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## EXTERNAL DEBT AND FOREIGN INVESTMENT: AN EMPIRICAL ANALYSIS ON THE ECONOMY OF GHANA

**Gigamon Joseph Prah** 

Corresponding Author: Zhejiang Gongshang University, China  
Email: [prahgigamonjoseph@gmail.com](mailto:prahgigamonjoseph@gmail.com)

**Charles Ofori** 

Zhejiang Gongshang University, China  
Email: [ofori3881@gmail.com](mailto:ofori3881@gmail.com)

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### Abstract

This study considers the impact of Ghana's heavy external debt on its ability to attract foreign investment. The study uses data covering the period from 1991 to 2019. Foreign investment is measured using net foreign direct investment inflows, while external debt is measured using two indicators: public and publicly guaranteed external debt stock and long-term debt stock. Using the ARDL, we found that both external debt indicators have a substantial negative long-run influence on foreign direct investment inflows. On the other hand, economic growth, measured by the gross domestic product, has a substantial positive effect on foreign direct investment inflows. External debt has a detrimental impact on foreign direct investment, while improvement in the country's economic performance promotes foreign direct investment inflows. The implication is that when funds borrowed are well utilized for economic purposes, it will neutralize the negative consequences of the debt, and the improved economic performance shall augment foreign investment inflows. These findings are essential for most developing economies, especially the African countries, which heavily depend on foreign loans. Policymakers should focus on strategies such as human capital improvement, innovation, and strengthening their legal systems that improve economic performance.

**Keywords:** External Debt, Foreign Direct Investment, Economic Growth, Ghana

**JEL Classifications:** H63, O47, P45

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### 1. Introduction

Practically, every nation depends on borrowed funds for its economic sustainability. However, the rationale behind developing nations' borrowing funds is somewhat distinct from that of developed nations. While developed nations borrow to aid in the stability of their economies, developing nations are primarily concerned with borrowing to meet their financial demands and complete their developmental projects. Since developed economies invest their borrowed funds mostly in

revenue-generating activities, as compared to developing economies, they tend to benefit more from the borrowed funds (Atique and Malik, 2012). This indicates that external debt is insantly precarious for economic and social development in developed and emerging nations. However, emerging economies are more vulnerable compared to developed economies.

Mainly, public debt acts as a double-edged weapon depending on how it is utilized. It has the potential to boost the well-being of the indigenes. It is, therefore, a critical enabler that every country needs for its economic performance. Nonetheless, when it is improperly handled, it can crush the stability of the economy of the countries involved. According to (Reinhart and Rogoff, 2009), when external debt is uncontrolled and hits a certain threshold, it places the economy into a more appalling crisis. In as much as borrowing funds is good for the economy, it is wise for the country to keep track of its debt such that it does not escalate. However, it is essential to emphasize that a nation's capability to track its level of debt largely depends on its ability to generate enough revenue or boost its fiscal policies internally. Though theoretically, external borrowing has been identified to exert favorable enduring consequences for the economy by lowering transactional costs, enhancing fiscal governance, fostering tighter macroeconomic discipline, easing diversification benefits, and encouraging financial development (Gaies and Nabi, 2021), empirical evidence reveal that external funds have disproportionate consequences on both emerging and developed economies (Abraham and Schmukler, 2018, Gaies *et al.* 2019).

External funds have a higher detrimental role in emerging economies than in developed economies. Ostadi and Ashja (2014) posit that institutional investors' perspectives shutter in the case of accumulating external debt, which fosters unfavorable forecasts for the nation's economy, leading to a drop in foreign investment, despite the conclusions of Sultana (2016), which found that external debt positively affects foreign direct investment.

Since Ghana's independence, the country has been relying on external sources of funds to sustain its economy. This is due to the fact that the government and its policymakers have not been able to sustain its revenue-generating initiatives through taxes. The tax revenue is usually below the targeted amount; hence, the economy is primarily run-on budget deficit. The only option left for the government is to turn to borrowing externally to support its yearly budget. The end consequence of this consistent borrowing is the accumulation of huge external debt over the years. Since 1970, the country has been experiencing a continuous increase in public debt. According to IMF country directors, Ghana's economic health is imperiled by the government's rising debt burden and massive funding, which expose the country to roll-over and solvency difficulties (IMF, 2021). Ghana's budget deficit surged to 15.2 percent in 2020 compared to 7.5 percent in 2019. Against this backdrop, Ghana's external obligations accelerated to 79 percent of its gross domestic product (GDP) against 63 percent in the previous year.

