EXTERNAL BAILOUTS AND MACROECONOMIC STABILITY IN GHANA

Nicholas Bamegne Nambie[1], Belinda Ameh Obobi[2]

[1](School of Business/ Valley View University, Accra-Ghana)
[2](School of Business/ Ghana Christian University College Amrahia, Accra-Ghana)
*Corresponding Author: Nicholas Bamegne Nambie[1]

ABSTRACT: *The study examined the influence of external bailouts on Ghana's macroeconomic stability using Vector Error Correction Model and time series data covering 2008 to 2021. It was determined that there is a long-term causal association between external bailouts and macroeconomic stability in Ghana, and that foreign direct investment, gross domestic product, and imports all have a long-term relationship with external bailouts. In addition, it was discovered that there is no short-term causal relationship between the variables. As foreign bailouts continue to increase in the near term, it has no combined or individual influence on macroeconomic variables, but in the long run, it has both a combined and individual effect on all macroeconomic variables in the model. In order to improve macroeconomic stability, policymakers are recommended to reduce their reliance on external bailouts, accumulate foreign reserves, and expand agricultural production and industrialization.*

KEYWORDS - *External Bailouts, FDI, Macroeconomic Stability, Gross Domestic Product, Imports*

I. INTRODUCTION

In July 1944, representatives from 44 nations developed the Bretton Woods system at the Mount Washington Hotel in Bretton Woods, New Hampshire. After World War II, these nations saw an opportunity for a new international system that would draw on gold standards and the Great Depression and allow for post-war reconstruction (Woods & Hampshire, 1944). It was an extraordinary attempt by governments that had erected economic barriers for a decade. As a result, when the new exchange system was established, the IMF faced a mission dilemma. As a consequence of this duty, the IMF expanded from a currency regulator into a global agency involved in the national policies of many third-world states, especially since the 1982 debt crisis. According to statistics, IMF program participation rose from 21 in 1974 to 52 in 1983 (Clements & McClain, 2021). 190 IMF members can theoretically purchase or borrow funds from the institution. A country's required quota, based on its economy, must be donated to the Fund. A member country can withdraw 25% of its allotment to cover Balance of Payment (BOP) imbalances. 25% of the available sum requires Fund arrangements. IMF loan requirements require governments to implement particular measures (Rustomjee, Chen, & Li, 2022; Carvalho, 2022; Rosha & Thiemann, 2022; Haga, 2022).

High levels of debt in the majority of African nations hinder their economic progress and human development, resulting in a low standard of life. In 2012, thirty-three (33) sub-Saharan nations were classed as extremely indebted impoverished nations (Wale-Oshinowo, Omobowale, Adeyeye, & Lebura, 2022). Longer proportion of resources that could have been used to provide employment, educational facilities, health care, and agriculture are instead devoted to servicing external debt, hence aggravating poverty and impeding economic growth. Several reasons, including recent oil price instability, decreasing terms of trade, low export growth, abuse of borrowed funds, corruption, and weak governance, contribute to the continent's debt burden. Africa's total external debt was $3849726.9 million in 2009, up from $3849726.9 million in 2008. The external debt stock climbed by 106.7 percent in 2016, and 149.7 percent in 2017, it grew to 205.1 percent in 2021. In 2019 and 2020, Africa's external debt as a percentage of GNI owed to creditors was 39.6% and 43.7%, respectively (Manasseh, Nwakoby, Offu, & Nwonye, 2022).

Since attaining independence in 1957, Ghana's economy has flourished due to a strong public service, a moderately rapid growth rate, and a substantial foreign exchange reserve (Asante, 2021; Omeje, 2021; Christensen & Laitin, 2019; Miescher, 2022). In order to foster socioeconomic development, the government developed a program of free healthcare and education and initiated widespread industrialization. However, the economic situation deteriorated further due to external shocks caused by the declining cocoa price. In 1965, when confronted with the challenge of managing with a financial crisis, Ghana sought aid from the IMF (Stanislaus, 2022; Herbst, 1993; AtionAid-Ghana, 2016). To counteract inflation, the Fund recommended decreasing government spending to levels that could be covered by government revenues. However, the government opposed these requirements. Adopting these restrictions would have thwarted the expansionist

growth objectives, which included industrialization as a means of diversifying the Ghanaian economy by substituting imports.

Ghana's partnership with the IMF has led to economic improvement and stability, notwithstanding the cost of jobs. Ghana's economic structure has remained mainly intact since IMF-funded initiatives four decades ago. Ghana left the IMF's Poverty Reduction strategy in 2006. After withdrawing, the nation raised $750 million in Eurobonds. Two years later, Ghana re-joined the Fund (Moss & Majerowicz, 2012). Ghana's options in 2009 were limited by the global financial crisis and Ghana's declining international credit ratings; this led to the decision to seek the $602 million IMF loan (ActionAid-Ghana, 2016). As the current account, budget deficit, exchange rate, inflation, and debt indicators deteriorated, raising financing from the global financial market became less likely. The inability to establish primary budget surpluses to cut borrowing rates and increase foreign exchange reserves was theoretically forced by the absence of a restricting agency once the IMF program concluded in 2020. Ghana lacks fiscal and policy space to address to the pandemic's economic shock. In response to the 2020 pandemic, Ghana requested IMF funding (IMF) (Antwi-Boasiako, Abbey, Ogbey, & Ofori, 2021; Ofori, Frimpong, Babah, & Mensah, 2020; Novignon & Tabiri, 2022).

