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Global Economic Uncertainty and Foreign Direct Investment: Evidence from Sub-

Saharan Africa

Hambolu Victor Olufunsho

Department of Banking and Finance, Faculty of Management Sciences Kogi State University, Ayigba, Kogi State Email: <u>hambolu.v@ksu.edu.ng</u> **Ojogbo, Samuel Obinna**

Department of Finance, Faculty of Management Sciences, University of Lagos Email: sojogbo@unilag.edu.ng Kehinde A. Alliu

Department of Finance, Faculty of Management Sciences University of Lagos Email: <u>kehindealliu@gmail.com</u>

Abstract

Given Africa's relatively low success in attracting foreign direct investment inflows (FDI) over the past decades, particularly during times of global crises and high uncertainty, this study examined two key areas, which are the impact of global economic uncertainty on FDI inflows and the asymmetric relationship between FDI and global economic uncertainty in Sub-Saharan Africa. Our control variables are trade openness, gross domestic product, capital formation and market size. We used panel Auto-regressive Distribution Lag framework modelling and a panel of 21 countries from Sub-Saharan Africa over the period 1990-2023. Our result suggests an inverse but significant relationship exists between FDI and uncertainty, and the control variables positively intensify against mitigating the phenomenon. Based on the formal test of asymmetry, the outcome further indicates the existence of asymmetry in the long run. Overall, the study advocates the need to manage the extent of global uncertainty on the economic agent, such as FDI in Africa, in order to reduce the excruciating impact.

Keyword: Asymmetry. Economic uncertainty. Foreign Direct Investment. Panel ARDL.

1.0 Introduction

Developing countries are faced with problems related to financial resource gaps compared to advanced countries. As a result, international economics and finance literature emphasize that developing countries need inflows of financial resources such as foreign direct investment (FDI) to reduce resource gaps, increase domestic production and boost their development potentials (Todaro & Smith, 2006; Chea, 2011; World Bank, 2017). This is premised on the fact that most economies that attract low FDI inflows are susceptible to slow economic prospects compared to economies that have an abundant supply of capital for economic development (Ogbonna et al., 2022; Asiedu, 2006). Therefore, FDI inflow is crucial in promoting economic growth and development, especially for developing countries (Nguyen & Gabriel, 2021).

Thus, Sub-Saharan Africa and other developing countries strive to engender policies to attract increasing FDI inflows in addition to an open economy (Okunoye et al., 2023). These

show that developing countries consider FDI inflow critical in bridging financial resource gaps and boosting capital formation. This underscores the vital role of FDI inflow in wealth creation, employment opportunity and economic growth (OECD, 2002). However, these deliberate efforts seem to have been undermined by global economic uncertainties. (Avom et al. 2020; Limi and Asefa, 2006; and Sabir et al., 2019).

Sub-Saharan Africa countries often suffer from economic uncertainty surrounding trade tension, financial crisis, and global price fluctuation, including exchange rate fluctuation. As such, countries become predisposed to global shocks due to heavy reliance on global commodities. Investors need to be more confident in making decisions when investing in SSA countries due to the passive exposure risk associated with SSA countries (UNCTAD 2020). In addition, they often reconsider their decision to reinvest in an economy that is characterized by moderate risk against the economy that appears highly volatile to economic turmoil and high levels of risk. The instability in exchange rates appears to be one of the limiting factors of FDI inflows in SSA countries. The over-reliance on the export of goods such as crude oil, agricultural products, and minerals has exposed countries to exchange rate fragility. When the demand for export products drops due to economic uncertainty, it impacts the profit of investors, leading to a perceived change in foreign direct inflow. Additionally, extant literature has suggested the role of institutional government policies, governance structure, and legal systems in promoting FDI inflow. Rao et al. (2023) report that government intervention in the private sector is a precursor to FDI inflows, while foreign aid is a deterring factor in South Asia and Southeast Asia.

2.0 Empirical and Theoretical Review

Two extant pieces of literature on Asian FDI inflows are grouped into two components. The first component attributes foreign direct investment drivers to the impact of global endemics. This study extends to particular and singular countries like Indonesia and broader analyses across multiple regions such as Europe, Asia, and America (Syarifuddin & Setiawan, 2022; Fang et al., 2021). The second strand is based on the role of institutions as key drivers of foreign direct investment in both Asia and developing countries. This situation is where the authority promote the private sector, which has become recognized as a major factor. Contrarily, according to Rao et al. (2020), foreign aid decrease foreign direct investment significantly. The determinants of foreign direct investment, such as political stability, skill, and wage condition, are acknowledged and noted for their role in foreign direct investment (Le & Tran-Nam, 2018; Rashid et al., 2017; Bui et al., 2018). In addition, political institutions, levels of corruption, legal frameworks, and regulatory institutions are important elements enticing foreign direct investment (White et al., 2015; Shah, 2017). This effect spread across the developed and developing economies. However, in a developed economy setting, some factors suggest playing a less critical role in promoting foreign direct investment. However, it remains a viable option in resource-poor nations (Kamal et al., 2020).

