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Research Article

Evaluating the Impact of Macroeconomic Fundamentals on Domestic Private Investment in Selected Ecowas Countries

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Abstract: *Against the background of the significantly low level of Sub-Saharan Africa's domestic private investment, this study x-rays the impact of macroeconomic fundamentals on domestic private investment among four selected ECOWAS countries: Nigeria, Ghana, Gambia and Cote D'Ivoire between 1986 and 2022. It employs the Generalized Least Squares (GLS) method in a panel of four countries in ECOWAS for the estimation and found that most macroeconomic fundamentals, such as exchange rate and interest rate, among others, moved in the wrong direction between 1986 and 2022. The study suggests the need for improvements in all the macroeconomic indicators.*

Keywords*: Private Investment, Macroeconomic Fundamentals, Panel Data, Generalized Least Squares (GLS) method, Exchange Rate, Interest Rate.*

I. INTRODUCTION

Low domestic private investment linked to scarcity of capital, including plant and machinery, skilled labour; macroeconomic instability, poor managerial skill, as well as crimes and corruption in various institutions, continues to mitigate national development in developing countries (Ababio, Aboagye, Barnor & Agyei 2022). Domestic private investment in economic literature has been described as a major driver in the economic prosperity of countries. It is very key in job creation and reduces poverty through the provision of funds required for meaningful investment. According to Okorie and Chikwendu (2019), the achievement of rapid and sustainable economic growth has always remained the topmost macroeconomic objective in the list of economic goals pursued by the government of every developing nation. Incidentally, one of the major variables influencing economic growth is domestic investment.

One of the essential elements for the attainment of sustainable and inclusive economic growth is access to financial services with a productive interest rate. Interest rate constitutes a major component among macroeconomic fundamentals and a significant instrument with which the monetary authority can conduct monetary policy operations. A prominent and effective monetary policy transmission is the interest rate policy. Interest rates potentially impact the aggregate economy through the magnitude of macroeconomic indicators such as capital inflows, demand for credit, exchange rate, and investment demand.

Various studies have investigated the macroeconomic fundamental factors affecting investment performance among developing countries (Ejedegba, 2022; Foday & Ousman, 2020; Birma & Birma, 2017; Davis & Emerenini, 2015). Most studies opined that fundamental macroeconomic instability affects firms' decisions on investment in several developing economies. For example, interest rate instability ─ a macroeconomic instability proxy can constrain investment decisions. Interest rate instability manifests through frequent changes in monetary policy rates, reflecting an unstable macroeconomic environment. Comprehending the impact of interest rates on domestic private investment is essential for formulating policies that foster economic growth. Its significance is in its balancing effect on supply and demand within the financial industry. Banks serve as mediators that transfer funds from surplus units to deficit units within the economy by receiving deposits and directing them into productive endeavours. The execution of this duty is contingent upon interest rates, the development level of the financial sector, and the savings and investing behaviours of the populace.

Also, sporadic exchange rate fluctuation expansionary monetary and fiscal policies through depreciation and taxation have serious effects on the exchange rate stability and money supply that impinge on investment decisions. Foday and Ousman (2020) have argued that exchange rate variability is one of the major obstacles confronting developing economies in macroeconomic management. Inadequate financial sector development could restrain the readiness of a country to reap the benefits accruing from Foreign Direct Investment (FDI) spillovers. Member countries of ECOWAS exhibit significant disparities in the development of their financial sectors, as evidenced by the variation in domestic credit extended to the private sector, which is crucial for domestic private investments (World Bank Development Indicators, 2019). Investors require certainty regarding a country's macroeconomic conditions prior to making investments to mitigate risks. This indicates that Kenya and

other Sub-Saharan African nations must stabilize their macroeconomic conditions to attract private domestic investments. The majority of the studies identified interest rates and exchange rates as fundamental factors affecting investment growth among developing countries. Policy prescriptions of the various studies point to the importance of the attainment of macroeconomic stability in the region under review.

Specifically, a correlation exists between macroeconomic fundamentals and domestic private investment performance. The majority of the studies have suggested a negative relationship between macroeconomic fundamentals and domestic private investment. Amongst others, for instance, studies by Awad, Al-Jerashi and Alabaddi, 2021 Birma and Birma, 2017 Berko, Hammond and Amissah 2002; etc. have pointed to the key role of unchecked macroeconomic fundamental factors in constraining investment decisions.

