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Panel Quantile Analysis on the Economic Growth-Foreign Direct Investment Nexus: Evidence from West Africa.

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Abstract

This study examines the relationship between Foreign direct investment (FDI) and economic growth in the selected West African countriesbetween 1998 to 2018. UsingPanel Quantile Regression techniques. The findings discloses that FDI enhances growth both at lower and higher quantile in the West African region. The study recommended that policymakers should make striking efforts to attract additional inflow of foreign capital in the region

KEYWORDS*:* Panel quantile, Economic Growth, Forign Direct Investment

1. Introduction

The pursuit of economic growth is a macroeconomic goal that most countries strive for. Throughout the years, Different countries have implemented several ways through which this goal will be fulfilled. Investment, as a critical component of total expenditure in every economy, is critical to growth through higher productivity. Employment and productivity levelsOkwu et al. (2020). Most developing countries rely on it. Foreign Direct Investment (FDI) is attracting attention to boost economic growth. Several substantial reforms have been implemented. To improve legal, governance, political, and regulatory frameworks, work has been done. Give investors with an enabling investment(Bisson, 2011) .

Foreign Direct Investment (FDI) was not regarded as positive factor earlier in Africa and other developing countries, rather considered and suspected of negating national sovereignty, social welfare and domestic economy. Market globalization, changes in the global production system and

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international monetary policies, led to the changes in the perception of these economies toward foreign direct investment. And thus, radically change the attitude of African continent and specifically west African region that is blessed with abundant unemployed mineral resources, on foreign direct investment.FDI is now increasingly needed by developed and developing countries, considering it as a dominant factor. It is now of considered as a means of communicating development, transfer of wealth and technology and thus, an approach to finance economic growth and development. Thus, the global economy has been completely transformed in recent years

Despite the importance of FDI on employing abundant natural resources in West Africa a panel studies that examines the connection arescant. Most of the studies are either on individual countries or a panel study that produces a mean result without consideration to the different quantile heterogeneity. Today these countries have considered FDI as positive factor of achieving economic growth and possibly development. Foreign direct investment (FDI) flows increase drastically and substantially over the last twenty years. FDI is now important means of sourcing private external finance for developing economies.It is against this backdrop that this study aimed at examining the effect of FDI on economic growth of the West African countries both at lower and upper quantile.The outcome will help in filling the existing lacuna in the literature and also served as a reference point for the policymakers in the African sub-region.

2. Literature Review

There are several theoretical and empirical viewson the nexus between economic growth and foreign direct investment (FDI). Theoretically, FDI is expected to enhance growth by transferring technology, improving balance of payment as well as employment of material and human resources. Empirically,Okwu et al. (2020);Melnyk et al. (2014) studies investigated how FDI flows influence economic growth. The outcomesreveal significant positive impact of FDI on economic growth during the study period. Fernando & Celso (2016) also examines the long-term relationships between FDI and economic growth of SSA countries using recently developed econometric techniques that control for sample heterogeneity and capture long term relations. The study confirms that FDI affects growth positively in the long run. This is in line with the view that FDI inflows can stimulate growth for the host countries by increasing the capital stock, creating new job opportunities, and easing the transfer of technology (Borensztein et al., 1998; De Gregorio, 2003; De Mello, 1997). Also,Mah (2010)opined that FDI inflows create new investment and thus enhances growth economic growth of the host community

Although the existing studies generally suggest a positive impact of FDI on economic growth, it is also possible that FDI has negative effects on economic growth by crowding out domestic investment,

increasing external vulnerability, and causing dependence(Aitken & Harrison, 1999; Lipsey, 2002).Also,Carkovic&& Levine (2002) have found that FDI does not exert a significant, positive impact on economic growth in developing countries. Azman-Saini et al. (2010) examine the systemic link between economic freedom, foreign direct investment (FDI) and economic growth in a panel of 85 countries. The empirical results show that FDI by itself has no direct effect (positive) impact on output growth.

There is no consistency in the literature on the connection between FDI and growth. Moreover, the methodology adopted provides mean results without regards to different quantiles in the observations. This study, therefore, intend to fill in this lacuna.

Data and Methodology

Data

The data is a panel data set of 9 selected West African countries over a period of 1998–2018. Data on FDI Foreign direct investment, net inflows % of GDP, the GDP-growth rate, and mineral rent % GDP are sourced from World development

indicators. The countries are selected based on the availability of data

Methodology

To examine thisrelationship at different quantile, the choice of the appropriate technique is an important theoretical and empirical question. Panel Quantile Regression (PQR) analysis is best to examine the relationship between our FDI and GDP variables. Therefore, this paper empirically strategized into 2 main stages. First, unit root tests analysis is undertaken in panel series. Second, the PQR technique is employed to examine the relationship at lower and upper quantile.

Model

The general specification of the model which the study estimated can be written as

follows as in the study of (Abbes et al., 2015).

$$GDPG_{it} = \alpha_{0i} + FDI_{it} + MRT_{it} + e_{it}$$

where GDPG is the gross domestic product of country i, for the period t, FDI is the Foreign direct investment of country i, given at the period *t*, *e* is an error term.

