Effect of Foreign Direct Investment on Economic Growth in Ghana

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Abstract

The objective of this study was to investigate the impact of foreign direct investment (FDI) on economic growth in Ghana, by examining the effect of FDI flow, FDI stock and FDI per capita on economic growth. The study adopted the quantitative and descriptive research design to analyse annual time series data on the dependent and independent variables spanning twenty-seven (27) years from 1996 to 2022. The ordinary least square and seemingly unrelated regression techniques were used for data analysis. The study revealed that FDI flow, FDI stock and FDI per capita had a statistically significant positive effect on per capita economic growth. The study thus recommended that the government of Ghana should intensify its efforts to carefully develop and implement progressive and attractive policies that can induce more investment from foreign multinationals, thereby increasing the stock of external capital inflows that can be channelled into the most value generating sectors of the country to eliminate production inefficiencies and boost domestic output that can increase economic growth. Additionally, the government of Ghana through the appropriate agencies can improve the enforcement of its regulatory policies to ensure that multinational firms and the general activities of foreign investors consistently provide fair and commensurate wages to Ghanaian workers, in order to promote the beneficial effects that FDI has on reducing income inequality in Ghana. MNCs must therefore provide the same value of remuneration for the same level of skills-quality and demand that workers in other economies would receive. This will eliminate wage differentials, transition low-wage earners into higher income status and thus reduce income inequality.

Introduction

The various researches conducted on FDI's seem to have concentrated more on the determinants, effects, challenges, components and the general impact of FDIs on the Ghanaian economy. Asiamah, Ofori and Afful (2019) in an article, 'analysis of the determinants of foreign direct investment in Ghana' focused on the factors that determines FDIs and how important these factors are to decision makers, investors and the banking industry to be specific. The research identified inflation, exchange and interest rates as negatives effects that impact decision makers and investors on FDIs. The limitation in this research is that, it did not consider the impact of these FDIs on the economic activities in Ghana and the lives of the citizens. In the research by Yakubu et al (2019), a sectoral analysis of the factors affecting FDIs was conducted. The study concluded that market size and labour cost are the major determinants of FDI flows to the agricultural sector. The limitation identified in this study is that, it does not take a more comprehensive look at how FDI flows affect overall economic activity and citizen quality of life. Yeboah and Anning (2020) conducted research on the components of FDIs and the impact on employment in the Ghanaian economy. The study's

findings showed that, due to the growth of the labour force, approximately 85% of all FDI-related jobs were benefitted by Ghanaians. The limitation to this research is that, the impact of FDIs is skewed towards employment creation and not on the general economic activities of the country. This research seeks to close the gap and limitations indicated in the literature on FDIs in Ghana. Therefore, this research will look into the effect of foreign direct investment on per capita economic growth in Ghana

Hypothesis Testing

H_0: FDI does not have a significant effect on Ghana's per capita economic growth

H_1: FDI flows has a significant positive effect on per capita economic growth in Ghana

H_2: FDI stock has a significant positive effect on per capita economic growth in Ghana

H_3: FDI per capita has a significant positive effect on per capita economic growth in Ghana

Literature review

Foreign Direct Investment (FDI)

Economic growth and development are among the predominant objectives that nations endeavour to achieve. Recent developments over the years have shown that there exists an array of channels through which economic expansion and development goals are implemented from country to country. The evidence indicates that foreign direct investment (FDI) plays an integral role in the aggregate expenditure of a given economy, making it indispensable for spurring growth, high productivity, employment and equitable distribution of wealth (Okwu, Oseni and Obiakor, 2020). Due to this, majority of developing economies stringently work to put in place favourable policies that attract FDI so as to improve their economic conditions (Kulu, Mensah and Sena, 2021; Bissoon, 2011).

The World Trade Organisation (WTO, 2019) indicated that FDI ensues when an investor anchored in a country obtains possession of an asset in a different country with the purpose of managing the asset. In that regard, FDI comes with several management considerations, including but not limited to investment portfolios in foreign shares, bonds or even outright acquisition of a company in the recipient nation. FDI encompasses the flow of funds between nations in the form of inflows or outflows through which a country obtains benefit from the investment while the other appropriates the investment opportunity to boost its productivity and elevate economic performance. The scale of such investment is largely influenced by the perception of investors, such that, if their goals are long-term then the FDI volume will be substantive enough to generate significant benefits in the recipient economy. Conversely, short-term backed FDI overture tends to mainly benefit investors with immediate profits without necessarily providing meaningful gains to the recipient economy (Devajit, 2012).

The International Monetary Fund (IMF) described FDI as the form of investment establishing a long-term relationship that provides the investing party from a home country substantive interests and control in a business venture from another economy different from the country of the investing party. FDI emanates from foreign or external investors who speculate that undertaking investments in a target economy will yield significant returns due to the viable conditions available in the recipient country (Ankrah, 2016; IMF, 1998). FDI demonstrates the ambition of a "direct investor" who is an entity resident in one economy to acquire a lasting interest of a different entity resident in another economy, also referred to as "the direct investment enterprise" (Okpeku, 2019). In broad terms, FDI serves as a transmission channel for transferring essential resources from the direct investor into the target country, including but not limited to technology, human resources, capital, and technical knowledge and expertise. While the definition of FDI may vary based on the perceptions of either the recipient country or external investor, it inherently involves the flow of capital and significant control by means of shareholder equity (United Nations Conference on Trade and Development (UNCTAD, 2011).