Under the foregoing, this paper discusses the potential impacts that macroeconomic fundamentals can exert on domestic private investment among selected ECOWAS countries. What is crucial in the study is the need to create a relatively stable macroeconomic environment for investment to thrive and contribute to economic performance in the region. Following the introductory section, section 2 presents reviews of related literature. Section 3, the conceptual/theoretical review. Section 4 centres on theoretical framework and methodology. Section 5 focuses on the presentation and analysis of results, while section 6 concludes the paper.

II. REVIEW OF RELATED LITERATURE

A vast amount of literature exists on the subject, but a brief review will be undertaken. For instance, Afful and Kamas (2020) examined the impact of interest rates on private investment and identified the threshold level at which interest rates negatively affect private investment in GhanaThe Autoregressive Distributed Lag (ARDL) model was used in the study, and the interest rate threshold was estimated using the quadratic function and conditional least squares techniques. The ARDL model's findings supported the McKinnon-Shaw hypothesis in Ghana by showing that interest rates had a beneficial long- and short-term impact on private investment. There is a threshold beyond which interest rates have a negative impact on private investment in Ghana, according to the outcomes of the conditional least squares model and the quadratic function.

Awad, Al-Jerashi, and Alabaddi (2021) examined how political unrest and interest rates affected private investment in Palestine. The findings support the neoclassical theory, which holds that interest rates have a negative relationship with private investment in the country. The findings showed that there is no causality or long-term link between the factors.

Birma and Birma (2017) analyzed the impact of monetary policy on private-sector investment in Sierra Leone. Recent econometric techniques indicate that money supply and savings have a positive and statistically significant impact on private sector investments, while treasury rate, inflation and gross domestic debt have a negative effect.

Iheonu, Asongu, Odu, and Ojiem (2020) studied the impact of particular ECOWAS countries between 1985 and 2017. The study used the Augmented Mean Group technique, which takes cross-sectional variability and country-specific heterogeneity into account. There were four main conclusions: (i) depending on the financial sector development metric employed, the impact of banking sector growth on domestic investment varies; (ii) domestic credit to the private sector has a positive but statistically insignificant effect on domestic investment in ECOWAS countries; (iii) differences in the efficiency of banking intermediation between countries affect the relationship between financial sector development and domestic investment in the chosen ECOWAS countries; and (iv) domestic credit to the private sector is directly related to domestic investment in ECOWAS countries.

Leshoro and Wabiga (2023) examined the differential impacts of positive and negative interest rate shocks on private investment, focusing on the asymmetric nature of the relationship between these variables in South Africa. The study employed contemporary non-linear autoregressive distributed lag (NARDL) techniques. Private investment responds differentially to positive and negative interest rate shocks, according to research, which shows asymmetric correlations in both the short and long term. The results of the study indicate that there is insufficient empirical support for accurate macroeconomic forecasting from a linear examination of the link between interest rates and private investment.

Korsu and Tamuke (2023) examined the impact of bank credit on the private sector on private investment in Sierra Leone, as well as the role of the macroeconomic uncertainty in this relationship. An ARDL model of private investment is estimated using annual data spanning from 1980 to 2019. The findings indicate a long-run relationship between private investment and the model variables, with bank credit exerting a positive and significant influence on private investment in Sierra Leone in the long run.

Ntie and Badjie (2021) analyzed the impact of interest rates on economic growth in The Gambia over the period 1993 to 2017. They employed the Vector Error Correction Model (VECM) to examine the relationship between the dependent variable,

the real effective exchange rate and the real interest rate in both short-run and long-run contexts. Empirical evidence suggests a long-run relationship between the growth of the Gambian economy and interest rates.

Berko, Hammond, and Amissah (2002) examined the impact of interest rate spread on economic growth, utilizing annual time series data from 1975 to 2018. In order to ascertain the long-term and short-term correlations between interest rate spread and economic growth, the study used the Engel-Granger two-step approach with the Ordinary Least Square (OLS) technique. The results showed a negative long-term impact. The findings show that Ghana's labor force, capital stock, and exports all have a favorable impact on the country's economic growth over the long and short terms. The impact of government spending on Ghana's economic growth was not found to be statistically significant.