Little is known about the IMF's impact on Ghana's macroeconomic stability. More than 20 years of research on IMF programs and economic growth show little benefit (Moore & Verdickt, 2022; Genovese & Hermida-Rivera, 2022). Tight monetary and fiscal rules were expected to have a contractionary effect on IMF austerity programs at least in the short run (Mtibaa, Lahiani, & Gabsi, 2022; Arestis, Ferrari-Filho, Resende, & Terra, 2022). Chitenderu and Ncwadi (2022) say IMF policies hinder economic progress. Non-random selection into IMF programs has shown similar contractionary impacts. (Bomprezzi, Marchesi, and Turk-Ariss, (2022) find little evidence that IMF programs enhance long-term growth, and yearly economic growth declines for each year a country participates. Bonna (2021) studied the influence of IMF programs on economic growth in low-income countries and concluded that concessional programs, which had a generally favourable impact for up to two years after agreements were made, had received too little consideration. The impacts vary on initial economic conditions, growth trajectories, foreign aid, debt, IMF resources, and time. Despite the vast literature on external debt and macroeconomics, very few studies have investigated the impact of external debt on Ghana's macroeconomic stability. This study fills this knowledge gap by examining the relationship between the two variables using Vector Error Correction Modelling with time series data, specifically, study examines the impact of external bailouts on macroeconomic stability in Ghana. The ensuing chapters will concentrate on literature reviews, methodology, analysis and findings, policy implications, and recommendations.

II. LITERATURE REVIEW

Foreign debt slows economic growth due to a lack of knowledge about its structure, nature, and size, as well as problems servicing debt commitments (Mohsin, Ullah, Iqbal, Iqbal, & Taghizadeh-Hesary, 2021; Manasseh, et al., 2022; Kamran, Syed, Qureshi, Rizvi, & Hayat, 2021). High debt loads produce unsustainable balance of payment deficits and huge budget deficits in most Sub-Saharan African governments including Ghana (Owusu, 2019; Essl, Kilic, Celik, Kirby, & Proite, 2019; Pinto, 2019). In a study of some Sub-Saharan African nations, external debt negatively affected economic growth and this supports the debt overhang hypothesis (Turan & Yanıkkaya, 2021). In developing countries in Asia, Latin America, the Middle East, and Sub-Saharan Africa, external debt was inversely connected with economic growth. Akinwunmi and Adekoya (2018) support these conclusions that high debt hinders growth by restricting capital accumulation and total factor productivity. Using multivariate cointegration techniques, the study investigated the long and short run relationship between economic growth and external debt service in Turkey from 2015 to 2019 and found that external debt service and economic growth were cointegrated. In addition, the relationship between external debt service and economic growth was negative. The analysis also demonstrated a unidirectional causal relationship between debt service and economic development. Similarly, Zaghdoudi (2020) studied the dynamic relationship between Pakistan's external debt and economic development, while controlling for other growth factors.

Beginning with Gupta (2022) theoretical research on this subject focuses more fully on IMF rescue plans under strategic sovereign default scenarios. By allowing investors to exit, limited rescue packages can have negative short-term effects (Kuruc, 2022; Cherian & Arun, 2022; Demir, 2022). The logic of the study was supported by a static coordination game model (Corsetti, Guimaraes, & Roubini, 2006). Using a model in which a crisis can be the result of fundamental shocks and self-fulfilling panics, Guimaraes, Roubini, and Corsetti (2006) demonstrated how a partial bailout condition on a policy adjustment by debtor nation could restore investor confidence and thus reduce the likelihood of crises. In addition, their model demonstrated how liquidity support could affect the government's incentives to implement beneficial but costly initiatives and adjustments.

Berensmann (2022) demonstrated that, despite the fact that the IMF offers significantly lower interest rates than sovereign nations, countries borrow more from private sector creditors because they have the option to strategically default on private debt, whereas IMF debt arrangements are legally binding. Pitchford and

Wright (2012) formulated a dynamic stochastic model of government debt and default with endogenous participation rates in bailout programs. They proved that bailouts boost private lenders' willingness to provide new loans to the borrowing government and restore their faith by decreasing the probability of a short-term sovereign default. According to their model, the government uses the catalytic effect of bailouts to reduce interest rates, boost the supply of capital, and raise private debt consequently, the risk of default increases with time.