On this basis, the current study examines how this debt burden affects foreign direct investment (FDI) inflows into Ghana. We measure the country's external debt using two indicators: public and publicly guaranteed external debt stock and long-term external debt stock. The findings reveal a long-run adverse impact of both indicators for external debt and the inflows of FDI into the country. Furthermore, we found that external debt largely deters the FDI inflows into the economy of Ghana.

The research adds to the body of knowledge in multiple ways. First, most studies that investigated the consequences of foreign debt in Ghana focused on economic growth (Frimpong and Oteng-Abayie, 2006; Asafo and Matuka, 2018), domestic investment, and private investment (Amoh and Adom, 2017; Naa-Idar *et al.* 2012; Tuffour, 2012). Our study concentrates on external investment, specifically the inflows of FDI into the country. Though external borrowings and FDI inflows provide capital inflows into an economy, our study provides evidence that excessive inflows of one source of capital (debt) have a detrimental bearing on the other source of capital (FDI inflows). Second, few studies that have focused on foreign investment have methodological delinquencies Alhassan (2016) and Kombui and Kotey (2019), for instance, expressed external debt as a determining factor in FDI inflows to Ghana. However, for their measurement of external debt, they used only long-term external debt stock. We used both public and publicly guaranteed external debt stock and long-term external debt stock to document more robust findings.

Moreover, Diana *et al.* (2019) used the OLS model estimation, which comes with limitations, especially when dealing with collinearity. Also, the study failed to recognize structural breaks. In every economy, shifts in any of the economic indicators cause changes in other economic variables over a period of time. Hence, recognizing these changes provides valid and accurate conclusions to economic decisions. Our study bridges this gap by using a more robust estimation, that is, Autoregressive Distributed Lag Models (ARDL), which addresses collinearity issues. We also use the CUSUM test to check the stability of the estimated coefficients.

The remaining sections of this study are as follows. The next section explains the theoretical and empirical reviews related to the study. This section is followed by Section 3, which explains the data and methodology. Section 4 presents the empirical results and discussion, while Section 5 concludes the study.

## **2. Theoretical and empirical review**

### **2.1. Debt overhang theory**

Conventionally, developing economies have relied on debt as a crucial source of finance for investment. After the global debt crisis in the 1980s, most countries, especially developing economies and some advanced economies, suffered from a tremendous debt overhang. This crisis occurred because most countries had shortages of domestic investible capital after the crisis, which according to Panizza (2008), is due to scant domestic savings. Hence, countries quickly resorted to borrowing funds outside to support their domestic savings (Pattillo *et al.* 2002) and thereby aid in the acceleration of economic development. The end consequence is huge debt leading to a debt overhang. Debt overhang alludes to the scenario in which a nation is overburdened with large debt such that it cannot seek more funds without difficulties, even when the new money it intends to borrow is essentially a good deal that would more than pay for itself. Debt overhang, in agreement with Krugman (1988), happens only if the anticipated payback on a foreign debt drops far short of the repayment's contractual value. Similarly, debt overhang occurs in countries when they begin to experience adverse shocks in their economies, are incapable of making sound economic policies, or changes in certain circumstances that make them unable to discharge their stocks of debts.

The theory of debt overhang has been widely supported by several theoretical studies (Elbadawi *et al.* 1997; Greene and Villanueva, 1991; Krugman, 1988; Sachs, 1988a). Countries overburdened with debt mainly face distortions and a slowdown of economic growth. The level of economic slowdown is such that even if the governments make structural adjustments, the performance of the economies might still be negatively impacted.

Several studies tested the debt overhang theory (Borensztein, 1990; Cohen, 1993; Edo, 2002; Sachs, 1988b; Warner, 1992). These studies postulated a detrimental debt overhang impact on economic performances through the reduction in investment. Nevertheless, these studies focused on either highly indebted or relatively low-income economies. For instance, Borensztein (1990), in examining the effect of external debt on investment, concentrated on only debt-burdened regions. The findings indicated that past accumulated debts, which consequently result in debt overhang, are detrimental to investment. Similarly, Edo (2002) found that foreign debt has a severe unfavorable impact on investment upon making an extensive study on Nigeria and Morocco. According to Krugman (1988) and Sachs (1988b), the height of debt accumulated by economies is usually exogenous, and it takes only debt relief for the deleterious impact of debt on capital to be nullified. However, Aguiar *et al.* (2009) postulated that the link involving debts and holdings is endogenous due to the limited ability of governments to commit to their plans and policies and that even though debt relief sometimes places advantages for governments, it may not be able to provide Pareto improvement.