4. Results

Table1 present a result of the unit root tests onIm et al. (2003); Levin et al. (2002) performed for the study. Majority of the statistics are not significant at the 5% level for both variables (GDP and FDI). After differentiation into first degree data, we notice a significant way that all data are stationary for both variables. These results led us to a logical way to test for the presence or absence of a long-term relationship between GDP and FDI by applying Co-integration test

Table 1 Unit root test result

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Variables	Statistics	Level I(O)		First difference I(1)	
		Constant	Constant & Trend	Constant	Constant & Trend
FDI	LLC	-3.3645	-3.7582	-8.3045	-7.5827
		(0.0090)***	(0.0029)***	(0.0000)***	(0.0000)***
	IPS	-1.3850	-1.5756	-7.7829	-5.7867
		(0.0085)***	(0.0576)*	(0.0000)***	(0.0000)***
	FDF	-2.8351	-1.9923	-12.1952	-8.8729
		(0.0033)***	(0.0260)**	(0.0000)***	(0.0000)***
	FPP	-7.4960	-6.6297	-6.1055	-7.3643
		(0.0000)***	(0.0080)***	(0.0000)	(0.0000)***
GDPG	LLC	-4.4475	-7.0210	-16.2101	-14.4443
			(0.0000)***	(0.0000)***	(0.0000)**
		(0.0000)***			
	IPS	-2.9570	-3.8612	-10.5418	-8.6069
		(0.0016)***	(0.0001)***	(0.0000)***	(0.0000)***
	FDF	4.7295	-7.0820	-15.7591	-13.1527
		(0.0000)***	(0.0000)***	(0.0000)***	(0.0000)***
	FPP	-7.7181	-3.8684	-14.5493	-11.5465
		(0.0000)***	(0.0002)***	(0.0000)***	(0.0000)***
MRT	LLC	-08765	-2.8120-	-4.6472	-3.2529
		(0.2226)	(0.0021)***	(0.0000)***	(0.0008)***
	IPS	1.9590	-0.9365	-3.2701	-2.3868
		(0.9749)	(0.1745)	(0.0011)***	(0.0828)*
	FDF	2.2426	-2.2010	-3.6293	-1.6854)
		(0.9853)	(0.1178)	(0.0003)***	(0.0491)**
	FPP	3.4104	2.5178	-6.9445	-5.0861
		(0.9991)	(0.9323)	(0.0000)***	(0.0000)***

Note: The figures outside parenthesis are the t-statics values while those in the parenthesis are p-values.

*** and ** represents 1% and 5% significant levels respectively.

Table 2 shows the panel quantile estimation result for the panel of countries. As earlier expected, GDPG portrays a positive impact on FDI inflow in these panels of countries. The coefficient values of GDPG are positive at both quantiles. However, the impact is significant at 1% level at higher quantile (Q75) compared to 5% of Q50 and the 10% level of significance at lowest quantile 25. This means that FDIenhances growth at both quantiles but at different significant levels. the inflow of the FDI in the region. This may well be attributed to the growth of market size associated with high level of employment by multinational corporations (Boateng, Hua, Nisar, and Wu, 2015; Mah, 2010 and Suleiman; Kaliappan, and Ismail, 2015).The factor variable representing raw-materials in

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the model is the mineral rent (MRT), its coefficient is positive and significant at different levelonly at Q50 and Q75. Meaning that at quantile 50, the positive impact of FDI is significant at 5% level and 1% at quantile 75. This is in line with the finding of (Bokpin, Mensah, and Asamoah, 2015). Suleiman et al. (2015) also reported a significant positive effect of natural resources on FDI. In Sub-Saharan Africa, mineral resources are the main factor attracting FDI inflow in the region (Bokpin et al., 2015).

Table 2 Panel Quantile Regression (PQR) Results. Dependent variable GDPG

Independent Variable	PQR Q-25	PQR (Q-50)	PQR Q-75
FDI	0.173	0.137	0.236
	(1.98) *	(2.51) **	(7.65) ***
MRT	0.245	0.090	0.302
	(1.02)	(2.01) *	(2.55) **

For the robustness check, the studyemploys the services of Pooled Mean Group (PMG) model. Table 3 shows the result of the PQRmodel and PMG estimation and, the outcome shows that the variables are exactly signs with the PMG estimations at a different quantile. This is in line with our assumption; therefore, we could settle that our result from PMG(TER) is valid and reliable

Table 3 PMG and Panel Quantile Regression (PQR) Results. Dependent variable GDPG

Independent Variable	Model 1 PMG	PQR Q-25	PQR (Q-50)	PQR Q-75
Long-run coefficients				
FDI	0.331	0.173	0.137	0.236
	(3.80) ***	(1.98) *	(2.51) **	(7.65) ***
MRT	0.309	0.245	0.090	0.302
	(2.58) **	(1.02)	(2.01) *	(2.55) **
Speed of adjustment (ECT)	-0.691 (-4.40) ***			
Short-run coefficients				
Δ FDI	0.022 (1.97) *			
Δ MRT	0.406 (1.53)			
CONSTANT	0.176 (3.71) ***			
No. of countries	9	9	9	9

Notes: The figures in parenthesis are the z-values except those for Hausman Test which are p-values. ***, ** and * represent 1%, 5% and 10% levels respectively.

5. Conclusion and Policy Recommendations

This paper examines the relationship between FDI and Economic Growth (GDP) for 9 selected countries of west Africa by using panel quantile regression (PQR). The PQR estimations reveals that FDI enhances economic growth of the selected countries significantly at the different levels, with the maximum significant at the highest quantile Finally, the results are of great importance for policy makers and academics. These results may help policymakers to establish priorities regarding the assignment of the resources to facilitate inflow of the Foreign direct investment for the sustainable growth and development. Future research should focus upon the modelling of the relationship between various characteristics of a country that influence FDI and finding the causal relationship between FDI to Economic Growth.

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