Two methods have been demonstrated for achieving economic growth in a nation. According to the dynamic competition theory and the neoclassical growth theory, growth may be the consequence of competition-driven innovations or an increase in the amount of investment (Fanti, Pereira, & Virgillito, 2022; Terranova & Turco, 2022). According to the neoclassical growth theory, a nation's economic growth is contingent on its savings and investments. Therefore, it is believed that measures encouraging higher savings may stimulate investment and economic growth. Thus, sufficient cash are required to support economic operations, which has reportedly been a struggle for the majority of developing economies. If internal sources of funds are insufficient to finance budget deficits, economic activities can be financed either internally through taxes or externally via borrowing. On the other hand, the Dual Gap theory has been regarded as the best explanation for why external finance is preferable to domestic financing for attaining sustainable growth, particularly when domestic savings in most developing nations are included (Ajayi & Oke, 2012; Umaru, Hamidu, & Musa, 2013; Adekoya & Akinwunmi, 2018).

Broome (2008) judge IMF crisis loans more positively inside a global game. Public financing encourages more lenders to roll over their loans, reducing the chance of crises, instead of making reforms, rely on heavily subsidized government emergency credit. If an on-going IMF program is seen as a request for more aid, sovereign risk may increase over the medium to long term (Tahmoorespour, Ariff, Lee, Anthony, & Karim, 2022).

2.1 Bailout Conditionality from 2009-2010

Ghana's economic growth rate fell from 7.3% in 2008 to 4.1% in 2009 (Edo, Osadolor, & Dading, 2020; Fosu, 2013; Broadberry & Gardner, 2022). Inflation declined from 20.7% in June 2009 to 9.38% in September 2010. The Ghanaian cedi had been more stable and robust than other major currencies. China's economic reforms led to a decrease in inflation from 18.1% in December 2008 to 9.38% in October 2010 (Ameyaw, 2015; Maswana, 2015). However, these reforms came at the expense of job creation and employment, which had negative effect on the poor (Huerta & Ojeda, 2022; Sandonà & Solari, 2021). There is evidence of a correlation between rising unexpected inflation and falling unemployment, which favours the poor in relative terms. Some studies indicate that moderate rates of inflation do not regularly have a negative effect on the actual economy (Nazamuddin, Wahyuni, Fakhruddin, & Fitriyani, 2022). Inflation above 40 percent can have serious effects on growth and income distribution (Nabila & Anwar, 2021; Onwuka, 2022). There is little justification for monetary policy aimed at keeping inflation in the low single digits. Low inflation is commendable and advantageous for the poor, but it should not be pursued at the expense of boosting employment. However, Ghana's economy experienced a fall in government investment, which further threatened economic progress.

The Ghana Education Fund (GETFund) was on its knees with a debt overhang, subvention drastically reduced in 2009; hence payments were affected during the year. Given the unstable status of educational funding in Ghana, the delay in payments into the GETFund affected the smooth running of the educational system. The Ghana Education Service (GES) was forbidden by IMF conditionality from hiring more teachers to fill gaps in schools that require teachers (ActionAid-Ghana, 2016; Bagbin, 2019; Twumasi-Ampofo, Asamoah, Ofori, Osei-Tutu, Offei-Nyako, & Osei-Tutu, 2021).

Funding for the National Health Insurance (NHI) declined by 40% between 2008 and 2009, as compared to 2008, the health budget for 2009 was reduced by 20 percent relative to the previous year (Kolekang, Sarfo, Danso-Appiah, Dwomoh, & Akweongo, 2022). This reduction largely was attributable to the IMF's proposal to reduce spending in order to lower the Government of Ghana budget deficit. The Ghana Medical Association warned that the National Health Insurance Scheme was at the verge of collapse (Wahab, 2015). The national health insurance funding for the scheme was curtailed, adversely affecting the capacity of accredited service providers to meet patient demand. Ghana's domestic spending arrears stood at GH 830 million at the end of 2009, compared to a total of GH 850 million in 2008 (AA-Ghana, 2016). In 2009, the government decided not to initiate any new projects in order to comply with the IMF's need to reduce the budget deficit. The majority of the poor were left to endure hardship due to high interest rates. The Bank of Ghana and Commercial Banks have been embroiled in a bitter dispute over lending rates for two years, which degraded into a blame game. As a result of IMF conditions, no new employment possibilities were created through the awarding of new contracts. In addition, by delaying payment to the District Assembly Common Fund, infrastructural projects could not be initiated. The IMF's proposal that the Government of Ghana should raise power tariffs disproportionately harmed the weak and poor. Focus groups believed that remittances were either

increasing or maintaining the same compared to the previous year. The large increase in utility rates showed that the government was required to meet the conditions to qualify for the next IMF loan instalment (Stubbs, Kentikelenis, Stuckler, McKee, & King, 2017; Laird, 2008; Kentikelenis, Stubbs, & King, 2016).

