed external financing as the flow of capital assets such as foreign direct investment, and foreign portfolio investment to promote productivity, entrepreneurship, and investment in a domestic economy. External financing is the flow of funds and other capital goods from developed to developing countries to boost the recipient's productive capacity (Sule, 2019). Capital flows affect economic growth either directly, through its effect on savings, cost of capital, technology transfer, and development of the financial sector, or indirectly, through increased product specialization and improvements in macroeconomic policies and institutions by encouraging competitiveness (Prasad, Rogoff, Wei, & Kose 2003). Capital flows, in combination with trade flows, are prerequisites for sustainable growth and development (Loots, 2005).

On the other hand, the institution is an important factor that shapes the behaviour of organizations and enhances economic performance (Haggard, 2004; Becherair, 2014). Yildirim, (2015) defines institutions as habits that bring limitations to our actions through rules. It is about how organizations, settled in social life, direct how to behave, and live a harmonious social life. The essence of institutions is to ensure good governance in both public and private organizations. Therefore, institutional quality refers to those basic tenets that guide the operations of public and other private institutions in other to maximize wealth (Sule, 2020). The quality of institutions affects the composition and level of capital flows to developing countries and is more important for financially open economies (Kose, Prasad, Rogoff & Wei, 2010; Ahlerup, Baskaran, & Bigsten, 2016).

Resilience refers to the ability to dampen the impact of, and quickly recover from shocks (Jayne, Fox, Fuglie & Adelaja, 2021). Resilience refers to the ability not only to withstand and cope with challenges but also to transform in a sustainable, fair, and democratic manner." (European Commission, 2021). Resilience is enhanced by the factors that drive transformation such as human capital development, improved governance, and political and economic inclusion (Jayne et al. 2021). Economic resilience is the ability of an entity or system to maintain function (e.g., continue producing) when shocked (Rose, 2004). Similarly, economic resilience refers to an economy's policy-induced ability to recover from or adjust to, the negative impacts of adverse exogenous shocks and to benefit from positive shocks (Briguglio, Cordina, Farrugia & Vella, 2009). Economic resilience is defined as the magnitude and duration of deviation from the economy achieving its purpose in times of crisis (Vugrin et al., 2010).

Frankenberger, (2012), further emphasized that a resilient system has the capacity to respond positively to changes and maintain or improve function. Resilience also captures the ability to absorb shocks, so the overall effect of a shock is neutralized or made negligible (AfDB, 2021).

Economic growth has historically been a central theme of macroeconomic research and has given rise to the sub-discipline of growth theory (Solow 1956; Romer 1990). The Solow and Swan theory, the first neoclassical growth theory, formed the foundation for this study and it is modeled as a function of capital stock (K), labor productivity (L), and technology. According to the neoclassical growth model, as a result of financial globalization, capital will move from nations with an abundance of capital to those with a shortage of capital because the latter are anticipated to have higher returns on capital (Slesman, et al., 2015; Okafor, Ugochukwu & Chijindu, 2016; IMF, 2019). Basically, capital inflows lower the cost of capital, augment savings in countries with a dearth of capital, and ultimately increase domestic investment (Kose et al. 2010; Edo, 2018). However, the causes and nature of economic volatility and stability, have enjoyed less attention than economic growth theory (Deller and Watson 2016; Wagner and Deller 1998). The causes of variation in the rate of growth and in a system's responses to shocks have also received relatively little attention but are central to the resilience discussion (Rose 2004; Han & Goetz 2015; Bruneau et al. 2003; Fingleton et al. 2012). The focus of this study is to contribute to the discourse on the drivers of resilience by Briguglio et al. (2009) and others since resilience is "the ability of something to recover from change" (Merriam-Webster 2016).

Foreign direct investment (FDI) and financial flows are pivotal elements in open macroeconomics, influencing various aspects of economic growth, capital accumulation, and cross-border technology transfer. FDI, in particular, is often regarded as a more stable form of capital inflow compared to portfolio investments, with the potential to foster long-term economic development in host countries (Iamsiraroj & Ulubasoglu, 2015). However, the impact of FDI and financial flows is not uniform and can vary widely based on the institutional quality, absorptive capacity, and economic policies of the recipient nations (Alfaro et al., 2014). Extant literature that FDI can spur economic growth by facilitating knowledge spillovers and enhancing competition, it may also cause crowding out effects on domestic investments in certain situations (Nguyen, 2022). Furthermore, the deepening of global financial integration has heightened the vulnerability of nations to external shocks, underscoring the necessity of sound macroeconomic management and resilient financial systems to optimize the benefits of international capital flows while minimizing associated risks (Rey, 2015).

Some of the extant literature on the role of quality institutions in the nexus between capital inflows and economic resilience are also reviewed. Starting with Ndiweni and Bonga-Bonga (2021) who employed threshold regression analysis to the impact of capital inflows on economic growth, they found a positive and significant relationship once a defined threshold level of institutional quality has been

exceeded. The result implies that the relationship between capital inflows and growth is dependent on the level of institutional development in sub-Saharan Africa. The study, conducted by Cockeran (2016) using exploratory data analysis, compared South Africa's resilience to external shocks relative to that of the other BRICS countries. The findings revealed that South Africa, compared to the other BRICS economies, is more susceptible to external shocks.