Choi et al. (2021) examined the likely relationship between endogenous economic policies and foreign direct investment in sixteen countries for eighteen years. After accounting for endogeneity issues, the report suggested that the economic uncertainty of various countries contributes negatively to foreign direct investment. Okunoye et al. (2023) studied the role of global economic uncertainty on FDI inflow in Asian markets. The outcome proposed that global economic policy does not play a sensitive role in the drive of FDI inflow. Shah (2017) reviewed possible factors, such as the political institutions of five South Asian countries, that can influence FDI inflows. The outcome showed that changes in institutional



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factors do not suggest significant and positive changes in FDI inflows. White et al., (2015) examined the relationship among legal system, uncertainty and foreign direct investment in South Asia market. Their findings concluded that foreign direct inflow decreases at a decreasing rate with the uncertainty experienced in the legal system to a modulation point. In another argument, Ogbonna et al. (2022) advanced a submission in favour of Africa on its inability to attract significant and substantial foreign direct investment in the recent decades, most especially in periods characterized by uncertainty. Their conclusion was premised on the impact of global economic uncertainty and institutional governance on foreign direct investment in African countries. The outcome proved that global economic uncertainty has a reducing and significant impact on foreign direct investment.

Thus, our study differs from previous studies in two ways. To begin with, we test the predictability of the smooth version of world uncertainty index on FDI in SSA countries. Few studies have used this version in related studies beyond SSA countries (see Okunoye et al., 2023; Avom et al., 2020; Nguyen et al., 2020). The choice of this measure is necessitated by the advantage over unseasonal events, which are characterized by the previous global economic uncertainty index. Previous studies have narrowed down global economic uncertainty on foreign direct investment by using unseasonal proxies that tend to influence the channel of FDI inflows (Nguyen & Lee, 2021). Our new proxy for uncertainty is from unseasonal events such as the COVID-19 pandemic, global financial crisis, and trade war that may have a relationship with foreign direct inflows. Next, we account for the asymmetry of the smooth version of global economic uncertainty. The justification for accounting for asymmetry is premised on the fact that the uncertainty experienced in SSA countries may not be the same in the short or long run. The region may be affected in either same way or differently. Our choice of SSA countries is motivated by the undeniable fact of the increasing role of global economic uncertainty on Sub-Saharan Africa's economy, which mainly depends on the export of its goods in order to earn revenue (Okunoye et al., 2023).

The study is anchored on institutional theory, which stresses the important role of both formal and informal norms, rules and policies of countries, such as corruption control, political instability, and regulatory framework in shaping economic activity (Phan et al., 2024). Firms grow their business across borders through foreign direct investment, where the firm stands a better advantage in efficient production and profit potential. By implication, an investor's attitude toward investment is determined by the government and uncertainties associated with policies. As such, FDI appears sensitive to economic shocks most at a time when an investor makes investment decisions. In addition, investors may be discouraging from investing in countries characterized by weak institutions at a time of global uncertainty. The focus of the study has been on the developing and emerging economies, which are faced with pandemics which appear to influence most economic agents (Ho & Gen, 2021). SSA countries are faced with weak institution which worsened during global economic uncertainty. By extension, FDI may be under threat in an uncertain environment (Ogbonna et al., 2022).

Variable	Definition	Source		
fdi	Foreign direct investment, net inflows (% of gdp)	World Bank Development Indicator access July, 2024		
wui	World uncertainty index	Data Obtain world Uncertainty Index, 2024		
top	Trade openness (sum of export and import of goods and services) expressed as % of gdp	World Bank Development Indicator access July, 2024		
gdp	Gdp growth (annual %)	World Bank Development Indicator access July, 2024		
domestic invest	Gross fixed capital formation	World Bank Development Indicator access July, 2024		
mrkt size	Market size measured as gdp growth (annual %)	World Bank Development Indicator access July, 2024		

Table 1. Definition of Variable and Data Sources.