III.   METHODOLOGY

The study examined the impact of external bailouts and macroeconomic stability in Ghana using non-probability sampling technique to sample time series data from the world development indicators spanning 2008 to 2021. External debt is measured as a composite index of external debt total (DOD, current US$), and Macroeconomic stability is measured as a composite index of foreign direct investment, net (BOP, Current), Imports of goods and services (% of GDP), GDP growth (annual %) with data from the world development indicators (WDI). E-views software will be used in the analysis and estimation of the data. Along with the granger causality test, co-integration approach and the Vector Error Correction Model are utilized to investigate the long and short term associations between variables. Cointegration was characterized by (Granger, 1969) and applied to variance decomposition. To ensure that all variables are steady or co-integrated prior to employing any estimation method, in this work, the procedures consist of testing the unit root, co-integration test, and then the Granger causality analysis based on VECM. Non-stationary variables are characterized with time series. If this time series is directly regressed, the problem of spurious regression occurs. In order to avoid erroneous regression, the Augmented Dickey-Fuller (ADF) unit root test is used to determine if variables are stable. If the series are not stationary, it is important to determine if the variable is single co-integrated and then employ alternative processing to make it so. The co-integration test is conducted to investigate the long-term and short term relationships between variables.

3.1 Vector Error Correction Model

It is only possible to estimate the conventional VAR model, when the variables are in a stationary state. Differentiating the series is the first step in the traditional method for eliminating the unit root model. In the case of cointegrated series, on the other hand, doing so would result in an excessive differentiation and the loss of information that was transmitted by the long-term comovement of variable levels. Because of this, a cointegrated VAR model is constructed. According to Johansen (1991) this concept of the Vector Error Correction Model (VECM) consists of a VAR model of the order p - 1 on the differences of the variables, and an error-correction term derived from the known estimated cointegration relationship. In addition, the VECM also includes an error-correction term. Intuitively speaking, a VECM model will establish a short-term link between the external bailouts and the macroeconomic indicators, while simultaneously adjusting for the deviation from the long-term comovement. A crucial component in the estimate of the VECM dynamic model (ect-1) is the coefficient of the error correction term. This parameter measures the pace at which external debt returns to its equilibrium state. In VECM, all variables are regarded as either endogenous (Y) or exogenous (X) in order to determine the long run relationship, short run relationship, and combined effect of variables. This is done in order to establish the long run connection. For the purpose of the estimation that is ordered by each variable, VECM is utilized with one co-integrating equation, and OLS is utilized within an e-views environment. The individual coefficients of differentiated terms are what are used to capture short run effects, whereas the VECM variable coefficients contain information on whether or not the values of variables in the past had an effect on the values of variables that are currently being investigated. The extent of each variable's tendency to find its way back to equilibrium is measured by the size and statistical significance of the coefficient that represents the error correction term. A substantial coefficient shows that previous errors in the equilibrium are essential in determining the current results, and it captures the relationship between the two the effect on the long term (Adams & Fuss, 2010).

3.2 Model specification

Vector Autoregression (VAR) is differenced to obtain a Vector Error Correction Model (VECM) by losing a lag.

$$Y_t = \beta_0 + \beta Y_{t-1} + \mu_t \text{ --- (1)}$$

$$\Delta Yt = \beta 0 + \pi Y_{t-1} + \mu t \text{ -- (2)}$$

$$\Delta Y_t = \beta_0 + \Delta Yt_{-1} + \partial_1 \Delta X_{t-1} + \lambda_2 ECTt\text{-}1 + \varepsilon_t \text{-- (3)}$$

ECT_{t-1} = the lagged ordinary least square residual obtained from the long-run co-integrating equation and expressed as follows:

$Y_t = \alpha + \eta_i X_{t-1} - \upsilon_1 R_{t-1}$
$ECT_{t-1} = (Y_t - \eta_i X_{t-1} - \upsilon_1 R_{t-1})$, the equation for co-integrating.

The Error Correction Term (ECT) illustrates how the dependent variable's short-run movement is affected by the prior period's departure from long-run equilibrium.

ʎ = coefficient of the ECT is the speed of adjustment. It measures the speed at which y returns to equilibrium after changes in X and R.

$Extdebt_t = \beta_{11}Extdebt_{t-1} + \beta_{12}GDP_{t-1} + \beta_{13}Import_{t-1} + \beta_{14}FDI_{t-1} + \theta_1 ECT_{t-1} + \mu_t$ --(4)

i.   K-1 = the lag length reduced by one (1)
ii. β = short-run dynamic coefficients of the model's adjustment long-run equilibrium
iii. θ_i = speed of adjustment parameter with a negative sign
iv. ECT_{t-1} = the error correction term is the lagged value of the residuals obtained from the co-integrating regression of the dependent variable on the regressors. Contains long-run information derived from the long-run co-integrating relationship.
v. μ_{it} = the stochastic error terms often called impulse.

Table 3.1 Definition of variables

SRL	VARIABLE	NOTATION	DESCRIPTION
1.	IMF (extdebt)	IMF (Extdebt)	IMF is measured as an index of external debt total (DOD, current US$), extracted from the world development indicators (WDI)
2.	Gross Domestic Product	GDP	GDP measures macroeconomic stability, and is Gross Domestic Product Growth, measured as a percentage of annual GDP (annual %), extracted from the world development indicators.
3.	Import	Import	Import of goods and services (% of GDP), measures macroeconomic stability and extracted from the world development indicators
4.	Foreign Direct Investment	FDI	Foreign direct investment, net (BOP, Current US $), measures macroeconomic stability and extracted from the world development indicators