Foreign Direct Investment and Economic Growth

Makki and Somwaru (2004) stated that FDI is typically considered as an essential catalyst of economic growth in developing nations. Markedly, FDI functions as a vital vehicle of technological transfer from advanced economies to developing countries, further stimulating domestic investment in addition to facilitating the development of human capital and critical infrastructural base of recipient nations. Liesbeth, Maertens and Swinnen (2009) intimated that investments are the engine of economic development making it indispensable to elevating a country's wealth. FDI is among the leading drivers of a country's economic growth, through inflows from external investors that permeate the recipient nation productive sectors

culminating in the development of the national economy and quality of human resources (Simionescu and Naros, 2019). Unsurprisingly, several authorities have admitted that FDI is a significant determinant of economic growth, in addition to mitigating poverty and boosting industrial advancement (Nguyen, 2022; Do, Hoi, Nguyen and Anh, 2021; Anwar and Nguyen, 2010; Hoang, Wiboonchutikula and Tubtimtong, 2010). Likewise, Nguyen (2020), Khun (2018), Nguyen (2017) observed that FDI was positively associated with economic growth, resulting from the direct and indirect outcomes of external inflows into the economy. Muhlen and Escobar (2020), Elekes, Boschma and Legnyel (2019), Ascani and Iammarino (2018) and Alviarez et al. (2021) also agreed that FDI led to structural transformation of the economies of recipient countries.

Overview of Ghana's Economy and Foreign Direct Investment

Under Dr. Kwame Nkrumah's socialist government, businesses were controlled and owned by the State. The country transitioned into an industrialised nation, driven by State participation, import substitution and a closed economy, focusing less on agriculture in hopes that the benefits of the industrialised economy would trickle down into other sectors. However, the subsequent sharp decline in cocoa prices derailed cocoa production which deteriorated the entire economy. The Busiah government sought to open the economy through private sector participation and economic liberalisation, thereby making Ghana an investor-friendly destination for external investments. To boost exports, the government raised cocoa prices while easing imports restrictions, nonetheless the fall in global cocoa prices escalated balance of payments problems and this forced government to reimpose import restrictions and limit foreign exchange transfers to tackle ensuing economic challenges. The Acheampong era saw a reversal of the drive towards economic liberalisation, rather focusing on broader State participation and stricter import regulations which dissuaded FDI inflows to the point where it was lowest recorded in the period. The government's "operation feed yourself" socialist programme prioritised State investment and input subsidies in agricultural activities which improved welfare of rural townships and public sector workers (Owusu, 2019).

During the Provincial National Defence Council (PNDC) tenure, the government focused on an economic reform using aid from the International Monetary Fund and World Bank. The programmed was used to develop the nation's infrastructure, improve fiscal discipline, move economic controls and fixed exchange rate into the hands of market forces. This fostered productivity, promoted exports and facilitated structural and institutional reforms that eliminated economic inefficiencies and made the country attractive for external investment. Markedly, structural adjustment programme and trade liberalisation revamped the Ghanaian economy from near collapse, eliciting investor confidence while returning global trust (Owusu, 2019). The outcome was that inward FDI which had nosedived to 1% from 1970 to 1982 ballooned to 6% in 1992. Gross domestic product (GDP) grew on average at 54% from 1984. Although, the initial implementation of the programme saw FDI stagnant, Ghana had become the leading investment destination in Africa in 1991 to 1995 (UNCTAD, 2003). The introduction of the Free Zones Act, 1995 and the Ghana Investment Promotion Act, 1994 provided certain tax incentives and investor protections that made it favourable to entice foreign investors while making the country a congenial destination for FDI (Antwi, Mills, Mills and Zhao, 2013).

To further increase inward FDI, the country enacted an investment code that primarily ensured that Ghana would continually be a congenial external investment destination. The code eliminated the requirements for prior approval for foreign-backed projects, and made existing processes more fluid for establishing a firm by multinationals, as well as offering incentives and safeguards for foreign investments. The investment code served as the mandate of the Ghana Investment Promotion Centre (GIPC). The added benefit of extended political stability under the Fourth Republic in addition to the activities of GIPC are among the key reasons for the increased inflows of FDI into the nation. The 2008 World Investment Report disclosed that the proportion of inward FDI into Ghana quadrupled from 2005 to $636 million, representing 19.4% of gross fixed capital formation. Resultantly, several sectors of the economy have undergone significant development, engendering employment creation, wage parity, human capital accumulation, and higher welfare gains for the country (Yakubu, 2020; Owusu, 2019)

The FDI-Driven Economic Growth Theory

Rakhmatullayeva, Kuliyev, Beisenbaijev and Tabeyev (2020) by integrating the neoclassical and endogenous growth theories disclosed that FDI assumes an indispensable function in the growth and development of a nation's economy. Basically, the theoretical position demonstrates how economic growth is influenced by certain critical additive advantages generated by FDI. These additive advantages/resources come in the form of capital and technological transfers that serve as critical drivers of economic growth. Accordingly, for economic transformation to occur—where growth and human development increases, and income inequality declines—there must be a rise in the sources of additive resources. This means that as FDI inflows increases into the recipient country, capital and technological advances are channelled into the productive sectors of the economy leading to a commensurate appreciation in economic growth. Additionally, the sustained and increasing influx of FDI translates beyond economic growth trickling down as higher wages that permeates income levels thus ameliorating wage inequalities.