Similarly, Deshpande (1997) asserted that one of the negative consequences of debt overhang is to discourage investment. Upon conducting empirical studies on 13 poorly indebted economies, the findings showed a consistent detrimental influence of foreign debt on investment. However, Deshpande (1997) explained that this effect is a matter of time, as the first half of the study period revealed a positive impact while the second half of the period of study from 1982 to

1991 revealed a negative impact. Aside from debt overhang displaying adverse effects on investment, several studies (Kharusi and Ada, 2018; Nawaz *et al.* 2012; Shabbir, 2013; Were, 2001) also revealed the negative statistical influence of foreign debt on other macroeconomic variables. These findings indicate that debt overhang is detrimental to countries' development and must be discouraged with appropriate policies. Despite these empirical findings on the adverse influence of external debt, other studies found no evidence of debt overhang in poor economies (Hansen, 2004; Savvides, 1992).

## **2.2. Savings gap theory**

The savings gap has been one of the primary reasons most developing countries considerably engage in foreign borrowings. The savings gap refers to the difference between the gross "capital formation" and the "savings" of a particular country. This term is also mostly referred to as the financing gap. When the funds available to a country due to domestic savings are short of the total amount that the country requires to engage in investment, a gap occurs. Hence, to close this gap, countries resort to borrowing funds externally to boost their domestic savings. This framework implies that whenever countries are unable to generate enough funds internally to support developmental projects, the need to borrow from external sources arises.

This concept of the savings gap was initiated by Domar (1946), asserting that investment spending and overall GDP growth have a proportionate relationship. As countries increase their spending on investment, there is an equal improvement in their GDP growth. This concept of savings gap later reemerged in Rostow (1959) with the idea that developing countries that seek to become developed economies need to pass through different stages of growth. Hence, Rostow (1959) asserted that a proportionate connection exists between investment and economic growth and development. Rostow reiterated (Rostow and Rostow, 1990) that as countries enter the take-off stage, the effective investment and savings rates increase from 5% of the national income to 10% or even more. During this period, there is usually a rapid expansion of new industries, which leads to an increase in profit margins, a more significant portion of which are reinvested in a new plant which consequently stimulates support from the service sector. Since industries usually enjoy larger profits within this growth stage, when the country lacks considerable internal resources to boost investment, it is required to seek external funds to fill this gap.

However, Chenery and Strout (1968) claimed the need for countries to have their own national savings such that in situations where there is a shortfall in the domestic savings in meeting investment requirements, they could rely on the national savings to augment the domestic savings, instead of going for external debt. Nevertheless, Chenery and Strout (1968) explained that countries would be able to engage in self-refinance only when they have a higher marginal saving rate. Thus, increasing the rate of marginal propensity to save leads to an increase in the aggregate savings coefficient.

## **2.3. Crowding-out effect theory**

The crowding out effect is an end consequence of the government's intervention to improve its economy. The theory assumes that the private sector should be the one to fund the government's expenditure. Hence governments deliberately increase real interest rates and taxes to generate enough funds from the private sector. When this happens, the government spending in the economy effectively makes use of the private resources, which later yields heavy costs that must be assessed against the potential perks resulting from it. However, the cost of money is difficult to determine since it entails valuing the economic volume that the private sector could have reaped from their assets if those resources were not diverted to the government sector.

The basic premise of this theory is that public debts devour a larger portion of national savings intended for investment, resulting in an increase in the cost of money as demand for savings rises while supply remains constant. Due to exorbitant interest rates, the crowding-out effect occurs when only the government and its agencies are able to borrow. As a result, individual entrepreneurs and businesses cannot compete and are pushed out of the market. The failure of

economies to create enough capital for investment harms economic growth. According to classical economic theory, the effect of crowding-out is a decline in the multiplier effect of deficit-financed government expenditure targeted at boosting the economy. External creditors essentially extract much of the revenues accruable from investment inside the domestic economy as debt service costs skyrocket due to the government's excessive borrowing. This withdrawal is accompanied by a complete ban on new foreign investments, which obstruct capital formation in a significant way. Several studies, including Heimberger (2021), Huang *et al.* (2020), Iyoha (1997), and Picarelli *et al.* (2019), conducted research on this theory. For instance, according to Picarelli *et al.* (2019) sought to find out whether the public debt leads to crowding out of governmental financing. However, the findings revealed instead the evidence which corroborates the debt overhang theory. The researchers asserted that the crowding out effect is mostly stronger in countries with high debt. The crowding out effect of debt was also felt in China within the period 2006 to 2013, where the local public debt crowded out all private firms' investments leaving the investment from the public firms untouched. Huang *et al.* (2020) revealed that in those periods, investments by private firms were sensitive to internal cash flow; hence private firms were investing less in cities with larger public debt.