IV. RESULTS AND DISCUSSION

4.1 Stationarity Test

Table 4.1 Augmented Dickey-Fuller test statistic (At first difference)

EXTDEBT		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-17.74244	0.0000
Test critical values:	1% level	-3.445776	
	5% level	-2.868235	
	10% level	-2.570401	
IMPORT		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-19.89644	0.0000
Test critical values:	1% level	-3.445776	
	5% level	-2.868235	
	10% level	-2.570401	
GDP		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-19.07987	0.0000
Test critical values:	1% level	-3.445776	
	5% level	-2.868235	
	10% level	-2.570401	
FDI		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-10.95177	0.0000
Test critical values:	1% level	-3.445967	
	5% level	-2.868319	
	10% level	-2.570446	

4.2 Unit root test

The unit root test is a method for determining whether or not the variables making up a time series are stationary. This method is utilized in tests on the International Monetary Fund (External Debt) bailout and Macroeconomic Stability in Ghana, the ADF test, also known as the Augmented Dickey-Fuller test, is the standard unit root test method that is used to circumvent the issue of spurious regression. When time series data include a unit root, the variables in question are not stationary at level; nevertheless, after the differences are taken into account, the variables do become stationary. The findings presented in Table 4.1 indicate that the time series of variables were non-stationary at level; however, following the application of their first order difference processing, the series became stationary. This indicates that the initial series is a first-order single cointegrated series, I. (1).

4.3 Determination of optimal lag length for the model

The very first problem with the VAR model is figuring out the lag intervals for the endogenous variables. The longer the Lag Intervals for Endogenous variables, the better it is able to completely portray the model's dynamic nature. The ideal lag period for the VAR model can be determined using one of a number of different ways. This study employed the Lag Length Criteria and the Ar Roots Graph in order to find the Lag Intervals for Endogenous variables as shown in Table 4.2. This was done after extensive attention was given to determining the Lag Intervals. After making a comparison of the different lag length criteria, the best lag order for the VAR model is 4, as determined by the findings of the study. As can be seen in Table 4.2, the VAR model with a lag interval of the fourth (4) order was built with the help of econometric software. The value of the model's log likelihood function is relatively high, and its Akaike Information Criteria (AIC) value is low; this suggests that the model's capacity to explain phenomena is very good. Following the conclusion of the determination of the lag order of 4, the VAR model of the second order was re-established.

Table 4.2 Determination of optimal Lag length (P) for the model

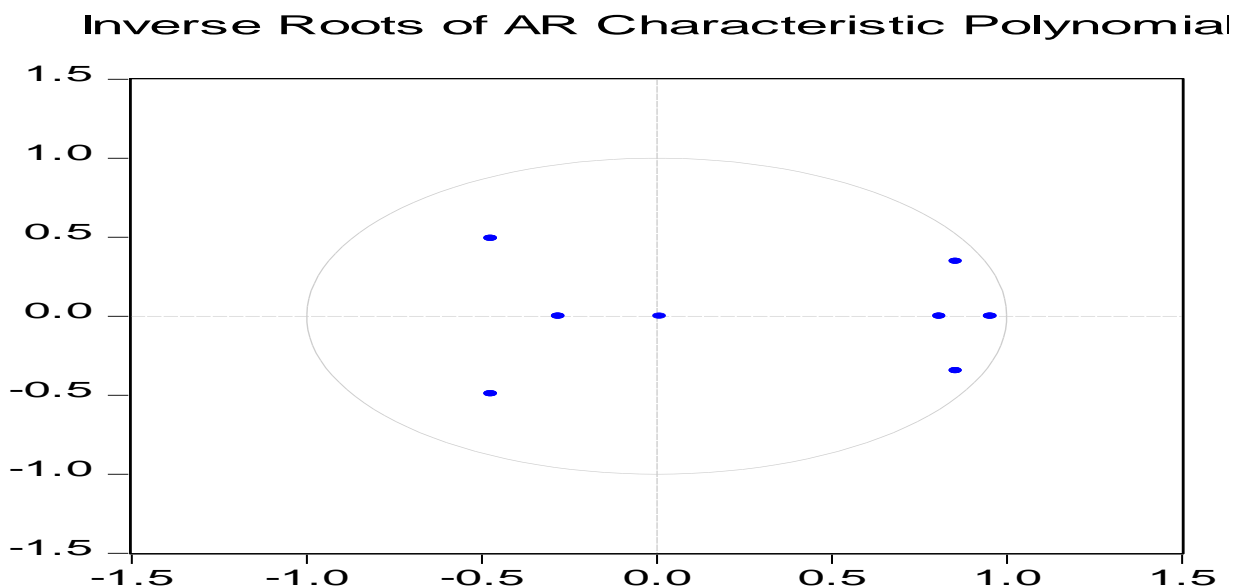| Lag	LogL	LR	FPE	AIC	SC	HQ
0	-426.8417	NA	2.72e+08	30.77441	30.96472	30.83259
1	-370.8265	92.02504*	15873328*	27.91618	28.86775*	28.20708*
2	-355.3647	20.98378	17851603	27.95462	29.66746	28.47826
3	-340.1636	16.28697	23393709	28.01168	30.48578	28.76804
4	-316.6957	18.43904	21958893	27.47827*	30.71362	28.46734

Figure.1

Fig 1 displays the mod of the AR characteristic root reciprocal of the VAR model. This figure also shows that the mod of the reciprocal of each characteristic root is located within the circle. That is to suggest that a lag order of 4 is suitable, and the developed VAR model is stable after being subjected to a stability test.