Hossain, & Rahman (2017) investigated the implication of governance in facilitating foreign direct investment in developing countries. Using pooled OLS results, they showed that improved governance increases FDI inflows. Regression analysis was utilized by Murdipi, Baharumshah, and Law (2023), and their results showed that the benefits of portfolio investments for boosting the economy are still fairly responsive to various institutional measures. Adams, Klobodu and Lamptey (2017) adopted ARDL and Granger causality in their analysis of the effects of capital flows on economic growth in Senegal but their results, however, did not show cointegration between aid and growth or between FDI and growth. However, remittance caused economic growth in Senegal in the long run while debt exerted a negative effect on growth. The resilience index was used in the study by Boorman, Faigenbaum, Ferhani, Bhaskaran, Arnold, and Kohli (2013) measuring countries' resilience to shock in the Eurozone and showed that many economies had flaws even before the global crisis and after the crisis in Europe.

Igan, Kutan, and Mirzaei (2020) employed a panel-based fixed effects method with empirical results indicating that private capital inflows are related to better growth in industries that are more reliant on external finance. The study also demonstrated that equity inflows and long-term growth are positively connected, particularly with well-functioning banks with evidence of higher institutional quality. Rios and Gianmoena (2020) adopt the Bayesian Model Averaging techniques and find that the quality of regional government appears to be the major factor influencing resilience. Ezcurra and Rios (2019) employ spatial econometric methods in a sample of European regions whereas Sondermann (2018) combines time-series Vector Autoregressions and probit modeling in a sample of European countries. It is interesting to note that both studies find a positive impact of the quality of institutions on resilience (Ezcurra & Rios, 2019; Sondermann, 2018). These outcomes demonstrate that quality institutions matter to economic resilience in Europe. Ngouhouo and Nchofoung, (2021) conducted research on economic resilience in sub-Saharan Africa: evidence from composite indicators using B2A algorithm and the graph theory. Results from 22 SSA countries demonstrate that while most of these nations continue to be in a very fragile state, only few of them exhibit features of a stable resilience. The economies of Central Africa and East Africa exhibit a state of controlled vulnerability, whereas the economies of West Africa are the most fragile. Second, the South African economies exhibit the strongest resilience despite being unstable.

We provide two contributions to the current body of knowledge in light of the previous background. First, we attempted a comparative analysis of the moderating effect of capital inflows on

economic resilience in South Africa, Nigeria, and Egypt. This is necessary to give a holistic overview of the impact of the capital inflows on economic resilience as it affects Africa and this contributes to the available scholarly research undertaken. This study examines this as an alternative measure for economy recovery and also takes into cognizance, the interaction of governance quality. Second, an economic resilience index using World Bank's Development Indicators was constructed, limited to the sample countries under consideration. This index was constructed in line with the approach by Briguglio et al. (2009), which is derived from macroeconomic stability, microeconomic market efficiency, good governance, and social development characteristics as components.

Methodology

This research concentrates on Egypt, Nigeria, and South Africa due to their status as regional leaders and their recognition as emerging economies by numerous international bodies (Aman, Gonel, Kaplan & Karaduman, 2018). Also, these countries have remained among the top recipients of net capital inflows into sub-Saharan African countries (Adelakun & Ogujiuba, 2023; UNCTAD, 2023). This study focused on Foreign Direct Investment (FDI), net inflows (BoP, current US$), Portfolio Equity net inflows (BoP, current US$) and Official Development Assistance (ODA). The choices can be justified by the room they give to examine flows directly tied to investment as well as development assistance. They were obtained from World Bank's Development Indicators. The government effectiveness index was used as proxy for institutional quality (also sourced from the World Bank). The empirical model for this current study draws from work of Ngouhouo and Nchofoung, (2021). The model is within the framework of the neoclassical growth model (Solow, 1956) (from Mankiw et al., 1995) augmented to include measures of institutional quality. The functional form is stated below:

$$\mathrm{ERI} = \mathrm{f}(\mathrm{FDI} * \mathrm{GOV}_t, \mathrm{FPI} * \mathrm{GOV}_t, \mathrm{ODA} * \mathrm{GOV}_t, \mathrm{EXR}_t, \mathrm{CPI}_t \quad (1)$$

Where: ERI = Economic Resilience Index, FDI = Foreign Direct Investment (US$ Million), ODA = Official Development Assistance (US$ Million), EXR = Exchange Rate in US$, GOV = Governance Index and CP = Consumer Price Index (%). It is expected that the interactions of capital inflows and institutional quality indicators will exert a negative but significant influence on the selected economies of Egypt, Nigeria, and South Africa.

This study adopt the Panel Autoregressive Distributed Lag modelling framework (PARDL) developed by Pesaran et al. (1999). The choice of this model makes it possible to distinguish between the short-run and long-run impacts (Shikur, 2024). This means that this model makes it possible to

differentiate between the short-run and long-run effects of multi-explanatory variables on economic resilience in selected countries in SSA. It accommodates various orders of integration, such as I (0), I(1), or a combination orders of integration, namely, I (0), I (1) variables as long as none of variables are I(2). Also, it accommodates a different number of lags on each variable.