### 3. Data and methodology

#### 3.1. Data

To draw a conclusion on the linkage between external debt and foreign FDI inflows, this study utilizes five data series obtained from the World Bank Development Indicators (WDI-2021) covering a period from 1991 to 2019 for Ghana. The data for the time series include foreign direct investment (LNFDI), external debt stock public and publicly guaranteed (LNEDSPP), external debt stock long-term (LNEDSL), gross domestic product (LNGDP), and trade openness (OPENN). Since all the variables are measured in currency, making the series large, the natural logarithm of the variables is used in order to enhance the model fitness and ensure that all variables are shaped normally, except trade openness which is measured in ratio.

Table 1 presents the results of the summary statistics, including the mean, standard deviation, minimum, and maximum values. The means of all the variables show positive, indicating that the trends in the variables keep increasing. Gross domestic product has the highest mean value of 10.44, while trade openness shows the lowest mean value of 4.31 approximately. Gross domestic product has the lowest standard deviation value, indicating that the variable is more stable than other variables. On the other hand, foreign direct investment depicts more volatility.

**Table 1. Descriptive statistics**

Parameters	LNFDI	LNEDSPP	LNEDSL	LNGDP	OPENN
Mean	8.6889	9.8029	9.8098	10.4408	4.3084
Std. Dev	0.7645	0.2603	0.2609	0.2071	0.2397
Min.	7.3010	9.3550	9.3550	10.1419	3.7492
Max.	9.5888	10.3074	10.3128	10.7956	4.7540

**Source:** Compiled by authors

#### 3.2. Empirical model

To explore the nexus between Ghana's external debt and foreign direct investment inflows, this study considers the institutional FDI fitness theory. According to the theory of institutional FDI fitness, government economic policies, in terms of the availability of credit in the economy, play a crucial part in determining the FDI flow in the economy. Similarly, economic policies such as openness to trade aid in the promotion of FDI inflows. Though several studies have assessed the relationship between FDI and external debt, vast of these studies considered these two variables as determining factors for growth (Agyapong and Bedjabeng, 2019; Demikha *et al.* 2021; Fonchamnyo *et al.* 2021; Joshua *et al.* 2021; Tanna *et al.* 2018). Moreover, these studies have

been limited to cross-country analysis. To the best of our knowledge, studies on the direct link between foreign debt and FDI inflows at individual country levels are limited in literature, especially for African countries. The few studies on African countries ascertained external debt as a constitute of FDI without assessing the long-run relationship. Conversely, this study considers external debt and growth as the determinant of FDI inflows. Hence, the study seeks to analyze whether external debt accumulation incites or impedes FDI inflows.

The dependent parameter used in this study is foreign direct investment, while the explanatory variable is external debt. The external debt variable is measured using two variables: external debt stock public and publicly guaranteed (LNEDSPP) and long-term external debt stock (LNEDSL). The control variables used are gross domestic product (LNGDP) and trade openness (OPENN). Hence, the implicit form of the model is as in Equation (1).

$$LNFDI_t = f(LNEDSPP_t, LNEDSL_t, LNGDP_t, OPENN_t) \quad (1)$$

Equation (1) is then expanded linearly and formulated as in Equation (2).

$$LNFDI_t = \beta_0 + \beta_1 * LNEDSPP_t + \beta_2 * LNEDSL_t + \beta_3 * LNGDP_t + \beta_4 * OPENN_t + \varepsilon_t \quad (2)$$

, where t represents the time period,  $\beta_0$  is the constant  $\beta_1$  to  $\beta_4$  represent the regression coefficients, and  $\varepsilon$  denotes the stochastic white noise.

The bounds test (Pesaran *et al.* 2001) is used to check the long-run relationship. The asymptotic critical values are determined by the bounds test for F-statistics and t-statistics, which mainly depend on whether the variables are presented in I(0), I(1), or a mixture of both. According to Pesaran *et al.* (2001), the lower bound critical values are represented by the critical values of I(0), whereas the upper bound critical values are represented by the critical values of I(1). When the F-statistics surpass the upper bound critical values, a long-run relationship exists. Hence, both the short-run and the long-run models can be estimated. However, where the F-statistic value is below the lower bound critical value, there is no co-integration. Where there is no co-integration, only the short-run model is estimated. On the other hand, when the t-statistics value is used, for there to be a long-run relationship, the t-statistics value should be below the upper bound critical values.