Mohsen (2022) examined the factors influencing investment in Cote d'Ivoire from 1980 to 2020. This study analyzed the interactive effect of external debt, communication infrastructures, imports, and inflation on the investments in Cote d'Ivoire to achieve its objective. The study utilized annual time series data from 1980 to 2020. The results of the OLS model indicate a positive and significant between investment and communication infrastructures, imports, and inflation. On the other hand, there is a negative and insignificant relationship between external debt and investment. Among these factors, imports exert the greatest influence on investment. The Granger causality test indicates the absence of a short-run causal relationship between the variables.

Ayeni (2020) examined the factors influencing domestic private investment in The Gambia. The study used the ARDL model to investigate the long-run equilibrium of private investment using exogenous variables such as the exchange rate, loans to the business sector, foreign debts, the actual interest rate, real exchange rate, and price increases. The study indicates that the high exchange rate elevates the real cost of imports, particularly for capital goods, resulting in increased investment expenses. Aggregate demand conditions, real interest rates, real exchange rates, and inflation are all underperforming relative to expectations. Credit to the private sector has not effectively enhanced private investment in The Gambia due to inadequate credit availability.

Akinlo and Onatunji (2020) analyzed the relationship between exchange rate volatility and domestic investment in selected ECOWAS countries from 1986 to 2017. The ARDL bound testing approach was utilized, and the results confirmed a long-run relationship among the variables. Contrary to the numerous theoretical predictions and hypotheses, exchange rate volatility in Ghana, Benin, and Burkina Faso is observed to be positive yet insignificant.

Eshun, Adu, and Buabeng (2014) analyzed the financial factors influencing private investment in Ghana, utilizing annual time series data spanning from 1970 to 2010. The study utilized the ARDL bounds testing procedure. The empirical findings indicate that private investment decreases in both the short run and long run when the real interest rate is elevated and investors encounter significant financing constraints due to limited credit availability in the sector.

The determinants influencing private sector investment in Ghana were examined by Frimpong and Marbuah (2010). In order to give an empirical evaluation of the factors that have either encouraged or inhibited private sector investment in Ghana over the past few decades, this study uses an ADRL approach. The results show that public investment, rising prices, the real interest rate, transparency and the real exchange rate, and a constitutional rule regime all impact private investment in the near term. On the other hand, real production, inflation, foreign debt, the real interest rate, openness, and the real exchange rate all substantially impact the reaction of private investment over the long run.

Ngoma, Bonga, and Nyoni (2019) analyzed the macroeconomic factors influencing private investment in Sub-Saharan Africa (SSA), utilizing panel data from 35 SSA countries over the period 2002 to 2017. The study made use of the Panel Corrected Standard Error (PCSE) method, Fixed Effects, Random Effects, and Pooled Regression models. Results showed that GDP, real interest rates, public investment, and inflation all impacted private investment in the Sub-Saharan Africa (SSA) region.

Mose, Jepchumba, and Ouru (2020) examined the macroeconomic factors influencing domestic private investment behaviour by applying a modified flexible accelerator hypothesis. The study's results indicate that credit availability has a positive and statistically significant effect on private investment growth in Kenya, Rwanda, and Burundi, thereby affirming the essential role of domestic credit.

Nwankwo and Allison (2021) assessed how macroeconomic variables affected Nigeria's private sector's growth. The study's objectives were examining interest rates, assessing the impact of the Money Supply (MS) on the private sector, analyzing the impact of exchange rates on private investments, and examining the connection between inflation rates and private sector investments in Nigeria. Information from Nigeria's Central Bank (CBN) Statistical Bulletin and Debt Management Office (DMO) covering the years 1986–2020. The research utilized the OLS econometric method to analyze macroeconomic factors' impact on Nigeria's private investment. The research indicates that interest rates positively affect private-sector investment in Nigeria during the period from 1986 to 2020.

Charles and Okoro (2019) examined the influence of macroeconomic variables on private investment in Nigeria from 1990 to 2016. The study employed the ordinary least squares method for data analysis to evaluate the modelled private equity and private real investment. The study indicates that Real Gross Domestic Product has a positive and significant effect on investment, while economic openness has a positive but insignificant effect. Interest rates demonstrate a positive and significant effect, whereas financial deepening shows a positive but insignificant effect. Additionally, interest rates, inflation rates, and exchange rates exert negative effects on private real investment.