4.4 Cointegration Test

The right selection of the cointegration test's to form a lag order is the most important step in doing the analysis. In most cases, the Juselius and Johansen (1990) approach is used to assess whether or not the variables in the VAR model have a cointegration connection with one another. In this case, the sequences that are being tested are linear trend terms, and the test version of the cointegration equation consists of only the intercept.

Table 4.3 Results of Co-integration test

Lags interval (in first differences): 1 to 4

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.873987	102.6320	47.85613	0.0000
At most 1 *	0.686278	46.70499	29.79707	0.0003
At most 2	0.418663	15.40528	15.49471	0.0516
At most 3	0.027749	0.759802	3.841466	0.3834

Trace test indicates 2 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.873987	55.92698	27.58434	0.0000
At most 1 *	0.686278	31.29971	21.13162	0.0013
At most 2 *	0.418663	14.64548	14.26460	0.0435
At most 3	0.027749	0.759802	3.841466	0.3834

Max-eigenvalue test indicates 3 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

4.5 Results of Co-integration

The results of the Johansen cointegration test for Extdebt, GDP, Import, and FDI are presented in Table 4.3, which indicates that the trace statistics exhibits two (2) cointegrating equations, thereby rejecting the null hypothesis of no cointegration. The significance of the probability values for the three equations can thus be observed positively. The maximum eigenvalues indicate three (3) cointegrating equations, confirming the results of the trace statistics; we therefore reject the null hypotheses of no cointegration relationship between the variables. This further demonstrates that there is long run equilibrium relationship between the variables over an extended period of time. On the assumption that cointegration interactions exist, it is possible to conduct additional VEC modelling.

4.6 Estimation and Analysis of the Vector Error Correction Model (VECM)

The existence of cointegration between variables points to the existence of a relationship that is sustained through time between the variables that are being examined. After that, one can proceed to use the VEC model for estimation. The following table 4.4 illustrates, in the long term, the relationship that exists between Extdebt, GDP, Import, and FDI for one cointegrating vector from the period 2012-2021. (Standard errors are in parenthesis).

Table 4.4 Estimation of Vector Error Correction Model (VECM) and Analysis

Cointegrating Eq:	CointEq1
EXTDEBT(-1)	1.000000
FDI(-1)	-1.023432 (1.80274) [-0.56771]
GDP(-1)	2.768233 (0.72015) [3.84399]
IMPORT(-1)	-0.757249 (0.44328) [-1.70830]
C	-4.302954

The cointegration equation is:

$Extdebt_{t-1} = -1.023432FDI_{t-1} + 2.768233GDP_{t-1} + -0.757249Imports_{t-1} + -4.302954$

Table 4.5 Speed of Adjustment

	Coefficient	Std. Error	t-Statistic	Prob.
C(1)	**-0.279566**	**0.173043**	**-1.615588**	**0.0000**
C(2)	-0.404023	0.251187	-1.608455	0.0022
C(3)	-0.466808	0.270082	-1.728390	0.1180
C(4)	-0.192413	0.304495	-0.631908	0.5432
C(5)	0.272233	0.264876	1.027775	0.3309
C(6)	-0.539113	0.594742	-0.906464	000883
C(7)	1.467697	0.628458	2.335396	0.0444
C(8)	1.462165	0.663601	2.203382	0.0550
C(9)	0.662077	0.824110	0.803385	0.4425
C(10)	-0.041793	0.292313	-0.142973	0.0495
C(11)	0.382893	0.297067	1.288913	0.2296
C(12)	0.529052	0.351480	1.505210	0.1665
C(13)	0.485253	0.342516	1.416729	0.1902
C(14)	-0.188856	0.323760	-0.583321	0.0000
C(15)	0.023418	0.328140	0.071365	0.9447
C(16)	0.146870	0.257584	0.570182	0.5825
C(17)	-0.127031	0.256686	-0.494891	0.6325
C(18)	-5.945887	2.971858	-2.000731	0.0765

R-squared	0.808648	Mean dependent var	-1.952504
Adjusted R-squared	0.447205	S.D. dependent var	9.459767
S.E. of regression	7.033355	Akaike info criterion	6.973926
Sum squared resid	445.2127	Schwarz criterion	7.837817
Log likelihood	-76.14800	Hannan-Quinn criter.	7.230806
F-statistic	2.237277	Durbin-Watson stat	1.529672
Prob(F-statistic)	0.000954		