The FDI-driven economic growth hypothesis underscores the role that foreign capital and technological progress play in enhancing the level domestic of output (GDP), and subsequently, development. Proponents of the theory posit that a rise in the volume of FDI inflows exert positive outcomes on economic growth by means of knowledge expansion and skills acquisition by individuals in the target country, that is, human capital development. (Rakhmatullayeva et al., 2020; Walujadi, Indupurnahayu and Endri, 2022; Liu, 2022; Yuldashev, Khalikov, Nasriddinov, Ismailova, Kuldasheva and Ahmad, 2023).

The New Capital and Growth Nexus Theory

The theory of new capital and growth nexus was decomposed from the exogenous and endogenous growth models to illustrate the vital role that FDI plays in fostering economic growth in developing countries (An and Yeh, 2021). The theory assumes that economic growth is measured in terms of increasing productivity of a country, often indexed by GDP, is influenced by three key factors, namely, capital, labour and technology. In effect, FDI provides "new capital" which is regarded as a vital catalyst to stimulate economic growth, which the otherwise existing resources of the recipient country could not produce (Nguyen, 2022). The theory thus contends there is an implicit positive association between FDI and economic expansion, particularly in developing nations (Wang, Xu, Liu and Sun, 2023).

Studies on FDI and Economic Growth

In Tanzania, Mwakanbungu and Kauangal (2023) examined the convergence between FDI inflows and economic growth using annual data from 1990 to 2020, that is thirty years. The quantitative design incorporated the ARDL model and Granger causality test to analyse the short and long run interaction among FDI, financial development, trade and economic growth. The findings that FDI had a positive significant unidirectional effect on economic growth in short and long run. The study thus concluded that the government should prioritise FDI-driven growth policies to achieve desired economic outcomes.

The recent attempt by Ayenew (2022) focused on assessing the bearing of FDI on the growth of Sub-Saharan African (SSA) economies from 1988 to 2019. The balanced panel of twenty-two nations was analysed using the pooled mean group autoregressive distributed lag (PMG/ARDL) model. FDI was found to have a positive insignificant effect on economic growth in the short-run, but in the long-run the effect positive and significant. The author concluded that FDI was a critical driver of long-term economic growth among SSA countries, thus recommending that governments should strengthen existing economic policies to attract more inward FDI.

Nguyen (2022) analysed the interplay between FDI and economic growth in Vietnam focusing on the post 1986 economic reform are, that is, from 1990 to 2020. The Vector Autoregressive (VAR) model with Granger causality were used to estimate the convergence among the variables. The study found FDI and GDP had a bi-directional association in the short-run, but FDI exerted a negative effect in the long-run. The researcher explained that most of inward FDI went into industries that caused significant environmental harm which over time deteriorated the investment environment and hindered additional external inflows.

Osabohien, Iqbal, Osabuohien, Khan and Ngyun (2021) investigated how FDI in addition to agricultural trade influenced the inclusive growth based on empirical evidence from fifteen developing countries in West Africa. Secondary data covering twenty years from 2000-2019 was analysed using the two-stage least squared (2SLS) technique. Their study revealed that FDI did not have any statistically

significant effect on inclusive economic growth, while agricultural trade caused inclusive growth to increase. They therefore recommended that governments in the sub-region should improve policies like flexible trade to promote the exchange of goods and services to drive economic growth.

Asofo-Adjei and Kodongo (2020) used a nonlinear approach to investigate the impact of FDI on economic growth in SSA, using a sample of twenty-five nations from 1993 to 2015. The OLS and 2SLS methods were used to estimate the association among the variables. They found that at a FDI inflows per annum threshold of US$44.67 per capita, FDI exerts a positive effect on the economy growth of SSA nations. Also, the technological diffusion emanating from FDI augmented economic growth when absorptive capacities were very high. The study thus recommended that countries in SSA have to implement progressive economic policies to enhance absorptive capacities to attain economic growth.

Methodology

Research Design

The quantitative research approach was taken for the study. The justification being that it is ideal in empirical situations that require the use of numerical data reflecting objective facts, leading to the generation of statistical outcomes to provide an accurate picture of the relationship among socio-economic phenomena (Owusu, 2019). Kotey (2017) remarked that the quantitative approach is beneficial because it eliminates subjective biases as it provides a systematic, logical and well-structured strategy for examining numerical data that can be used to make factual conclusions supported by objective data. Descriptive techniques facilitate the acquisition of information about contemporary occurrences while providing the procedures to describe at length the true state of issues in terms of the respective concepts or constructs (Doku, 2020).

Data

Since the study specifically focused on assessing the impact of FDI on economic growth in Ghana, annual time series data on the dependent and independent variables were collected for twenty-seven (27) years, from 1996 to 2022. The study period was chosen mainly due data availability but was enough to gain a clear picture of how FDI has affected economic performance in Ghana's Fourth Republic. In addition, six control variables were identified in order to prevent misestimation of the effects of FDI. These include financial development, trade openness, domestic investment, labour, government expenditure and political stability. Secondary data on the aforementioned variables were collected from the World Bank's World Development Indicators, United Nations Development Programme Human Development Report, International Monetary Fund, World Governance Indicators and the United Nations Conference on Trade and Development.