Abdullahi (2022) investigated how monetary policy affected Nigeria's private sector's performance. This study uses the ARDL approach. The ARDL Bounds test shows a long-term correlation between the variables. Using time series data collected every year from 1981 to 2021, the study examined four variables: real interest rates, real exchange rates, broad money supply, and private sector credit as a percentage of economic growth. According to the findings, the private sector performs far better over the long run when the money supply is broad. The currency rate and interest rate have a major and detrimental impact on the performance of the private sector over the long run.

Chebet and Muriu (2016) examined the influence of specific macroeconomic variables on private-sector credit demand in Kenya. The research utilized annual time series data spanning from 1980 to 2012. Data were sourced from the Kenya National Bureau of Statistics World Bank Indicators and supplemented by the Central Bank of Kenya. The study employed the Vector Error Correction Model (VECM) methodology. The study established that public investment, short-term interest rates, long-term interest rates, employment, and domestic debts positively influence the demand for credit by the private sector, whereas per capita GDP and exchange rates negatively affect it.

Okerie and Chikwendu (2019) analyzed the influence of private-sector credit on private-sector investment using the ARDL model for the data analysis. The author discovered that private-sector credit positively and significantly influences private-sector investment in the short run but insignificant in the long run.

Ejedegba (2022) examined the empirical significance of macroeconomic fundamentals on investment in Nigeria from 1990 to 2020, employing the OLS estimation method. The study indicates that instability in macroeconomic fundamentals, compounded by policy uncertainty arising from errors and inconsistencies in government economic policies, has constrained investment performance in Nigeria since the 1990s. The paper emphasizes the necessity for the government to address macroeconomic instability, implement measures to enhance the investment climate and maintain consistency in its policies.

Iheonu, Asongu, Odo, and Ojiem (2020) examined the influence of financial sector development on domestic investment in specific Economic Community of West African States (ECOWAS) countries from 1985 to 2017. The study utilized the Augmented Mean Group procedure, which addresses country-specific heterogeneity and cross-sectional dependence, alongside the Granger non-causality test to ensure robustness against cross-section and dependence issues. The findings indicate that (i) The influence of financial sector development on domestic investments is contingent upon the specific measure of financial sector development employed; (ii) Domestic credit to the private sector exerts a positive yet insignificant effect on domestic investment in ECOWAS, whereas banking intermediation efficiency defined as the capacity of banks to convert deposits into credit and broad money supply have a negative and significant impact on domestic investment; (iii) There are cross-border variations in the effects of financial sector development on domestic investment among the selected ECOWAS countries; (iv) Domestic credit to the private sector is a Granger cause of domestic investment in ECOWAS.

Wanjiru, Mufuri, and Njeru (2015) assess the impact of specific macroeconomic variables on the growth of domestic private investment. The research utilized quarterly time series data from 1997 to 2018. An ARDL model was utilized to analyze the influence of selected macroeconomic variables on the growth of domestic private investment in Kenya. The identified macroeconomic variables include central bank rates, repo rates, treasury bill rates, money supply, exchange rates, and inflation. The bond cointegration testing procedure indicated the presence of a long-run cointegration in the model. The estimation demonstrates that private domestic investment exhibits a significant negative correlation with the central bank and commercial lending rates.

III. CONCEPTUAL/THEORETICAL REVIEW

Domestic private investment refers to gross fixed capital formation plus net changes in the level of inventories in the private sector in contrast to public investment, which entails investment by the government and the public. Domestic private investment entails all production that is in private hands. Here, households or other firms spoon the organization that carries out the production. The private sector also includes the economic activities of non-profit making organizations and private individuals. In the economic growth process, with increased domestic investment, employment opportunities can be created, new technology can be adopted, and incomes can be generated, leading to higher living standards for citizens with eventual poverty eradication (Matwanga, 2000). Recently, emphasis has been put on the development of the private sector to enhance economic

expansion and alleviate poverty. This is due to the importance of private investment as a prerequisite for economic development, enabling entrepreneurs to initiate economic activities to produce goods and services (Mose, Jepchumba & Ouru, 2020).