Construction of the Economic Resilience Index (ERI)

The literature shows that different approaches can be used to do the construction (Martin & Sunley, 2015; Modica & Reggiani, 2015). Whereas some authors propose the use of univariate indicators based on GDP per capita or employment rates, Cellini & Torrisi, 2014 and Lagravinese, 2015, adopted a different approach to measure the concept of resilience as a composite index based on a different number of variables that could affect the degree of economic vulnerability (Modica & Reggiani, 2015). This study constructed a composite economic resilience index and derives all its indicators from empirical works on economic resilience developed by different scholars (Hafele et al. 2022; Sondermann, 2018; Briguglio et al. 2009) and aggregates them into a single, composite indicator. In this study, the ERI is composed of 22 indicators divided into macroeconomic stability, microeconomic market efficiency, good political governance, and social and environmental conditions (Briguglio, Cordina, Farrugia & Vella, 2006; European Commission, 2021; Hafele et al. 2022). The data covered the period from 1996 to 2022. According to Briguglio (2016) categorization, it includes; Current account balance (% of GDP, CAD), External debt stocks, long-term (DOD, current US$, EDDS), Debt service on external debt, total (TDS, current US$, DSED), GDP growth (annual %, GDPG), GDP per capita growth (annual %, GDPPC), Gross capital formation (annual % growth, GCF), Deposit interest rate (%, DIR), Broad money growth (annual %, BMG), Control of Corruption (CC), Political Stability and Absence of Violence/Terrorism (PSAV), Regulatory Quality (RQ), Rule of Law (RL), Voice and Accountability (VA), oil refinery throughput (ORT), oil refinery capacity (ORC), oil price (OP), emp, human capital index (HC), real domestic absorption (CDA), capital stock (CN), average depreciation of capital (DELTA), share of household consumption (CSHC).

According to UNCTAD (2018), SSA countries are more prone to adverse shocks compare to other developing countries. While no country is entirely immune to vulnerability, those with greater resilience demonstrate the ability to insulate themselves and recover more effectively (Jolles et al., 2023; Oladunni, 2020). It is essential to consider the unique characteristics of each of the selected countries in SSA when developing a resilient index (Joseph, Awolaja & Ajibola, 2024). These indicators are relevant in the chosen countries because of their comprehensive coverage of key factors influencing economic resilience in developing economies, in fostering sustainable economic growth and stability in sub-Saharan

Africa (Asongu & Nwachukwu, 2016; Ngouhouo & Nchofoung, 2021). This is in line with the approach in literature and the closest research to the present study (Ngouhouo & Nchofoung, 2021). However, in this study, we went further to consider components of social and energy sectors that are perceived its changes influences how each country maintain its social status and energy utilization. These indicators are germane because social and energy sectors are vital for economic resilience in emerging African economies (Akinyemi et al. 2017; Renzaho, 2020; Nchofoung & Ngouhouo, 2024). Social investments build human capital and stability, while energy access drives industrialization and reduces external vulnerabilities, thus both sectors contribute to sustainable economic growth and improved shock resistance. Principal component analysis (PCA) is used to construct the index. Based on data availability, the index is constructed from 1996 to 2022 and its value ranges from 0 to 100 indicative, with 0 indicating a lowest level of development resilience.

Data presentation; Stylized facts

This section begins with the trend analysis for of the index of economic resilience as constructed for South Africa, Nigeria and Egypt depicted in Figure 1. The trends for FDI and ODA also follow in Figures 1, 2, 3, 4 and as well government effectiveness index in Figure 5.

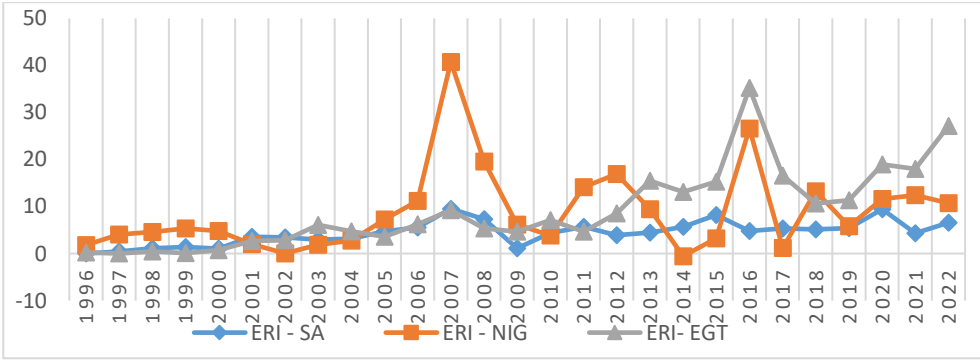

Figure 1. Trends in Economic Resilience Index (ERI) for South Africa, Nigeria & Egypt
Source: own calculation using data from World Bank's Development Indicators

Egypt, Nigeria, and South Africa, as key economies in Africa, face diverse challenges in economic resilience. According to literature, Egypt has shown moderate resilience through economic reforms, but struggles with high public debt and inflation (Amer, Selwaness & Zaki, 2021; Othman, Sholkamy & Zaki, 2021). Nigeria, despite its oil wealth, grapples with economic diversification, high poverty rates, and regional inequalities, impacting its resilience (Olowookere et al. 2022). South Africa,

the most industrialized of the three, demonstrates resilience in its financial sector but faces persistent unemployment and inequality, exacerbated by energy crises (Bhorat et al., 2020). All three countries are working to strengthen their social safety nets and improve energy security to enhance overall economic resilience, though progress varies significantly (Nchofoung & Asongu, 2022; Ngouhouo et al. 2021).

Figure 1 represents the co-movement of the resilience index (ERI) for South Africa (SA), Nigeria (NIG) and Egypt (EGT) for the periods of 1996 to 2022. The series across this sample exhibited similar characteristics except in the period of 2007/2008 where Nigeria witnessed a sharper rise over Egypt and SA. This period coincides with the global financial crisis, indicative of some resilience that we can attest to. This similar movement is noticed again for the period of 2016 for Nigeria and Egypt, and in this period, Nigeria slid into recession due to the fall in the price of crude oil at the international market occasioned by the Russia-Saudi crude oil excess supply. The United Nations, the Organization for Economic Cooperation and Development, and the European Union have all called for more robust economies, making economic resilience an important goal. Resilience is most relevant when there are shocks or when there is a crisis so generally, the trend shows these top three economies on the continent struggling to thrive.