In the case of co-integration, the long-run relationship model is as in Equation (3).

$$LNFDI_t = \beta_0 + \sum_{i=1}^n \beta_1 * LNFDI_{t-1} + \sum_{i=1}^n \beta_2 * ED_{t-1} + \sum_{i=1}^n \beta_3 * LNGDP_{t-1} + \sum_{i=1}^n \beta_4 * OPENN_{t-1} + \varepsilon_t \quad (3)$$

The short-run model, estimated with the error correction model, is formulated as in Equation (4).

$$LNFDI_t = \beta_0 + \sum_{i=1}^n \beta_1 * \Delta LNFDI_{t-1} + \sum_{i=1}^n \beta_2 * \Delta ED_{t-1} + \sum_{i=1}^n \beta_3 * \Delta LNGDP_{t-1} + \sum_{i=1}^n \beta_4 * \Delta OPENN_{t-1} + \delta ECM_{t-1} + \varepsilon_t \quad (4)$$

, where  $ED_{t-1}$  represent the two external debt proxies,  $ECM_{t-1}$  denotes the residuals series from the long-run regression's error correction term,  $\delta$  is the parameter for the speed of adjustment,  $\Delta$  is the difference operator,  $\beta_0$  is the constant and  $\beta_1$  to  $\beta_4$  represent the regression coefficients, n represents the optimal lag orders, and i represents the number of variables in the model which could be from 1 to k. The dependent variable LNFDI is a function of its lagged values  $LNFDI_{t-1}$ , which becomes an exogenous variable among the lagged values of the regressors in the model. The first part of Equation (4),  $\sum_{i=1}^n \beta_1 * \Delta LNFDI_{t-1} + \sum_{i=1}^n \beta_2 * \Delta ED_{t-1} + \sum_{i=1}^n \beta_3 * \Delta LNGDP_{t-1} + \sum_{i=1}^n \beta_4 * \Delta OPENN_{t-1}$ , represents the short-run relationship, whilst the  $\delta ECM_{t-1}$  indicates the long-run relation in the model.

#### 4. Findings and discussion

##### 4.1. Data analysis

Table 2 presents the relationship among the variables. The results show that gross domestic product is strongly correlated with foreign direct investment but has a high relation with LNEDSPP and LNEDSL. Trade openness has a lower correlation with all the variables of the study.

**Table 2. Correlation matrix**

Parameters	LNFDI	LNEDSPP	LNEDSL	LNGDP	OPENN
LNFDI	1.0000				
LNEDSPP	0.5649	1.0000			
LNEDSL	0.5512	0.9995	1.0000		
LNGDP	0.9131	0.7735	0.7613	1.0000	
LNOENN	0.0370	0.2063	0.2156	0.1255	1.0000

**Source:** Compiled by authors

This study uses the Augmented Dickey-Fuller (ADF) method for unit root analysis. The equation for the ADF techniques is given as in Equation (5).

$$\Delta y_t = \mu + \beta_1 + (\theta - 1)\Delta y_{t-1} + \sum \delta_i \Delta y_{t-i} + \varepsilon_t \quad (5)$$

, where  $\theta$  represents the interest variable,  $\Delta$  is the difference in the parameter,  $\mu$  is the constant,  $\beta$  is the coefficient on a time trend,  $y_{t-1}$  is the lagged values of the dependent variable,  $\delta_i$  is the coefficient of the lagged dependent variable, and  $\varepsilon_t$  is the white noise. According to the ADF-test (Said and Dickey, 1984), the null hypothesis states that a unit root exists in the series. Hence, where  $\theta$  shows a significant value different from 1, it indicates stationarity in the series.

The results in Table 3 show that all the variables are stationary at the first order difference at a 1% significant level, except LNGDP, which was stationary at the first order difference at a 10% significant level.

**Table 3. Panel unit root test**

Variables	t-statistics	p-value	
		I(0)	I(1)
LNFDI	-2.023	0.5890	0.0034
LNEDSPP	-1.235	0.9030	0.0011
LNEDSL	-1.202	0.9101	0.0013
LNGDP	-1.630	0.7804	0.0781
LNOENN	-2.603	0.2787	0.0001

**Note:** Compiled by authors

In order to ascertain whether the variables have a long-run relationship, this study conducts the bounds test. The result of the co-integration test is in Table 4. The F-statistics value for model 1 is 9.536, which surpasses the critical value of the upper bound at the conventional significance of 5%. Since the F-statistics value exceeds the upper bound at a 5% significance level, we conclude the existence of co-integration, hence a long-run relationship among the study's variables.

In model 2, the value of the F-statistics shows 9.334, which is higher than the upper bound of the critical value at 5%. This result indicates the existence of co-integration among the variables of the study. Hence, the study concludes that both models (1) and (2) have a long-run relationship among their variables.