The exchange rate denotes the domestic currency price for another country's currency. It is an important variable that determines the country's capital account. A rise in the exchange rate spikes the competitiveness of domestic firms' foreign demand for domestic goods and attracts foreign investors to domestic markets. Domestic currency depreciation attracts foreign investments, which strengthens the competitive position of local businesses, and these may boost economic activities on the home front. The well-developed financial market assists in mobilizing funds for domestic investment. Through their intermediation roles, the financial institutions mobilize additional financial resources from the surplus units and make them available to the deficit units, thus enhancing commercial and industrial capital development to facilitate economic growth.

The inflation rate is a fundamental macroeconomic variable that can influence domestic private investment decisions. The inflation rate measures how fast a currency loses its value in a given economy. It calculates how quickly prices for products and services increase over time or how much less one unit of money presently is worth than it was at a specific point in the past. Massive money production can raise the inflation rate by increasing supply and decreasing effective economic demand. It could also happen because some essential items become more scarce and, consequently, more costly. Because the yields on fixed-income securities might not keep up with inflation, causing a net loss for the investor, the inflation rate is significant. Allison and Nwankwo, 2021). Central banks try to regulate the inflation rate by altering the money supply.

Another significant macroeconomic factor affecting domestic private investment is the money supply. It refers to assets that serve as a medium of exchange since they provide instant economic purchasing power. There are two types of money supply: narrow money and broad money. The narrow money supply (M1) is calculated by subtracting government savings in commercial banks from the sum of demand deposits in commercial banks, domestic deposits with the central bank, and currency not held in banks. Broad money encompasses narrow money assets as well as liquid assets. They can be swiftly and easily converted to cash, and the transaction is completed with little or no interest penalty or capital loss due to forced selling. In a wide sense, broad money (M2) is M1 plus quasi-money. Quasi money is the sum of savings and time deposits at commercial banks.

The term "interest rate" refers to the amount that a bank charges for lending money. It is the rate at which commercial banks make funds available to the public. It's the possible cost of getting funding from a lender. Interest rates have significant economic repercussions, either by affecting the cost of capital or by influencing credit availability. The interest rate varies based on the purpose in view (Nwankwo & Allison, 2021). It plays a crucial role in the value of financial instruments and generally affects economic agents' decision to consume, save or invest. Interest rates determine key financial assets' prices, including bonds, stocks, and foreign currencies (Adenuga, 2020). High interest rates increase the quantity of idle funds in the market, improving the circular flow of funds and making funds more accessible for enterprises to thrive (Utile et al., 2018).

A) Financial Theory of Investment

James Duesenberry pioneered the financial theory of investing. It is sometimes called the cost of capital hypothesis of investment. Accelerator theories overlook the cost of the firm's capital investment decisions. They presume that the market interest rate (proxied by the firm's cost of capital) does not vary with the amount of investment made. It signifies that the firm has access to an unlimited amount of capital at the current market interest rate. In other words, the firm's funding is extremely elastic. At the current market interest rate, the corporation cannot have a limitless supply of cash at any time. As more cash is required for investment expenditure, interest rates rise. The company may borrow money from the market at any interest rate to finance investment expenditures (Jhingan, 2016).

B) Flexible Accelerator Theory

The accelerator model is represented more broadly by the model. The fundamental idea behind this model is that a company's investment rate increases with the size of the gap between its present and desired capital stock. The theory makes the assumption that businesses do not instantly convert their current capital stock to the intended capital stock because of uncertainty and other cost increases. Instead, businesses progressively adjust their capital levels in an effort to restore the ideal capital-output ratio. Therefore, the difference between the desired and present capital stock determines investment. The greater the gap, the higher the firm's rate of investment as it tries to close it in each cycle. As a result, the equation for net investment can be expressed as I = (K* -K-1), where I stands for net investment, K* for ideal capital stock, K-1 for the capital stock from the prior period, and is the partial adjustment coefficient, which shows the speed at which the gap between K and K-1 can be closed. The gap between the desired capital stock and the actual stock shrinks more quickly when the coefficient of adjustment is high. An additional variation of accelerator theory is the neo-classical approach to investing. According to the idea, output and the user cost of capital—which is influenced by the tax system, capital goods prices, depreciation rate, and real interest rate—are proportionate to the intended capital stock. Therefore, the primary factors influencing investment are production levels and consumer cost of capital. Production and the consumer cost of capital are proportionate to the ideal or intended capital stock.