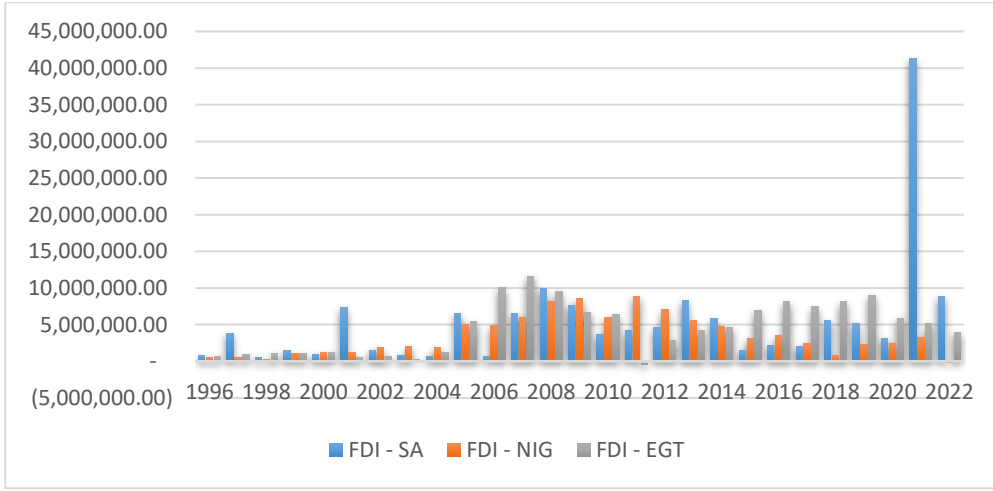

Figure 2. Trends in Foreign Direct Investment Inflow to South Africa, Nigeria & Egypt
Source: own calculation using data from World Bank's Development Indicators

Figure 2 holds the FDI net inflows to South Africa, Nigeria and Egypt within the period of 1996 to 2022 and the series is measured in current US$. Although, there are traces of similar patterns in the FDI inflows to these countries with exceptions in 1997, 2001, 2013, 2021 and 2022 where South Africa

attracted more of the net inflows over Nigeria and Egypt. However, Egypt and South Africa have enjoyed more net inflows than Nigeria.

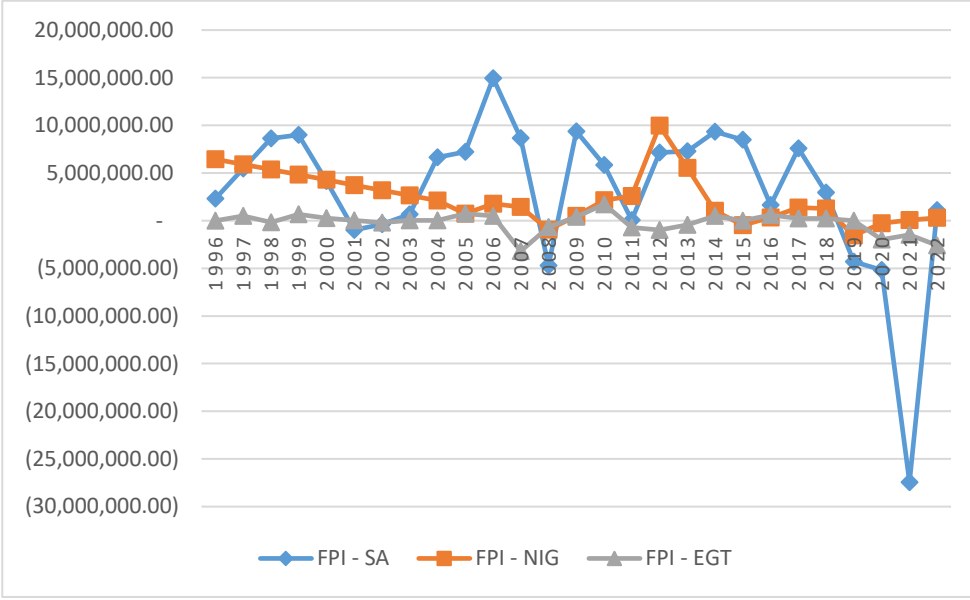

Figure 3. Trends in Foreign Portfolio Investment Inflow to South Africa, Nigeria & Egypt
Source: own calculation using data from World Bank's Development Indicators

Figure 3 represents the trends in portfolio investment net inflows to South Africa, Nigeria and Egypt for the period of 1996 to 2022. According to the statistics, the movement of the net FPI inflows demonstrate different characteristics. This is expected because differences in economic and policy dynamics alongside size and operation of capital markets influence the size of the flows. However, one striking similarity in the structure of the net inflows is that they were negative across these countries in 2008, which was the period of global financial crisis where most the economies were struggling to bail out their ailing economies. These negative net inflows are also consistent between 2019 to 2021 across these countries and this is linked to the global stresses of the Covid-19 pandemic and Russia-Ukraine war that disrupted global economic activities and supply chains. It is noteworthy that the trends in the other periods under consideration are unique for each country.