**Table 4. Bounds test**

Country	t-stat. value	F-stat. value	Lag length	Sig. level (%)	Critical values t-stat.		Critical values F-stat	
					I(0)	I(1)	I(0)	I(1)
<b>Model 1</b>								
Ghana	-5.098	9.536	4	1 5 10	-3.43 -2.86 -2.57	-4.37 -3.78 -3.46	4.29 3.23 2.72	5.61 4.35 3.77
<b>Model 2</b>								
Ghana	-5.154	9.334	2	1 5 10	-3.43 -2.86 -2.57	-4.37 -3.78 -3.46	4.29 3.23 2.72	5.61 4.35 3.77

**Note:** Model 1 tests for the co-integration between LNFDI and LNEDSPP, while Model 2 tests the co-integration between LNFDI and LNEDSL.

## 4.2. Findings

### 4.2.1. Long-term relationship

The long-run estimation results for the link between foreign debt and FDI inflows in Ghana are reported in Table 5. Model 1, which explains the impact of public debt on FDI, reveals an undesirable and significant impact. This finding infers that a 1% increment in public debt leads to approximately a 1% reduction in the FDI inflows into the economy of Ghana. In model 2, the study uses external debt stock long-term as an alternative measure for public debt. The result from model 2 shows that a 1% increase in the external debt stock long-term influences a 0.97% decline in FDI inflows in the Ghanaian economy. The results from both models reveal that external debt impedes the inflows of FDI. These findings corroborate those of (Deshpande, 1997, Ostadi and Ashja, 2014, Picarelli *et al.* 2019)

Both models also reveal that LNGDP which measures the size of the Ghanaian economy is significant and positively influences FDI inflows. In 1% increase in GDP enhances about 4.3% increase in FDI inflows.

**Table 5. Long-run estimation results**

Variables	Model 1	Model 2
LNEDSPP	-1.0015*** (-3.14)	-
LNEDSL	-	-0.9709*** (-3.10)
LNGDP	4.3636*** (11.03)	4.3196*** (11.13)
LNOPENN	-0.1305 (-0.59)	-0.1223 (0.55)
CONSTANT	-26.4905*** (-9.84)	-26.3596*** (-9.77)
Prob. > F	0.0000	0.0000
R-squared	0.8851	0.8843
Adj. R-squared	0.8713	0.8705

**Note:** Values in parenthesis represent t-statistics. \*, \*\*, and \*\*\* represent 10%, 5%, and 1% significance levels, respectively.

### 4.3.1. Short-term relationship

The study employs the error correction term (ECT) to illustrate the short-run relationship among the series and demonstrates the speed of adjustment. The results are as in Table 6. The findings report that the error correction term, ECT(-1), is significant, confirming a stable long-run relationship among the series. Moreover, the coefficient of the ECT(-1) is negative, indicating that in the long run, all the endogenous variables return to equilibrium after a change in the explanatory variables.

**Table 6. Error correction model**

Variables	Model 1	Model 2
LNEDSPP	-3.5351*(-1.77)	
LNEDSL		-3.5543(-1.71)
LNGDP	6.0469***(3.46)	5.9758***(3.38)
LNOPENN	-2.0675*(-1.95)	-2.1176*(-1.89)
D.LNFDI(-1)	-0.3480(-1.66)	-0.3587(-1.68)
D.LNFDI(-2)	-0.2490*(-1.80)	-0.2591*(-1.85)
D.LNFDI(-3)	-0.3657**(-2.24)	-0.3608**(-2.20)
D.LNGDP(-1)	0.9169(0.28)	0.7353(0.22)
D.LNOPENN(-1)	0.4464*(2.08)	0.4553*(2.09)
ECT(-1)	-0.3322**(-2.18)	-3.246*(-2.10)
CONSTANT	-3.4865(-0.77)	-3.0155(-0.66)
R-squared	0.7753	0.7719
Adj. R-squared	0.6406	0.6350
ARDL	(4, 0, 1, 1)	(4, 0, 1, 1)

**Note:** Values in parenthesis represent t-statistics. \*, \*\*, and \*\*\* represent 10%, 5%, and 1% level of significance respectively. D.LNFDI is the dependent variable. Model 1 captures the relationship between LNFDI and LNEDSPP, while Model 2 presents the relationship between LNFDI and LNEDSL.

### 4.3. Robustness

In this analysis, sensitivity and stability analyses are conducted to check the robustness of our results. Table 7 presents the results of the sensitivity analysis, which contains the tests on serial correlation, White test, and normality test. The tests are illustrated using their chi-square and probability values. According to the results, no serial correlation exists among the series. The White test reveals an insignificant p-value which indicates no heteroscedasticity. The normality test also revealed positive skewness and indicates that the series is leptokurtic.