All series were logged prior to the estimation



3.0 Data and Methodology

We examined panel data from 21 Sub-Saharan African countries from 1990 to 2023. The countries are Congo Republic, Ghana, Kenya, Senegal, Tanzania, Uganda, South Africa, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Chad, Gambia, Guinea, Madagascar, Mali, Mauritania, Namibia, Rwanda, and Togo. The decision that informed the choice of these countries was based on data availability. The period coverage is deliberately **chose** in order to advance frontier of knowledge in use of outcome for policy formulation. The Table 2 detail descriptive statistics of variables in their natural state and their sources. Our predicted series of interest is foreign direct investment inflow (FDI). Notably, the study used foreign direct net inflow (% of GDP). The primary explanatory variable in the study is global economic uncertainty, which is measured by the World Uncertainty Index (WUI). The approach of the measure of uncertainty has been met with stiff argument. Yet, there has been no consensus on the most suitable measure. Few studies have considered the volatility of economic and financial indicators as a measure of uncertainty (see Bloom, 2009; Asamoah et al., 2016). The approach has been criticised due to using a single series in the measure of uncertainty.

In an attempt to improve on the measure of uncertainty, Baker et al. (2016) constructed the Economic Policy Uncertainty (EPU) index to proxy for uncertainty. The EPU is based on three drivers: the federal tax code, newspaper-based coverage policy associated with uncertainty, inflation, and public spending forecast. In addition, this measure has been criticized due to its coverage, which was limited to only developed countries' economies. Consequently, we used the World Uncertainty Index (WUI) promoted by Ahir et al. (2018). This measure is considered superior to what was mentioned earlier. Specifically, our new proxy for uncertainty is from unseasonal event such as COVID-19 pandemic, global financial crisis, and trade war that may have relationship with foreign direct inflows. Previous studies have used (WUI) as a measure of uncertainty (see Ho and Gan, 2021; Avom et al., 2020). We account for the control variables, which are trade openness, gross domestic product, GDP, domestic investment, and market size from the World Development Indicator, which the World Bank develops.

In order to achieve the objective of the study, we model FDI inflow using dynamic model advanced by Avom et al. (2020) and Ho and Gan (2021) model:

 Δy_{it} Signifies foreign direct net inflow (% of GDP) of countries in i in time period t. $r_i y_{i,t-1}$ Suggest the lag value of Δy_{it} . x_1 denotes WUI, meaning a weighted moving average of the world uncertainty index, while $x_2 x_3 x_4$ and are control variables from trade openness gross domestic product, gross fixed capital formation, and market size, respectively; \mathcal{E} suggest the error term, while $\beta_{01} - \beta_4$, r, l, g1, g2, g3, and, g4 are defined as the parameters for the estimate.

Thus, the asymmetric version of equation I is expressed below:

$$\Delta y_{it} = \beta_{0i} + \rho_i y_{i,t-1} + \beta_{1i} x_{1i,t-1} + \beta_{2i}^+ x_{i,t-1}^+ + \beta_{2i}^- x_{i,t-1}^- + \sum_{j=1}^N \lambda_{ij} \Delta y_{i,t-j} + \sum_{j=0}^{N^2} (\gamma_i^+ \Delta x_{i-j}^+ + \gamma_{ij}^- \Delta x_{t-j}^-) + u_{it}^- + \varepsilon_{it}^- (\gamma_i^+ \Delta x_{i-j}^+ + \gamma_{ij}^- \Delta x_{t-j}^-) + u_{it}^- + \varepsilon_{it}^- (\gamma_i^+ \Delta x_{i-j}^+ + \gamma_{ij}^- \Delta x_{t-j}^-) + u_{it}^- + \varepsilon_{it}^- (\gamma_i^+ \Delta x_{i-j}^+ + \gamma_{ij}^- \Delta x_{t-j}^-) + u_{it}^- + \varepsilon_{it}^- (\gamma_i^+ \Delta x_{i-j}^+ + \gamma_{ij}^- \Delta x_{t-j}^-) + u_{it}^- + \varepsilon_{it}^- (\gamma_i^+ \Delta x_{i-j}^+ + \gamma_{i-j}^- \Delta x_{t-j}^-) + u_{it}^- + \varepsilon_{it}^- (\gamma_i^+ \Delta x_{i-j}^+ + \gamma_{i-j}^- \Delta x_{t-j}^-) + u_{it}^- + \varepsilon_{it}^- (\gamma_i^+ \Delta x_{i-j}^+ + \gamma_{i-j}^- \Delta x_{t-j}^-) + u_{it}^- + \varepsilon_{it}^- (\gamma_i^+ \Delta x_{i-j}^+ + \gamma_{i-j}^- \Delta x_{i-j}^-) + u_{it}^- + \varepsilon_{it}^- (\gamma_i^+ \Delta x_{i-j}^+ + \gamma_{i-j}^- \Delta x_{i-j}^-) + u_{it}^- + \varepsilon_{it}^- (\gamma_i^+ \Delta x_{i-j}^+ + \gamma_{i-j}^- \Delta x_{i-j}^-) + u_{it}^- + \varepsilon_{it}^- (\gamma_i^+ \Delta x_{i-j}^- + \gamma_{i-j}^- \Delta x_{i-j}^-) + u_{it}^- + \varepsilon_{it}^- (\gamma_i^+ \Delta x_{i-j}^- + \gamma_{i-j}^- \Delta x_{i-j}^-) + u_{it}^- + \varepsilon_{it}^- (\gamma_i^+ \Delta x_{i-j}^- + \gamma_{i-j}^- \Delta x_{i-j}^-) + u_{it}^- + \varepsilon_{it}^- (\gamma_i^+ \Delta x_{i-j}^- + \gamma_{i-j}^- \Delta x_{i-j}^-) + u_{it}^- + \varepsilon_{it}^- (\gamma_i^+ \Delta x_{i-j}^- + \gamma_{i-j}^- \Delta x_{i-j}^-) + u_{it}^- + \varepsilon_{it}^- (\gamma_i^+ \Delta x_{i-j}^- + \gamma_{i-j}^- \Delta x_{i-j}^-) + u_{it}^- + \varepsilon_{it}^- (\gamma_i^+ \Delta x_{i-j}^- + \gamma_{i-j}^- \Delta x_{i-j}^-) + u_{it}^- + \varepsilon_{it}^- (\gamma_i^+ \Delta x_{i-j}^- + \gamma_{i-j}^- \Delta x_{i-j}^-)) + u_{it}^- + \varepsilon_{it}^- (\gamma_i^+ \Delta x_{i-j}^- + \gamma_{i-j}^- \Delta x_{i-j}^-)) + u_{it}^- + \varepsilon_{it}^- (\gamma_i^+ \Delta x_{i-j}^- + \gamma_{i-j}^- \Delta x_{i-j}^-)) + u_{it}^- + \varepsilon_{it}^- (\gamma_i^+ \Delta x_{i-j}^- + \gamma_{i-j}^- \Delta x_{i-j}^-)) + u_{it}^- + \varepsilon_{it}^- (\gamma_i^+ \Delta x_{i-j}^- + \gamma_{i-j}^- \Delta x_{i-j}^-)) + u_{it}^- + \varepsilon_{it}^- (\gamma_i^+ \Delta x_{i-j}^- + \gamma_{i-j}^- \Delta x_{i-j}^-)) + u_{it}^- + \varepsilon_{it}^- (\gamma_i^+ \Delta x_{i-j}^- + \gamma_{i-j}^- \Delta x_{i-j}^-)) + u_{it}^- + \varepsilon_{it}^- (\gamma_i^+ \Delta x_{i-j}^- + \gamma_{i-j}^- \Delta x_{i-j}^-)) + u_{it}^- + \varepsilon_{i+j}^- (\gamma_i^+ \Delta x_{i-j}^- + \gamma_{i-j}^- \Delta x_{i-j}^-)) + u_{it}^- + \varepsilon_{i+j}^- (\gamma_i^+ \Delta x_{i-j}^- + \gamma_{i-j}^- \Delta x_{i-j}^-)) + u_{it}^- + \varepsilon_{i+j}^- (\gamma_i^+ \Delta x_{i-j}^- + \gamma_{i+j}^- \Delta x_{i-j}^$$

4.0 Result and Discussion

The descriptive output in Table 2 shows the minimum (0.09) recorded against market size when compared with the world uncertainty Index (WUI) of 0.16. This value appears least in the minimum value across the series carefully selected for the study, followed by WUI GDP, which recorded the highest value. Taking account of standard deviation, which measures variation around the mean value, the least standard deviation is recorded against WUI (0.20), while domestic investment is recorded (25.50) as the maximum value.