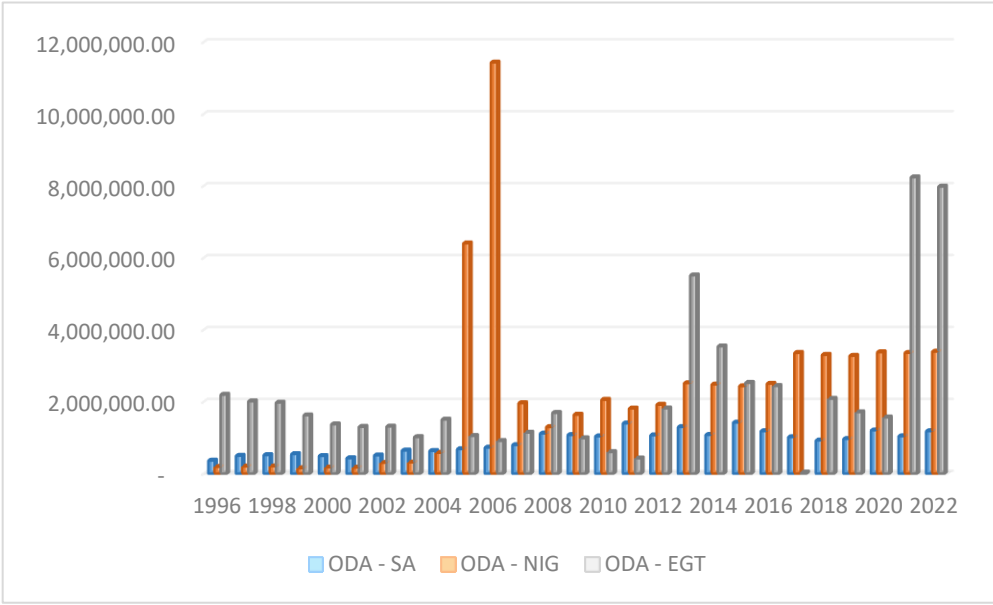

Figure 4. Trends in Official Development Assistance Inflow to South Africa, Nigeria & Egypt
Source: own calculation using data from World Bank's Development Indicators

Figure 4 is the trends in official development assistance received in million US$ for the periods of 1996 to 2022 by South Africa, Nigeria and Egypt. Overall, the data shows that Nigeria and Egypt have received more of ODA inflows than South Africa in the period under study. Egypt attracted larger proportion between 1996 to 2004 before being overtaken by Nigeria in the period of 2005 to 2007. Nigeria still maintained the lead in between 2008 and 012 before Egypt got more between 2013 and 2015. From 2016 to 2020, Nigeria accounted for a significant proportion over Egypt and South Africa. However, for 2021 and 2022, Egypt tops the chart significantly again.

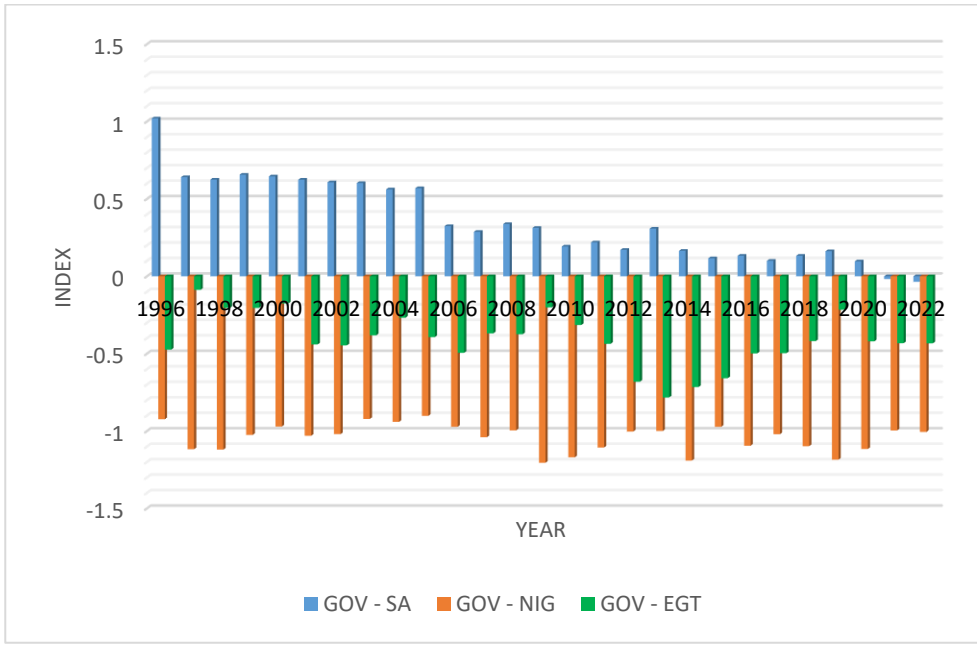

Figure 5. Trends in Governance Quality in South Africa, Nigeria & Egypt
Source: own calculation using data from World Bank's Development Indicators

Figure 5 represent the trends in government effectiveness index which is used as proxy for governance quality in South Africa, Nigeria, and Egypt. The data shows that only South Africa has achieved a strong governance quality throughout the period under study while Egypt and Nigeria remain on the weak threshold in all the time horizons with values below 0. This revelation portends that the top recipients of capital inflows exhibit poor governance standards. It raises a question as to whether the flows have achieved within them or not.