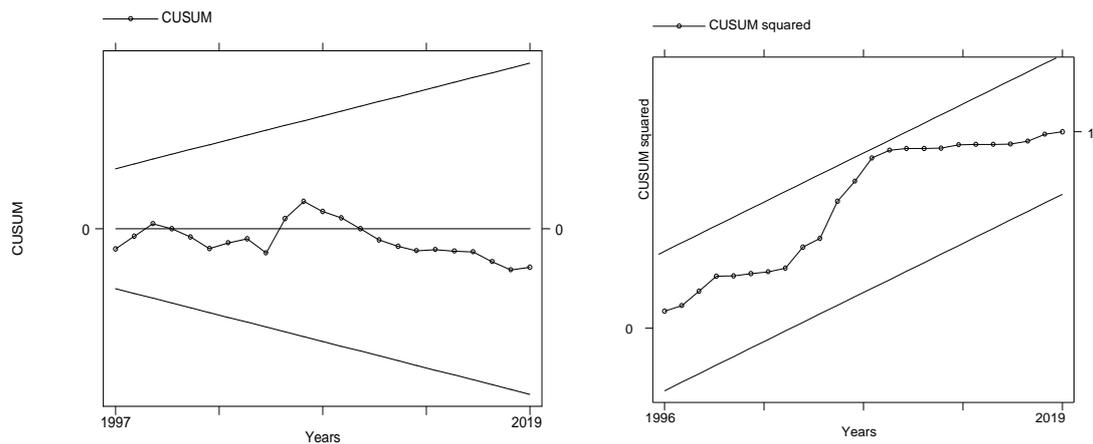
Economic changes are expected in every country, and these changes result from shifts in the countries' policies and systems of operation. A key driver of economic changes is innovation. As countries desire to reach their SDGs, embarking on innovation strategies causes changes in economic parameters. Hence, in analyzing macroeconomic data, it is vital to consider these structural changes and their effects on the economic parameters. The cumulative sum (CUSUM) test, therefore, becomes an appropriate method for analyzing these possible structural changes. Hence, in ensuring robustness in the ARDL estimation, the study uses the CUSUM test to check the stability in the regression of the coefficients,  $\beta$ . Unlike other sensitivity tests, the CUSUM test can quickly detect the smallest deviations in the mean values. This test works under the null hypothesis of constancy in the coefficients or no structural breaks in the model estimation. Hence, when the sequence values lie outside the expected range, it indicates structural changes in the model over time. The results, shown in Figures 1 and 2, reveal that the cumulative sum lines for both CUSUM and CUSUM squared fall within the lower and upper critical values. Thus, based on the 5% conventional significance level, the study cannot reject the null hypothesis that

there are no structural breaks in the model estimation. This finding implies that all the coefficients of the series are stable over time, validating the constancy of the regression model and robustness of the estimation.

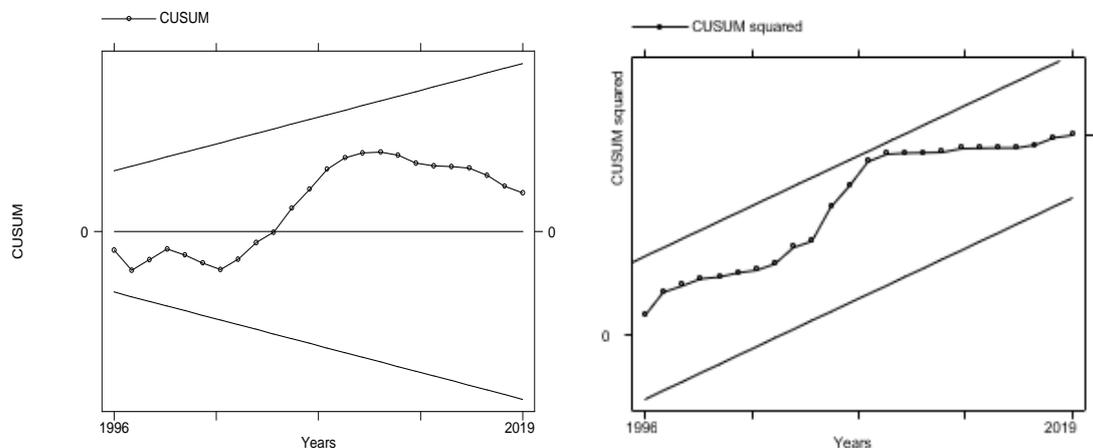
**Table 6. Sensitivity tests**

Tests	Model 1	Model 2
Serial correlation		
Breusch-Godfrey LM test	4.269 (0.1183)	3.381(0.1844)
White's test		
Cameron &Trivedi	25.00(0.4058)	25.00(0.4058)
Normality test		
Skewness	9.24(0.4153)	9.31(0.4091)
Kurtosis	0.74 (0.3893)	0.72(0.3948)