FDI was proxied by net inflows in foreign direct investment as percentage of GDP following similar approaches by Kulu, Mensah and Sena (2021), Baidoo (2018) and Le et al. (2021). Additional measures including FDI stock (Yimer, 2021; Asiamah, Ofori and Afful, 2019), and per capita FDI (Nakouwo, 2019; Asafo-Agyei and Kodongo, 2022; Tag and Degirman, 2022) were used. Economic growth was proxied by gross domestic growth (GDP) per capita in line with Dankyi, Abban, Yusheng and Coulibaly (2022) and Baidoo (2018).

Also, the study used the IMF's financial development index to capture the level of financial development (Ofori and Asongu, 2021). Trade openness was indexed by total volume of imports and exports as percentage of GDP (Osei, 2020; Kyere, 2018), domestic investment was captured by gross fixed capital formation (Hamdi and Hakimi, 2021; Markin-Yankah, 2019; Abdullai, 2019; Kyere, 2018; Zhuang, 2016), while government expenditure was indexed using the government final consumption expenditure (Yuldashev et al., 2023; Xia et al., 2022; Kontoh, 2020; Abdullai, 2019) and political stability was proxied by the political stability perception estimate (Ofori and Asongu, 2021; Kulu et al., 2021; Osei, 2018).

Econometric Specification

Based on the theoretical and empirical review conducted for the research, a multiple regression model was developed to estimate the effects of FDI on economic growth in Ghana using annual data. The models also had to account for the country-specific macroeconomic interactions that tend to influence economic development dynamics emanating from the FDI channel. The model was inferred from the works of Ayenew (2022), Osabohien, Iqbal, Osabuohien, Khan and Nguyen (2021), Le et al. (2021), Kulu et al. (2021),

Nakouwo (2019), Owusu (2019), Osei (2018), Zhuang (2016), Xia et al. (2022) and Osei (2020). The model is given as:

$$EG_t = \alpha_0 + \alpha_1 FDIF_t + \alpha_2 FDIS_t + \alpha_3 FDIPC_t + \alpha_4 FD_t + \alpha_5 TO_t + \alpha_6 DI_t + \alpha_7 GE_t + \alpha_8 PS_t + \xi_t$$

Where: EG_t is economic growth, II_t, $FDIF_t$ is foreign direct investment flows, $FDIS_t$ s FDI stock, $FDIPC_t$ is FDI per capita, FD_t is financial development, TO_t is trade openness, DI_t is domestic investment, LB_t is labour, GE_t is government expenditure, and PS_t is political stability. α_1 to α_9 are the parameter estimates of model, which estimates the FDI-economic growth nexus.. ξ_t, ψ_t and δ_t are the respective error terms of the model, and t captures the 27-year time period under observation.

Diagnostic Checks

Several diagnostic analyses were carried out to ensure that the empirical survey was devoid of bias, inefficient and unreliable estimations. This was necessary to generate results that could accurately capture the convergence among the study variables and lead to accurate conclusions. Multicollinearity, normality, stationarity, autocorrelation and heteroscedasticity were the diagnostic checks that were conducted for the study.

Estimation Technique

The first stage of analysis involves the use of descriptive statistics, that is, minimum, maximum, mean and standard deviations to discuss the characteristics of the dataset. The correlation matrix is then presented to discuss the direction and strength of associations among the study variables. The subsequent iteration of estimations involves the completion of all the foregoing model diagnostics. Then the final analysis which is the main empirical investigation is implemented to ascertain the impact of FDI on economic growth. Two regression analysis were used for the study, specifically ordinary least square (OLS) and the seemingly unrelated regressions.

Results and discussions

Preliminary Analyses

Descriptive Statistics

Table 4.1 Summary Statistics

Variable	Observations	Mean	Standard Deviation	Minimum	Maximum
EGPC	27	1423.23	382.18	951.92	2040.04
II	27	56.20	0.92	54.21	57.16
HCD	27	0.56	0.05	0.49	0.63
FDIF	27	4.36	2.65	0.96	9.47
lnFDIS	27	22.66	1.41	20.67	24.47
FDIPC	27	510.80	476.75	53.03	1269.37
FD	27	0.14	0.03	0.11	0.18
TO	27	77.71	17.89	38.52	116.05
DI	27	20.57	4.89	11.76	29.00
GE	27	9.71	2.21	6.96	15.31
PS	27	-0.04	0.15	-0.36	0.17

Note: EGPC is economic growth per capita, II is income inequality, HCD is human capital development, FDIF is foreign direct investment flows, lnFDIS is natural log foreign direct investment stock, FDIPC is foreign direct investment per capita, FD is financial development, TO is trade openness, DI is domestic investment, GE is government expenditure, PS is political stability

Author's computation, 2023

The statistical properties of the explanatory and response variables are presented in Table 4.1. For the 27-year period covering 1996 to 2022, the per capita economic growth of Ghana ranged from a minimum of US$951.92 to a maximum of US$2,0404.04, accompanied by an average of US$1,423.23 and a low standard deviation of US$382.18. This indicates that overall, the fluctuations in economic performance were very close to the observed mean.