Results and discussion

Preliminary analysis

Table 1
Descriptive Statistics

	Mean	Median	Maximum	Minimum	Std. Dev.	N_Std. Dev.	Skewness	Kurtosis	Jarque-Bera	Prob
ERI_EGT	9.22	6.22	35.20	0.00	8.62	0.93	1.29	4.47	9.96	0.01
ERI_NIG	8.91	5.81	40.77	-0.56	9.08	1.02	1.88	6.91	33.10	0.00
ERI_SA	4.39	4.47	9.51	0.00	2.55	0.58	0.17	2.57	0.34	0.84
FDI_EGT	4548215.00	4612200.00	11578100.00	-482700.00	3550774.00	0.78	0.23	1.82	1.81	0.40
FDI_NIG	3433220.00	2412975.00	8841062.00	-186792.40	2699355.00	0.79	0.60	2.21	2.34	0.31
FDI_SA	5383021.00	3810544.00	41296139.00	550338.60	7720031.00	1.43	3.89	18.75	347.20	0.00
FPI_EGT	-222985.20	26100.00	1724400.00	-3198900.00	1063297.00	-4.77	-1.20	4.39	8.60	0.01
FPI_NIG	2383842.00	1769163.00	9959019.00	-1548463.00	2667382.00	1.12	0.91	3.57	4.11	0.13
FPI_SA	3172723.00	5472631.00	14958984.00	-27434215.00	7866432.00	2.48	-2.19	9.57	70.09	0.00
ODA_EGT	2167163.00	1620250.00	8240030.00	33110.00	2004641.00	0.93	2.10	6.62	34.57	0.00
ODA_NIG	2250466.00	1958600.00	11431960.00	151990.00	2375472.00	1.06	2.28	9.48	70.66	0.00
ODA_SA	881536.50	964870.00	1420270.00	362340.00	316597.10	0.36	-0.05	1.75	1.77	0.41
GOV_EGT	-0.41	-0.42	-0.09	-0.78	0.17	-0.42	-0.30	2.78	0.46	0.79
GOV_NIG	-1.04	-1.02	-0.90	-1.20	0.09	-0.08	-0.34	2.10	1.45	0.49
GOV_SA	0.35	0.31	1.02	-0.04	0.26	0.74	0.55	2.55	1.60	0.45
EXR_EGT	8.07	5.85	19.16	3.39	5.19	0.64	1.12	2.67	5.77	0.06
EXR_NIG	175.37	148.88	425.98	21.88	109.51	0.62	0.83	2.89	3.08	0.21
EXR_SA	9.52	8.26	16.46	4.30	3.68	0.39	0.54	2.00	2.46	0.29
CPI_EGT	128.58	89.87	363.25	39.19	100.04	0.78	1.04	2.75	4.98	0.08
CPI_NIG	126.80	87.92	421.07	21.75	109.14	0.86	1.19	3.53	6.67	0.03
CPI_SA	102.55	96.07	183.68	46.58	41.23	0.40	0.43	1.93	2.11	0.35

Source: World Bank (2023)

According to Table 1, the mean values of the economic resilience index were 9.22, 8.91, and 4.39 for Egypt, Nigeria, and South Africa respectively. The average value of FDI, FPI, and ODA in current million US$ were positive exceptions for FPI inflows to Egypt. Moving further, the Governance index exhibited a negative mean for Egypt and Nigeria, which is an indication of weak government effectiveness for these two countries. The exchange rate was maintained at a lower threshold for Egypt and South Africa while the exchange rate for Nigeria was largely higher. Consumer price indexes that measured inflation demonstrated similar characteristics. Comparatively, the economic resilience index, FPI, ODA for Nigeria, FDI, FPI for South Africa, and FPI for Egypt exhibited volatile tendencies while the rest of the series significantly had lower standard deviations indicative of lower levels of volatility. The statistical distribution of the series demonstrates positive skewness for most of the series (implying greater individual values than the average) with the exception of FPI_EGT, FPI_SA, ODA_SA, GOV_EGT, GOV_NIG. For most of the series, the variable distributions are leptokurtic with the exception of ERI_EGT, ERI_NIG FDI_SA, FPI_EGT, FPI_NIG, FPI_SA, ODA_EGT, ODA_NIG, and CPI_NIG that are considered platykurtic.

Table 2
Unit root test results.

Country	Panel A: ADF unit root test							
	ERI	FDI	FPI	ODA	GOV	EXR	CPI	d_{max}
South Africa	<0.05*	<0.01*	<0.01*	<0.01**	<0.01**	<0.01**	<0.01**	I(1)
Nigeria	<0.01*	<0.01**	<0.01**	<0.01**	<0.01*	<0.01**	<0.05**	I(1)
Egypt	<0.01**	<0.01**	<0.01*	<0.01**	<0.01**	<0.05**	<0.01**	I(1)
Country	Panel B: DF-GLS unit root test							
South Africa	<0.05*	<0.01*	<0.01*	<0.01**	<0.01**	<0.01**	<0.01**	I(1)
Nigeria	<0.01*	>0.01**	<0.01**	<0.01**	<0.01*	<0.01**	<0.01**	I(1)
Egypt	<0.01**	<0.01**	<0.01*	<0.01*	<0.05*	<0.01**	<0.05**	I(1)

Source: Extract from E-view 12
Note: Probability values are reported using 5% level of significance while *, ** and *** denote stationarity at level (I(0)), first difference (I(1)), and second difference (I(2)), respectively. The dmax gives us the maximum order of integration for the individual countries.

From the result in Table 2, Panel A holds the ADF unit root test while Panel B represents Dickey-Fuller GLS unit root to validate the ADF result. The results reveal that all the series were stationary at both level [i.e., I (0)] and first difference [i.e., I (1)], thus exhibiting a mixed order of integration among the variables under consideration and this outcome spread across the selected countries. At this point, the rule of thumb must be observed by considering that all the series are of different orders of integration. Given the bivariate model and outcome of the stationarity test discussed above, the appropriate technique is Autoregressive Distributive Lag.