**Note:** P-values are shown in parenthesis.



**Figure 1. Cumulative sum for model 1**



**Figure 2. Cumulative sum for model 2**

#### **4.4. Discussion**

External debt has been widely advocated as an essential strategy used by most developing economies to attract funds to boost their economies. Due to its inability to generate enough funds domestically, a country such as Ghana relies on external funds to enhance its economic growth. As such, since 2000, Ghana's economy has continued to rely on external funds, which has consequently led to the country being over-burden with debt. However, this current study revealed that the country's dependence on external funds is detrimental to its FDI inflows, impeding growth. The over-reliance on external finance created an enormous debt, resulting in the loss of confidence from foreign investors in the economy, contrary to the country's expectation of inducing economic growth through borrowings. The negative influence of foreign debt on foreign investment usually happens when the government fails to utilize the external funds correctly such that funds are not used in infrastructural development and to solve the country's economic pressing needs. Inefficient use of external funds leads to poor infrastructural development, which consequently scares foreign investors.

Though Ghana's external debt impedes its ability to attract foreign investment, the study revealed that an increase in the country's economic performance potentially would aid in promoting the inflows of FDI. Specifically, while the empirical evidence shows that external debt reduces approximately 1% of the inflows of FDI, the study demonstrates that an increase in economic growth can increase FDI inflows into the country by approximately 4.3%. This finding provides evidence for the debt overhang theory, which means that as long as Ghana keeps its economy in order in terms of its performance, the country, irrespective of the level of debt, may be able to assess funds externally and attract foreign investment. High economic performance will keep away the fears due to the excessive debt and revive confidence in foreign investors to invest in the country. However, this may weaken domestic investment should the government continue to borrow funds since a larger share of the country's current and potential production would be pegged against past and present debt. Moreover, when this happens, the government may not be able to engage in structural adjustment policies, which will discourage private firms and individuals in the country from holding domestic assets. As private firms and individuals lose interest in holding domestic assets, they end up investing outside the country. This consequently creates a savings gap where the domestic savings come short of the amount needed by the government in investing into the country. When this happens, the government will have to turn to an external source of funds, which is borrowing, to augment investment projects.

In short, the study implies that external debt deters FDI inflows in Ghana and that excessive debt serves as a tax that adversely affects the country's current and future production. Government and policymakers should reduce the amount of externally sourced borrowing and possibly rely on FDI inflows. Relying on FDI inflows means that the country is improving its economic performance. Hence the following measures can be taken to boost its economic growth. Several emerging economies are much less competitive due to factors such as increased legislative hurdles to entry, corruption, and bitty markets. Ghana can create a more competitive environment, which would encourage more foreign companies into the country. As new and big foreign companies enter the country, their activities serve as motivation to domestic companies as they learn new technology and innovative ways of production, making them capable of also entering foreign markets. Moreover, policies like privatization, deregulation, and taxes reduction could be undertaken by the government to boost domestic private sector investment. Effective tax structure and collection modes should be initiated and implemented. As the private sector invests more domestically, enough funds are generated by the government to augment its investment projects. Additionally, the government should avoid huge budget deficits.

#### **5. Conclusion**

This study specifically examined the linkage between external debt, economic growth, and foreign investment in Ghana, covering the period from 1991 to 2019. We use the ARDL method of estimation. The study is influenced by the current unfavorable state of the economy in Ghana. For several years after its independence, the country has relied heavily on external sources of funds to support its economy. The country's yearly budget is so inflexible that the government

cannot do anything without seeking external support. The continuous reliance on external debt has created huge external debt for the country. In 2020 alone, the country's debt service took about 70% of the revenue generated. IMF (2022) Fiscal Monitor report revealed that Ghana's total debt is estimated to be 81.8% of its GDP in 2021, and the forecast is 84.6 percent for 2022. Currently, the country is in a debt crisis, losing about 30% of its generated revenue to external debt payments each year.

The results from the estimation showed that there is a long-run significant negative impact of external debt accumulation on FDI inflows. Furthermore, we found that economic growth exerts a significant positive impact on FDI inflows. These findings revealed that Ghana's heavy accumulated foreign debt is causing more harm to the economy. Therefore, the government of Ghana should reduce its reliance on borrowings to enhance its developmental projects. Moreover, funds borrowed outside the country should be fully utilized for improving the country's economic stability in order to avoid debt overhang and crowding out of investments. Funds borrowed externally should be for the sole purpose of economic projects, not for political or social benefits. In doing so, the full benefit of borrowing external could be achieved.

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