Foreign direct investment (FDI) flows averaged 4.36% with standard deviation of 2.65%, ranging from the minimum of 0.96% and maximum of 9.47%, implying a wide variation in the influx of capital from external investors. FDI stock averaged 22.66% with standard deviation of 1.41%, from minimum and

maximum of 20.66% and 24.47%, respectively. FDI per capita had a mean of US$510.80 and standard deviation of US$476.75, from a minimum and maximum of US$53.03 and US$1,269.37, respectively. Financial development was fairly stable over the period, ranging from 0.1p to 0.18, further supported by the low standard deviation of 0.03. However, the efficiency, access and depth of Ghana's financial institutions and markets grew at a higher rate based on the mean of 0.14.

With standard deviation of 17.89% and mean of 77.71%, trade openness ranged from minimum of 38.52% to maximum of 116.05%, which indicates the monetary volume of total imports and exports had a high variation over the period. Also, domestic investments averaged 20.57% with standard deviation of 4.90%, from the minimum and maximum of 11.76% and 29%, respectively, implying the level of fixed capital investments remained stable over the period, occurring very closely to the observed mean. From minimum of 6.96% and maximum of 15.31%, government expenditure averaged 9.70% with low standard deviation of 2.21%. For political stability, it averaged -0.03, implying that generally, the country's performance in political stability and absence of violence was very poor. It also had a very high standard deviation of 0.15, and similarly, a wide range of -0.36 to 0.17. This simply suggests that the political stability fluctuated significantly over the study period.

Correlation Analysis and Multicollinearity

Table 4.2 Correlation Matrix and Variance Inflation Factor (VIF)

Variables	EGPC	II	HCD	FDIF	lnFDIS	FDIPC	FD	TO	DI	GE	PS
EGPC	1.000										
II	.829	1.000									
HCD	0.983	0.896	1.000								
FDIF	0.356	0.463	0.480	1.000							
lnFDIS	0.984	0.856	0.993	0.484	1.000						
FDIPC	0.983	0.758	0.945	0.256	0.757	1.000					
FD	0.962	0.787	0.929	0.247	0.731	0.663	1.000				
TO	-0.645	-0.538	-0.653	-0.242	-0.628	-0.636	-0.560	1.000			
DI	-0.280	-0.272	-0.327	-0.482	-0.309	-0.224	-0.109	0.366	1.000		
GE	-0.489	-0.494	-0.530	-0.416	-0.542	-0.511	-0.433	0.513	0.209	1.000	
PS	0.512	0.675	0.569	0.307	0.523	0.416	0.453	-0.284	-0.237	0.011	1.000

	VIF	1/VIF
lnFDIS	7.904	0.127
FDIPC	7.441	0.134
FD	6.457	0.155
FDIF	5.276	0.190
PS	2.154	0.464
GE	2.128	0.470
TO	2.053	0.487
DI	1.894	0.528
Mean VIF	4.441	.

Note: EGPC is economic growth per capita, II is income inequality, HCD is human capital development, FDIF is foreign direct investment flows, lnFDIS is natural log foreign direct investment stock, FDIPC is foreign direct investment per capita, FD is financial development, TO is trade openness, DI is domestic investment, GE is government expenditure, PS is political stability, VIF is variance inflation factor

Author's computation, 2023

The results of the correlation analysis and multicollinearity tests captured in Table 4.2 shows that FDI flows had a positive relationship with economic growth per capita, of the correlation coefficient (*r*) of 0.356. FDI stock also had a positive relationship with the underpinned dependent variables, that is, economic growth per capita (*r*=0.984). The same positive effect is observed for FDI per capita on economic growth per capita, being 0.983, 0.758.

Financial development had a positive relationship with economic growth, the *r* of 0.962. Conversely, trade openness had an inverse relationship with economic growth, that is, *r* of -0.645 for economic growth. Likewise, domestic investment had a negative association with economic growth (*r* = -0.28). The *r* of -0.489 indicated a negative relationship between government expenditure and economic growth. Political stability, on the other hand, had a positive relationship with economic growth, the *r* of 0.512.

A thorough examination of the correlation matrix shows that there were no excessively strong associations among the explanatory variables, since none of their absolute correlation coefficients was above 0.80, implying that there was no problem of multicollinearity present in the variables. The variance inflation factor (VIF) test in Table 4.2 further provides ample confirmation about the problem of multicollinearity, where it can be seen that all the VIF statistics fell below 10, with minimum of 1.894 for domestic investment and 7.904 for FDI stock.

Regression Analyses

The study conducted two analyses by employing the ordinary least squares (OLS) and seemingly unrelated regression (SUREG) technique to examine the impact of foreign direct investment on economic growth. Based on the results of the stationarity and autocorrelation checks (see Tables 4.3 and 4.4, the first difference of the dependent variables and robust standard errors were applied in the main regression computations to generate efficient and robust results. Columns 1 to 3 presents the findings of the OLS estimations while in columns 4 to 6 the SUREG results are presented. Generally, both regression estimations returned similar results, except in some cases where the level of statistical significance, standard errors and beta coefficients changed in the SUREG model. For the purposes of the study, the SUREG models served as the main analyses of interest that were used for discussions and inferences in line with the research objective. This is because it uses feasible generalised least squares in its variance-covariance matrix to resolve autocorrelations and heteroscedasticities to generate robust results. Additionally, it provides a simultaneous analysis of the effect of FDI flows, stock and per capita on the economic growth variables.