The previous year's deviation from long-term equilibrium is corrected at a rate of 28% in the current period. Long-term causality exists between FDI, IMPORT, GDP, and the dependent variable, external debt. At the 1 percent level, the probability value of the error-correcting term is also significant. This indicates that external debt has a long-term positive effect on Ghana's macroeconomic stability. Long-term macroeconomic stability is impacted, when external debt rises by 10%, assuming all other factors remain constant. In the long term, a percentage change in FDI is related with an average 10% increase in external debt, all things being equal. Empirically, a 10 percent increase in external debt will have a favourable effect on foreign direct investment because the local currency will depreciate as a result; foreign investors will grasp the opportunity to invest in country since the foreign currency will be dominant. Also, there is a significant negative relationship between external debt and GDP, such that as external debt increases in the long run, GDP decreases, indicating that the more a country borrows in the long run without investing the borrowed funds in economically productive activities, the greater the negative impact on the GDP of the sovereign state and the country's macroeconomic stability. There is also a positive relationship between external debt and imports; when external debt increases by 75% according to table 4.4, imports also increase; this means that the more a country borrows without sufficient domestic production to meet domestic demand, the more imports it will have, on average all things being equal. The R-Square fitting degree of the VEC model is also greater than 0.05 and the AIC and Schwarz Criterion values are low, indicating that the model estimation is reasonable.

4.7 Short run causality test

Table 4.6 Wald Test:
Equation: Untitled

Test Statistic	Value	df	Probability
F-statistic	0.724230	(3, 9)	0.5626
Chi-square	2.172690	3	0.5373

Null Hypothesis: C(6)=C(10)=C(14)=0
Null Hypothesis Summary:

Normalized Restriction (= 0)	Value	Std. Err.
C(6)	0.539113	0.594742
C(10)	0.041793	0.292313
C(14)	0.188856	0.323760

Restrictions are linear in coefficients.

In order to specify the direction of causality between the variables, a Wald Test is performed to demonstrate the joint significance which indicates whether or not there is short run causality. The estimated results in table 4.5 indicate there is no short-run causal effect from the second variable to the dependent variable, and the chi-square value is not statistically significant, so we fail to reject the null hypothesis. In effect, external debt and macroeconomic stability in Ghana have no short-run causal relationship on average ceteris paribus. Therefore external debt in the short run has no significant effect on macroeconomic stability in Ghana but it thus has a long term effect on the economy.
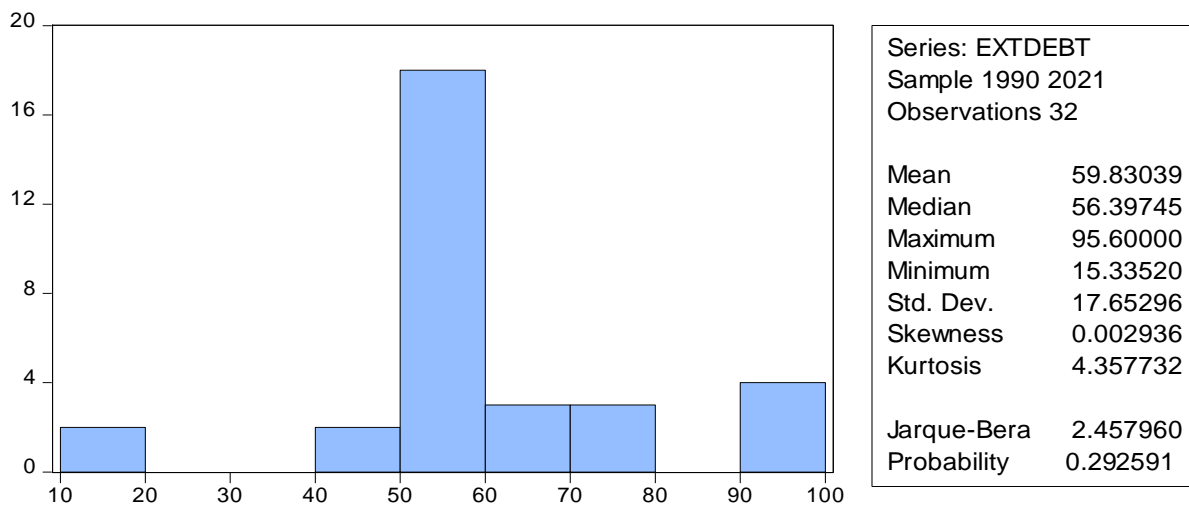
4.7 Residual diagnostics

Series: EXTDEBT	
Sample 1990 2021	
Observations 32	
Mean	59.83039
Median	56.39745
Maximum	95.60000
Minimum	15.33520
Std. Dev.	17.65296
Skewness	0.002936
Kurtosis	4.357732
Jarque-Bera	2.457960
Probability	0.292591

Figure 2

The circle in figure 1 contains VAR model test stationarities and the AR root mod. The constructed VAR model passed a 4-lag stability test. Model stability, Breusch-Godfrey Serial Correlation LM Test, Breusch-Pagan-Godfrey of Heteroskedasticity, and Jarque-Bera normality tests were undertaken. Fig. 1 shows all of the VECM model's roots within the unit circle. In the Godfrey LM test and the Breusch-Pagan-Godfrey of Heteroskedasticity test, we failed to reject the null hypothesis of serial autocorrelation for all lags and the null hypothesis of heteroskedasticity, implying the residuals are homoscedastic. Autocorrelation and heteroskedasticity are absent. All Histogram residuals are normal, refuting the null hypothesis.