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Long Panel Result			Descriptive Statistics				
Variable(s)	M.G coefficient	P.M.G coefficient		Mean	Maximum	Std Deviation	
Ec	0.531***	0.734***					
D.wui	0.0321***(0.0090)	0.1064***(0.0295)	wui	0.16	1.67	0.20	
D.top	0.2712(0.9692)	0.7012***(0.1221)	Тор	4.28	93.55	9.01	
D. gdp	0.9234***(0.4591)	3.6368***(0.3134)	Gdp	25.61	35.22	4.69	
D.domestic	0.3548(0.9152)	0.006***(0.0016)	domestic Invest	6.41	156.61	25.50	
Invest							
D. mrkt size	0.1142***(0.0293)	0928***(0.0341)	market size	0.09	59.68	9.36	
wui	-0.1434***(0.1191)	-0.441***(0.0610)					
top	0.2432(0.9692)	0.341***(0.0300)					
gdp	0.7012***(0.4591)	0.040***(0.001)					
domestic Invest	0.3548***(0.2051)	0.094**(0.116)					
mrkt size	0.1142(0.3529)	0271***(0.039)					
prob; Value		0.523					
			Asymmetry Result				
		Variables	M.G	P.M.G			
		Ec	-0.724***	-0.691***			
		D.wui_pos	0.0956**(0.1428)	0.2560***(0116)			
		D.wui_neg	0.904(0.567)	0.7012***(0.762			
		wui_pos	0.115(0.429)	-0.125***(0.180)			
		wui_neg	0.324**(0.549)	-0.329***(0.432)			
		P.value		0.621			

Table 2 M.G, P.M.G and Asymmetry Result (Foreign et al. as the Dependent Variable) and Descriptive statistics

This table detailed the outcome of M.G and P.M.G on the analysis conducted and the descriptive output of series in their natural state where * ** and *** represent 10%, 5% and 1%, respectively

Our empirical study began with two important result output from series examined. Table 2 contain the empirical output following the long-dynamic panel model stated in equation 1, In addition, the re-parameterized output followed in equation 2, while table 2, in addition, contain the asymmetric outcome following a formal test in line with model stated in equation 3. The empirical result for Table 2 includes foreign direct investment as the explained series, while the world uncertainty index is the explanatory series. Other series that serve as control variables are Trade openness, gross domestic product, gross fixed capital formation, and market size.

To begin with, our hausman test result suggest Pooled mean group (P.M.G) to be the best model. Hence, our interpretation will be based on the pooled Mean Group. Base on the P.G.M output, global economic uncertainty has significant and negative impact on FDI in the long-run in Sub-saharan Africa. This outcome is in line with the underlying theory of the study, which emphasises that FDI is driven by uncertainties. That is, investors are sensitive to uncertainties surrounding investment decisions, which may impact investment return in the long run (Li, 2006). The outcome is also consistent with a few studies (see Ogbonna et al., 2022; Avom et al., 2020; Zhu et al., 2019). This outcome advances the frontier of knowledge established earlier by Ogbuabor et al. (2016) that Africa's economy is susceptible to global uncertainty irrespective of its interconnectedness of trade with the rest of the world. Hence, this outcome established the negative impact of global uncertainty on FDI inflows to Africa. On the contrary, this outcome refutes the conclusion of Canah et al. (2020) finding, which affirmed the existence of a positive relationship between global uncertainty and FDI inflows. The non-linear outcome presented in Table 2 suggests that while both positive and negative changes differ in the short run, they converge in the long run. While the response differs in the short run, we can see a similar response in the long run. In other words, the two tends to converge with time. The response of FDI with respect to positive and negative changes in global uncertainty tends to converge with time. Positive is significant at the short-run, while negative is not significant in the short run. While both are significant in the long run and positive. This outcome is in line with what we expect and with theory.

Our formal test is significant. This suggest asymmetry in the long-run. This speaks to our observation of divergence in the long run.

5.0 Conclusion and Recommendation

Over the years, Sub-Saharan Africa faced with difficulty in attracting FDI from countries other than other content such as Asian, most importantly, at a time when Africa economy is faced with uncertainty. In this study, we examined the role of global uncertainty on foreign direct investment in the Sub-Saharan African economy. Furthermore, we test for the non-linear relationship between global economic uncertainty and foreign direct investment. Other control variables that are considered significant drivers of the FDI are accounted for in the model. The study explored the dynamic panel model framework with the panel of 21 Sub-Saharan African economy for the period ranging from 2019- 2023. The study affirmed the existence of diminishing effects on foreign direct inflows to Sub-Saharan African countries in the long run due to global uncertainty. Also, all control variables amplify the effect as against mitigating.

A major policy implication of this result is that decision-makers in the African economy should be conscious of the spill-over effect of global uncertainty since it is central to FDI inflow to the Sub-Saharan African economy. Since FDI is responsive to global uncertainty, Sub-



Saharan African economy should uphold reforms necessary in order to stand the shock of uncertainty. This step will reduce the agonizing effect of uncertainty to FDI in the Sub-Saharan African economy.

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