Table 4.3 OLS and SUREG Analyses

	OLS			SUREG		
VARIABLES	EGPC	II	HCD	EGPC	II	HCD
FDIF	4.352	-0.119*	0.000210	8.883*	-0.119**	0.00391*
	(0.131)	(0.0590)	(0.000325)	(4.734)	(0.0523)	(0.000684)
lnFDIS	167.4***	-1.131**	0.0311**	167.4***	-1.131***	0.0336***
	(43.95)	(0.460)	(0.00550)	(30.28)	(0.334)	(0.00438)
FDIPC	0.181	-0.00343**	1.01e-05	0.181**	-0.00343***	2.35e-05*
	(0.119)	(0.00123)	(1.47e-05)	(0.0890)	(0.000983)	(3.29e-05)
FD	2,477**	25.13**	0.365*	2,477***	25.13**	0.365***
	(1,083)	(11.72)	(0.197)	(944.5)	(10.43)	(0.136)
TO	-0.648	-0.000639	-0.000150	-0.648	-0.000639	-0.000150**
	(0.544)	(0.00554)	(8.68e-05)	(0.437)	(0.00483)	(6.32e-05)
DI	-3.226*	-0.0187	-0.000374	-3.226**	-0.0187	-0.000374*
	(1.774)	(0.0239)	(0.000299)	(1.535)	(0.0170)	(0.000222)
GE	5.650	-0.114**	-0.000543	5.650	-0.114***	-0.000543
	(3.996)	(0.0481)	(0.000750)	(3.610)	(0.0399)	(0.000522)
PS	49.87	1.714**	0.0127**	49.87	1.714***	0.0229***
	(77.11)	(0.605)	(0.0106)	(55.14)	(0.609)	(0.00797)
Constant	-2,696***	31.03***	-0.209*	-2,696***	31.03***	-0.209**
	(889.8)	(9.385)	(0.112)	(628.3)	(6.939)	(0.0908)
Observations	27	27	27	27	27	27
R-squared	0.994	0.885	0.993	0.994	0.885	0.993
F (8, 18)	606.08	50.18	464.62			

Prob > F	0.0000	0.0000	0.0000			
Chi²				4876.79	207.77	4115.75
Prob > Chi²				0.0000	0.0000	0.0000

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Note: EGPC is economic growth per capita, II is income inequality, HCD is human capital development, FDIF is foreign direct investment flows, lnFDIS is natural log foreign direct investment stock, FDIPC is foreign direct investment per capita, FD is financial development, TO is trade openness, DI is domestic investment, GE is government expenditure, PS is political stability

Author's computation, 2023

Per Capita Economic Growth

In column 4, foreign direct investment (FDI) flow had a statistically significant direct effect on economic growth per capita, where a unit rise in FDI flow was associated with an US$8.883 increase in economic growth per capita at the 10% level holding all other factors constant. The observed relationship was consistent in column 1 but was not significant. Additionally, a unit rise in FDI stock led to a US$167.4 increase in per capita economic growth at the 1% significant level, as seen in the both SUREG and OLS results in columns 4 and 1 respectively. Similarly, a unit rise in per capita FDI also caused per capita economic growth to appreciate by US$0.189 at the 5% significant level. The observed effect was insignificant in the OLS estimations shown in column 1. Since the ensuing results show the probability (p) value of FDI flow was below 10% (p<0.1), the p-value of FDI stock was below 1% (p<0.01, and the p-value of FDI per capita was below 5% (p<0.05), the study accepted H_1, H_2 and H_3 and concluded that FDI flow, FDI stock and FDI per capita had a statistically significant positive effect on per capita economic growth.

Regarding the control variables, trade openness had a negative effect on per capita economic growth, causing it to reduce by US$0.648 per unit, but the interaction was insignificant in both SUREG and OLS models seen in columns 4 and 1 respectively. Domestic investment had an indirect effect on per capita economic growth, reducing it by US$3.226 per unit at the 5% level ceteris paribus, which was consistent at the 10% significant level in column 1. From column 4, financial development had a positive effect on per capita economic growth causing an increase of US$2,477 at the 1% level which is consistent with the results in column 1.

Similarly, government expenditure and politically stability had a positive impact on per capita economic growth but their observed effects were statistically insignificant in both SUREG and OLS estimations in columns 4 and 1, respectively. Also, from Table 4.6, the overall p-values of the regression analyses in columns 1 and 4 were 0.0000 and 0.0000 respectively, indicating that the model estimations were significant and efficient in capturing the effects of the explanatory variables on per capita GDP. The R-squared of 0.999 (in columns 1 and 4) suggests that 99.4% of the total variations in economic growth per capita were explained by the FDI per capita, stock and flows together with the control variables, while the remaining 0.06% were predicted by factors unaccounted for in the model estimations.

The Effect of Foreign Direct Investment on Per Capita Economic Growth in Ghana

The study found that in Ghana, foreign direct investment (FDI) had a positive and statistically significant effect on per capita economic growth which implies that whenever FDI increased economic growth per capita increased and vice versa. This is due to the fact the three measures of external capital investments, namely, FDI flows, FDI stock and FDI per capita altogether caused economic growth per capita to increase over the study period. Consistent with the results of this study, other empirical works demonstrated that FDI flows (Mwakanbungu and Kauangal, 2023; Ayenew, 2022;), FDI stock (Yimer, 2022; Pallan et al., 2023), and FDI per capita (Asofo-Adjei and Kodongo, 2020; Fan and Hao, 2020) helped develop the national economy through the influx of external capital from foreign investors and affiliate MNCs which was critical in fostering economic growth in recipient countries.