4.8 Impulse Response Function

Response to Cholesky One S.D. (d.f. adjusted) Innovations ± 2 S.E.

Response of FDI to EXTDEBT

Response of GDP to EXTDEBT

Response of IMPORT to EXTDEBT
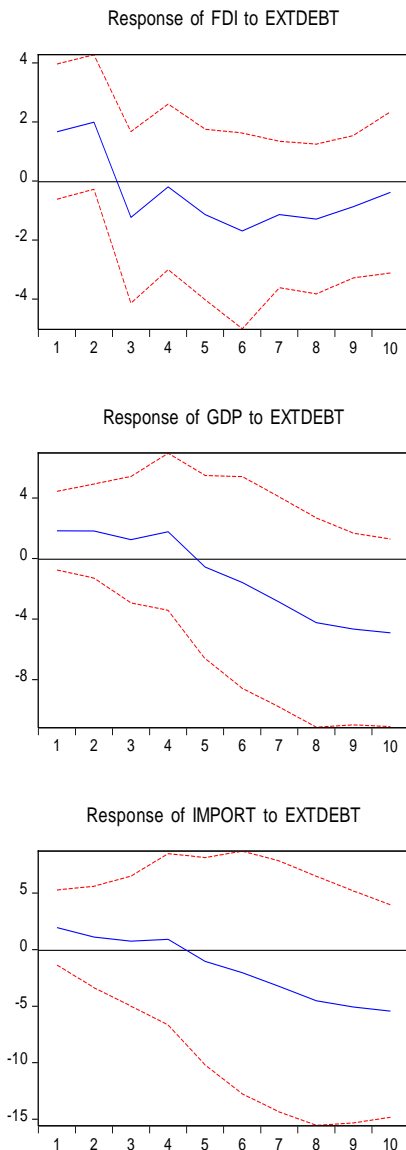
Figure.3

Impulse Response Function analysis was used in this study as an additional check of the co-integration test results, and it provided information for the long-run relationship between External Debt (IMF) and Macroeconomic Stability in Ghana. It also provided information for analysing the dynamic behaviour of variables in response to a random shock or innovation in other variables, and it demonstrates the effects of current and future values of the endogenous variables using the Cholesky-dof adjusted model. The impulse response functions depicted below reveal that a standard deviation shock of FDI to external debt results in an initial strong positive fluctuation from 1.9% to 2%, declined to period three (3). It fluctuated in period three (3) to period six (6) through to period seven (7) and appreciated again in period ten (10). In addition, a standard deviation shock of GDP to external debt resulted in fluctuation from period one (1) up to period four (4) and plunged downwards through the negative line to the tenth (10) period. Lastly, a shock of one (1) unit standard deviation of Import to external debt caused a strong negative fluctuation from period one (1) to period ten (10) to zero. This indicates that external debt (IMF) and macroeconomic stability in Ghana have a significant reciprocal effect.

V. CONCLUSION, POLICY IMPLICATIONS AND RECOMMENDATION

Using time series data spanning 2008 to 2021, the research looked at how the impact of Ghana's high external debt affects the country's overall economic stability. According to the results of the research, there is a connection, at least in the long run, between high levels of external debt and foreign direct investment. There is a positive correlation between the growth of external debt and the growth of FDI. This is due to the fact that when there is a growth in external debt, there is also an increase in the exchange rate and inflation, which causes the domestic currency to depreciate against the currency used for international trade. When investing in a sovereign nation, investors look to take advantage of declines in the value of the national currency. In the long

run, there was a negative link between gross domestic product and external debt. This relationship showed that as external debt increased, GDP decreased due to the large interest payments that were required on the debt burden. When there are no buffers or reserves to support the macro economy, the effects of this are amplified to a far greater degree. These findings are in line with the findings of (Musa, Umaru, and Hamidu (2013) which conducted similar studies on the impact of external debt in economic growth and concluded that there is long run causality between external debt and the economy. In addition, there is long run causality between imports and external debt. In the case of Brafu-Insaidoo, Ahiakpor, and Ogeh (2019) they provided a different opinion after carrying out research into the effect that IMF bailouts have on the expansion of the economy.

The findings of this analysis also demonstrated that there is no short-run causal relationship between any of the examined macroeconomic factors. There is no correlation between imports, gross domestic product, and foreign direct investments made by foreign governments in the short term. To be able to successfully deal with external economic shocks that have the potential to impair the country's macroeconomic stability, policymakers should consequently focus on reducing the amount of money the country borrows from outside and building up additional reserves and buffers. In addition, in order to improve the stability of the macro economy, it is recommended that policymakers boost domestic production of products and services, especially agricultural production. Additional research on the influence of external debt services on poverty rate can also be explored in order to discover whether or not there is a relationship between the two variables, and if there is, the degree of the impact, if there is one.

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Corresponding Author: Nicholas Bamegne Nambie[1]
[1](School of Business/ Valley View University, Accra-Ghana)