ARDL bounds test

Table 3 presents a summary of the ARDL Bounds test for the sample countries involved in the analysis. Using the comparison of the F-Statistic and the lower and upper bounds estimates respectively, the study infers the following. Given the F-Statistic at 1 percent is higher than the upper bounds for the 3 countries, the study rejects the null hypothesis of no cointegration between the variables in the models. Therefore, there is a long-run relationship between all variables in the relationship being estimated.

Table 3
Bounds Test.

Country	F-Statistics	Signif.	Lower Bound I(0)	Upper Bound I(1)
Egypt	17.15958	1%	3.93	5.23
Nigeria	22.29288	1%	4.40	5.72
South Africa	24.48334	1%	3.41	4.68

Source: Extract from E-view 12

ARDL short-run and long-run estimates

In Panel A of Table 4, the short-run estimates of the ARDL model is presented at 10%, 5% and 1% respectively.

Table 4
ARDL Results.

Panel A: Short-Run Estimates						
Country	FDI*GOV	FPI*GOV	ODA*GOV	EXR	CPI	ECM
Egypt	-7.337175 (0.002)*	4.029695 (0.028)*	2.546014 (0.157)	-0.12766 (0.815)	0.095321 (0.039)*	-0.557 (0.000)*
Nigeria	-2.666655 (0.158)	-8.7273 (0.000)*	10.49633 (0.006)*	-20.76678 (0.054*)	-0.342 (0.002)*	-0.646 (0.000)*
South Africa	0.130869 (0.642)	0.5838 (0.018)*	-0.84833 (0.057)*	9.12654 (0.000)*	-1.16892 (0.387)	-0.810 (0.000)*
Panel B: Long-Run Estimates						
Egypt	-4.710782 (0.001)*	2.587238 (0.042)*	1.634651 (0.122)	-0.081963 (0.815)	0.0612 (0.027)*	
Nigeria	-1.620294 (0.165)	-5.302819 (0.000)*	6.377702 (0.008)*	-12.61816 (0.044)*	0.231 (0.012)*	
South Africa	0.161528 (0.648)	0.720569 (0.022)*	-1.04707 (0.077)*	11.26465 (0.000)*	-1.44276 (0.402)	

Source: Extract from E-view 12
Note: The first figure in each cell is the estimated coefficient while the second is its probability value. This study uses 10%, 5% and 1% level of significance upon which the statistical significance of the estimated variables can be examined. The (∗) denotes rejection of no statistical significance.

Table 5
Results Summary.

Country	FDI*GOV	FPI*GOV	ODA*GOV	EXR	CPI	ECM
Panel A: Short-Run Estimates						
Egypt	Negative and significant	Positive and significant	Positive and insignificant	Negative and insignificant	Positive and significant	-0.557 (0.000)*
Nigeria	Negative and insignificant	Negative and significant	Positive and significant	negative and significant	Negative and significant	-0.646 (0.000)*
South Africa	Positive and insignificant	Positive and significant	Negative and significant	Positive and significant	Negative and insignificant	-0.810 (0.000)*
Panel B: Long-Run Estimates						
Egypt	Negative and Significant	Positive and Significant	Positive and Insignificant	Negative and Insignificant	Positive and Significant	
Nigeria	Negative and Insignificant	Negative and Significant	Positive and Significant	Negative and Significant	Positive and Significant	
South Africa	Positive and Insignificant	Positive and Significant	Negative and Significant	Positive and Significant	Negative and Insignificant	

Source: Extract from E-view 12

Table 5 holds the summary results of the short-run and long-run estimates of the ARDL model presented at 10%, 5%, and 1% respectively. Starting with Egypt, foreign direct investment and foreign portfolio investment moderated by governance quality (FDI*GOV & FPI*GOV) exhibit significant relationships respectively with economic resilience at a 5 per cent level in the short-run and long-run. On the signs, FDI*GOV decreases the buildup to a resilient economy, all things being equal while FDI*GOV facilitates economic resilience. Further, even though Egypt receives a substantial amount of ODA inflows, its impact is still negligible in the long and short run. This insignificance may be the result of the weak government effectiveness seen within the period of the study as development assistance is usually administered by the government.

For Nigeria, the series of foreign portfolio investments and official development assistance interaction with governance quality (FPI*GOV & ODA*GOV) show significant relationships with the economic resilience index at a 5 percent level in the short-run and long run. The sign of FPI*GOV reveals a negative effect on economic resilience, which implies that the FPI inflows do not contribute to the robustness of the economy. However, an increase in ODA*GOV improves economic resilience during the period of the study. However, the series of foreign direct investments that interacted with governance quality (FDI*GOV) revealed a negative effect and insignificant relationship with the economic resilience indicator. The elasticities of FPI*GOV and ODA*GOV further demonstrate the response when

government creates enabling business environment for foreign portfolio investors and official development assistance partners

On the results of the series on South Africa, FPI is significant in the long and short run exhibiting a negative relationship with resilience moderated by governance. ODA is negative and significant in the short and long run. The elasticities for FPI and ODA are negligible and require a lot of government commitment in terms of economic and social reforms that can serve as an inducement to substantial contribution in both the short-run and long-run. FDI has not been shown to be significant to SA but positive in the period under study. The several reasons that could account for the insignificant outcomes for SA could include modeling, estimation technique, or the chosen timeframe. Recall that from Figure 2, substantial FDI net inflows have been noticed in the South African economy within the period of the study and so further studies could explore different approaches to ascertain the impact. Thus, the aforementioned could serve as the limitation of the methodology.