It can therefore be inferred from the findings of this research that in that Ghanian context, FDI flows, stock and per capita contributes substantively to the enhancement of economic growth. In this sense, capital investments from foreigners and their affiliate multinationals went into the productive sectors of the country which resulted in economic growth. Accordingly, this suggests that the influx of external capital brought about several advanced technologies and managerial proficiencies which generated efficiencies

that facilitated higher production, investments, job creation, effectively boosting the volume of investment and output due to the productive capacities in the country, ultimately resulting in substantively greater levels of economic growth.

Owing to this, it can be deduced that the significant interplay between respective FDI indicators and economic growth clearly gives strong credence to the FDI-driven economic growth theory. The theory basically holds that FDI plays an indispensable role in economic development through certain critical additive advantages that ensue from the introduction of "additional resources" from outside the host country. As such, it can be gleaned from the empirical outcome of the study that the continued influx of external resources in the form of new funds and better technologies and productive efficiencies increased the stock of external investments that translated into higher domestic output seen in the form increasing per capita GDP or economic growth. This strongly buttresses the notion that the economy of Ghana, for its generative capabilities, cannot attain sustained economic growth without FDI, as the evidence from a theoretical and empirical standpoint suggests that as FDI flows appreciated, the stock of FDI increased to cover more individuals (per capita FDI) to the point where it could lead to higher economic growth. Effectively, this makes FDI an integral facilitator of economic growth in Ghana.

Table 4.5 Hypotheses Test Summary

	Hypotheses	Beta	P-value	Remarks
H_1	FDI flows has a significant positive effect on per capita economic growth in Ghana	8.883	0.061	Accepted
H_2	FDI stock has a significant positive effect on per capita economic growth in Ghana	167.4	0.000	Accepted
H_3	FDI per capita has a significant positive effect on per capita economic growth in Ghana	0.181	0.042	Accepted

Significant levels. *** p<0.01, ** p<0.05, * p<0.1

Author's computation, 2023

The results of the analyses carried out to test the relationships among the study variables are presented in Table 4.5 to give a snapshot of the findings of the hypotheses that were tested in this research.

Summary of Findings

Foreign direct investment (FDI) plays an integral role in the aggregate expenditure of an economy, making it indispensable for spurring growth, high productivity, employment and equitable distribution of wealth. Developing economies work to put in place favourable policies that attract FDI so as to improve their economic conditions. While several studies have looked at the antecedents and outcomes of FDI in Ghana, they were limited in terms of comprehensively examining the actual effects it had on overall economic activities, living standards, and the quality of life. To fill this gap, the study sought to investigate the impact of FDI on economic growth in Ghana, by specifically examining the effect of foreign direct investment on per capita economic growth in Ghana.

The study adopted the quantitative and descriptive research design approaches, to collect annual time series from 1996 to 2022 (27 years) on FDI flow, FDI stock, FDI per capita, per capita economic growth, in addition to five control variables namely, trade openness, financial development, domestic investment, government expenditure, and political stability. The seemingly unrelated regression (SUREG) and ordinary least squares (OLS) regression were used to analyse the effects FDI had on the underpinned dependent variables.

From the objective which sought to examine the effect of FDI on per capita economic growth in Ghana, the study found that FDI flow, FDI stock and FDI per capita had a positive and statistically significant effect on per capita economic growth which implies that the increase in external capital investments from foreigners and their affiliate multinational corporations led to the increase in per capita economic growth and vice versa.

Conclusion

The main goal of the study was to investigate the impact of foreign direct investment (FDI) on economic growth in Ghana. The finding that FDI stock, flow and per capita significantly improved per capita economic growth provides evidence to conclude that the capital inflows from foreign investors and the

activities of their corporations were channelled into the productive sectors of Ghana's economy like agriculture, manufacturing, technology, energy etc., such that production inefficiencies were eliminated through the introduction of advanced technologies and processes, in addition to superior knowledge and skills that enabled the aforementioned industries to be more productive, thus boosting the volume of domestic output in the country which translated into substantive economic growth seen in the increasing levels of per capita economic growth.

Recommendations for Policy and Practice

The study recommends that the government of Ghana should intensify its efforts to carefully develop and implement progressive and attractive policies that can induce more investment from foreign multinationals, thereby increasing the stock of external capital inflows that can be channelled into the most value generating sectors of the country to eliminate production inefficiencies and boost domestic output that can increase economic growth.

In an attempt to fully appropriate the advantages of knowledge and technological diffusion from FDI, local businesses can invest into the long-term capacities and skills development of their workers through extensive rigorous and continuous professional development programmes, to enable indigenous workers to become equipped with the latest proficiencies that can help them to quickly adapt and even replicate the technologies of their foreign contemporaries.

Also, the government of Ghana through the appropriate agencies should enhance the enforcement of its regulatory policies that seek to ensure that multinational firms and the general activities of foreign investors consistently provide fair and commensurate wages to Ghanaian workers. This will promote the beneficial effects that FDI has on reducing income inequality in Ghana. The MNCs must provide the same value of remuneration for the same level of skills-quality and demand that workers in other economies would receive. This will eliminate wage differentials, transition low-wage earners into higher income status and thus reduce income inequality.