Also, Table 5 holds the Error Correction Term (ECT), the values of -0.56 (56%) for the model on Egypt, -0.65 (65%) for Nigeria, and -0.81 (81%) and for South Africa are observed to be substantial based on the rule of thumb. Accordingly, if there is a short-term disturbance, the balance can be regained by 56%, 65%, and 81% in the current year for all the significant relationships.

Table 6 holds the results of the post-estimation tests. The Linearity RESET test is used to confirm that the models' specifications are accurate. The linearity null hypothesis is upheld and the ARDL models are accurately described as a result of the small F-values and probability values for the models. The F-statistics for the findings of the serial correlation are not significant since the likelihood exceeds the level of significance of 5% and the null hypothesis of no serial correlations is accepted. Furthermore, it shows that there is a continuous spread of the residual in the models because the test does not reject the null hypothesis that heteroscedasticity exists.

Table 6
Post-Estimation Results

	Linearity Test Ramsey RESET	Autocorrelation test Arch Test	Heteroscedasticity test Breusch-Pagan-Godfrey
Egypt	0.103288 (0.7496)	0.129368 (0.7225)	2.812836 (0.2126)
Nigeria	3.283186 (0.1034)	0.419630 (0.5241)	2.510402 (0.1425)
South Africa	2.785011(0.2734)	0.036517 (0.8501)	0.087492 (0.1966)

Note: The values in parenthesis are probability values associated with each of the tests.

Conclusions

Historically, sub-Saharan African countries have had enormous potential for growth, development, and structural change, but these possibilities have often been stalled by a number of problems, including weak institutions and limited domestic resources. As a result of the government piling debt, more options are now being looked into for external financing the essential pathway for sustainable economic growth. To address these developmental challenges, long-term capital must be sourced externally. Several rising emerging and advanced countries are contesting for dominance and where to channel their idle resources across the continent. In fact, in the last few years, South Africa, Nigeria, and Egypt have remained among the top recipients of net capital inflows (FDI, FPI & ODA) into sub-Saharan African countries but it is worrisome that economic performance and social indicators still pose a serious threat to the resilience of these economies.

This study, considered governance quality as a moderating variable of the nexus between capital inflows and economic resilience of Egypt, Nigeria, and South Africa using time series data from 1996 to 2022. The hypothesis was tested using the probability values of the individual coefficients obtained from both the short-run and long-run estimates. It is evident that the result of the ARDL model for Egypt reveals that the interaction of governance quality with foreign direct investment and foreign portfolio investment yielded mixed effects, though only FPI is significant on economic resilience. For Nigeria ODA is positive and FPI is negative and South Africa's foreign portfolio investment has a positive effect and official development assistance interacted with governance quality exhibiting a negative effect on economic resilience.

Differences in the study's findings demonstrate that each country has its own unique characteristics and contributes to the literature on the different factors that influence sustainable economic growth and the system's capacity to respond to shocks, i.e., essential to economic resilience. However, on a general note, the study concludes that the quality of governments has not assured the expected impacts of FDI in these countries, and ODA is not a strong driver of economic resilience except in Nigeria. How government systems and structures operate matters because assistance (free resources) and investments don't build resilience in a vacuum. Modern economic development strategies must take into account how different national economies are able to withstand shocks and endure in a world that is increasingly characterized by change and unpredictability. The findings are a pointer to why quality governance matter to capital inflows in the quest for transformational recovery.

The limitations of this study highlight that governance improvements alone have not consistently yielded the expected positive impact of foreign direct investment. Also, official development assistance (ODA) does not strongly drive economic resilience, except in Nigeria, indicating that assistance

and investments alone cannot build resilience without effective government structures. Given that this investment comes as a private and public partnership, the fundamental duty of the government is to create a platform that can guarantee a return on investment or capital. Given the differences in the behaviour of the series under consideration across the selected countries, the following recommendations were made:

1) For Egypt, the series of foreign direct investments in economic resilience shows that governance quality has not ensured that policies and programmes are implemented to benefit foreign investors and impact the economic recovery. Thus, the Egyptian government needs to revisit the various policies that relate to business operations in Egypt and make them flexible in such a manner that can encourage direct investment inflows and also enhance transformational recovery. For the series of official development assistance, it requires the government to continuously align its programme alongside that of the development partners to enhance the stability of the socio-economic activities.
2) The results for Nigeria, revealed that foreign portfolio investment interaction with governance quality failed to demonstrate the capacity to translate to a robust economy. To address this setback, this study recommends a holistic reform in Nigeria's capital market operations championed by Security and Exchange Commission. This is necessary since idle resources can always find their way into the capital market and these funds can be used for long-run investment for the benefit of overall economic resilience even during any episode of shocks. On the other hand, the fact that ODA interaction with governance quality produces a tendency for a more resilient economy in both the short-run and long-run is also a reminder to the government to continuously strengthen their development partnership strategies to attract more assistance.
3) The findings on the series for South Africa show that foreign portfolio investment facilitates a resilient economic performance with the interaction of governance quality. This proves that the theoretical emphasis on the role of governance quality in economic growth cannot be taken for granted, hence the need for the securities and capital markets regulation in South Africa to engage in more friendly policies and measures that can woe more portfolio investment. Moving further, official development assistance demonstrates decreasing effect on the stability of the South African economy even with the interaction of the existing governance quality. To tackle this, the various policies around socioeconomic activities that interest development partnerships need to be revisited to align with the overall goals of development partners for better outcomes.

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