Recommendations for Future Research

For future research, the study recommends employing different regressions techniques that can generate a more comprehensive findings, particularly the short and long-term effects of FDI on Ghana's broad economic indices. An example can be to use the auto-regressive distributed lag models and co-integration to determine how knowledge, skills, and technological, capital transmission from FDI interacts with Ghana's in both short and long run.

Additionally, future studies can be extended into analysing the effects of FDI from African perspective, such that, the peculiar characteristics of the various economic blocs across continent are accounted in such a study. This will provide an exhaustive indication as whether certain country-specific qualities have role to play in influencing how FDI affects the economic development of African nations.

References

Asofo-Adjei, G. and Kodongo, O. (2020). Foreign direct investment and economic growth in Sub-Saharan Africa: A nonlinear analysis, *Economic Systems 46 (xxxx) 10100*

Ayenew, B. B. (2022). The effect of foreign direct investment on the economic growth of Sub-Saharan African countries: An empirical approach. *Cogent Economics & Finance, 10*(1), 2038862. Doi:10.1080/23322039.2022.2038862

Abdulai, J. (2019). *The effect of government size, foreign direct investment, on economic growth in sub-Saharan Africa* (Master's thesis, University of Ghana)

Baidoo, F. (2018). *Welcome the strangers! Tourism development, foreign direct investments and economic growth in sub-Saharan Africa* (Master's thesis, University of Ghana)

Doku, I. (2020). Impact of climate finance on environmental quality in Sub-Sahara Africa (Doctoral thesis, University of Mandela). Available at
https://vital.seals.ac.za/vital/access/manager/Repository/vital:42206?site_name=GlobalView&exact=sm_creator%3A%22Doku%2C+Isaac%22&sort=sort_ss_title%2F

Dankyi, A.B., Abban, O.J., Yusheng, K. and Coulibaly, T.P. (2022). Human capital, foreign direct investment, and economic growth: Evidence from ECOWAS in a decomposed income level panel. *Environmental Challenges*, *9*, p.100602.

Hamdi, H., and Hakimi, A. (2021). Trade Openness, Foreign Direct Investment, and Human Development: A Panel Cointegration Analysis for MENA Countries, *The International Trade Journal,* DOI: 10.1080/08853908.2021.1905115

Kotey, R. A. (2017). *Foreign direct investment and economic growth in sub-Saharan Africa: the role of technology* (Master's thesis, University of Ghana)

Kulu, E., Mensah, S. and Sena, P.M. (2021). Effects of foreign direct investment on economic growth in Ghana: the role of institutions. *Economics of Development*, *20*(1), pp.23-34.

Kyere, D. O. (2018*). Climate change and inclusive growth in Africa: The role of adaptive capacity* (Master's thesis, University of Ghana)

Kontoh, E. (2020). *Microfinance and inclusive growth in sub-Saharan Africa* (Master's thesis, University of Ghana)

Le, Q. H., Do, Q. A., Pham, H. C., and Nguyen, T. D. (2021). The Impact of Foreign Direct Investment on Income Inequality in Vietnam. *Economics, 9*(27)

Mwakanbungu, B. H., and Kauangal, J. (2023). An empirical analysis of the relationship between FDI and economic growth in Tanzania, *Cogent Economics & Finance, 11*(1), 2204606, DOI: 10.1080/23322039.2023.2204606

Markin-Yankah, P. (2019). *The causal relationship that exists between financial sector development and economic growth in Ghana* (Master's thesis, University of Ghana)

Nakouwo, S. N. (2020). *Foreign direct investment (FDI) and sustainable human development in Africa* (Master's thesis, University of Ghana)

Nakouwo, S. N. (2020). *Foreign direct investment (FDI) and sustainable human development in Africa* (Master's thesis, University of Ghana)

Osei, O. K. A. (2018). *Foreign direct investment, institutions and industrialisation in sub-Saharan Africa* (Master's thesis, University of Ghana).

Osabohien, R., Iqbal, B. A., Osabuohien, E. S., Khan, M. K. K., and Ngyun, D. P. (2021). Agricultural trade, foreign direct investment and inclusive growth in developing countries: evidence from West Africa, *Transnational Corporations Review*. DOI: 10.1080/19186444.2021.1936986

Ofori, I. K., & Asongu, S. (2021). Foreign direct investment, governance and inclusive growth in sub-Saharan Africa. *Governance and Inclusive Growth in Sub-Saharan Africa*.

Owusu, A. K. J. (2019). *Impact of foreign direct investment on economic growth in Ghana* (Master's thesis, University of Ghana).

Osei, A. (2020). *Does trade enhance inclusive growth? Empirical evidence from Africa* (Master's thesis, University of Ghana).

Xia, C., Qamruzzaman, M. and Adow, A.H. (2022). An asymmetric nexus: Remittance-led human capital development in the top 10 remittance-receiving countries: Are FDI and gross capital formation critical for a road to sustainability? *Sustainability*, *14*(6), p.3703.

Yuldashev, M., Khalikov, U., Nasriddinov, F., Ismailova, N., Kuldasheva, Z. and Ahmad, M., 2023. Impact of foreign direct investment on income inequality: Evidence from selected Asian economies. *Plos one*, *18*(2), p.e0281870.

Zhuang, H. (2016). The effect of foreign direct investment on human capital development in East Asia. *Journal of the Asia Pacific Economy*, *22*(2), pp.195-211.