According to the neoclassical view, the company reaches an equilibrium level of capital stock when the marginal value product of capital equals its user expense. A flawless capital market and little government intervention are prerequisites for the neoclassical investment model. The problem with the neoclassical model, however, is that it fails to rationalize the pace of investment or the shift toward the ideal capital stock.

IV. THEORETICAL FRAMEWORK AND RESEARCH METHODOLOGY

A) Theoretical Framework

The study is based on the Flexible Accelerator Theory. Koyck's approach to the flexible accelerator assumes that the actual capital stock depends on all past output levels with weights declining geometrically, and hence, the equation for capital is given as:

$$K_t = v(1-\lambda)(Y_t + \lambda Y_{t-1} + \lambda^2 Y_{t-2} + ...\lambda^n Y_{t-n}) \quad (1)$$

where $0 < \lambda < 1$, if there is no change in income and is equal to $\bar{Y}$, the expected volume of output also remains unchanged, then

$$\bar{K} = v(1-\lambda)(\bar{Y} + \lambda\bar{Y} + \lambda^2\bar{Y} + ...\lambda^n\bar{Y}) = v(1-\lambda)\bar{Y}(1+\lambda+\lambda^2+...\lambda^n) \quad (2)$$

Where $(1+\lambda+\lambda^2+...\lambda^n) = \frac{1}{(1-\lambda)}$ are the weight in geometric series and equation (2) becomes $\bar{K} = v\bar{Y}(1-\lambda)\left[\frac{1}{(1-\lambda)}\right]$

OR $K = v$: if equation(1) is valid, then K_{t-1} is also true. Hence, we can rewrite equation (1) as:

$$K_{t-1} = v(1-\lambda)(Y_{t-1} + \lambda^2 Y_{t-2} + \lambda^3 Y_{t-3} + ... + \lambda^n Y_{t-n}) \quad (3)$$

Multiplying by λ , we have

$$\lambda K_{t-1} = v(1-\lambda)(\lambda Y_{t-1} + \lambda^2 Y_{t-2} + \lambda^3 Y_{t-3} + ... + \lambda^{n-1} Y_{t-n}) \quad (4)$$

Subtracting equation (4) from equation (1), we obtain:

$$K_t - \lambda K_{t-1} = v(1-\lambda)(Y_t + \lambda^{n-1} Y_{t-n})$$

Since the term λ^{n-1} tends to zero, the above equation becomes:

$$K_t - \lambda K_{t-1} = (1-\lambda)vY_t \quad \text{OR} \quad K_t = (1-\lambda)vY_t + \lambda K_{t-1} \quad (5)$$

This process of rewriting equation (1) as equation (5) is known as the *Koyck transformation.* Net investment is the change in the stock of capital, $K^*_t - K^*_{t-1}$. Therefore, subtract K^*_{t-1} from both sides of the equation to get the expression net investment.

$$K_t - K_{t-1} = (1-\lambda)vY_t + \lambda K_{t-1} - K_{t-1}$$

$$I_m = (1-\lambda)vY_t + K_{t-1}(\lambda - 1) \quad \text{OR}$$

$$I_m = (1-\lambda)vY_t + (\lambda - 1)K_{t-1} \quad (6)$$

The net investment $(K_t - K_{t-1})$ is called the distributed lag accelerator which is inversely related to the capital stock of the previous period and is positively related to the output level. To convert net investment to gross investment, depreciation is added to both sides of equation (6) to obtain:

$$I_m + D_t = I_{gt} = (1-\lambda)vY_t + (\lambda - 1)K_{t-1} + D_t \quad (7)$$

Depreciation (denoted as D_t) is assumed to be proportional to last year's capital stock and assumed by estimation as ($D_t = \delta K_{t-1}$). By adding ($D_t = \delta K_{t-1}$) to equation (7) to become:

$$I_{gt} = (1-\lambda)vY_t - (\lambda - 1)K_{t-1} + \delta K_{t-1} = (1-\lambda)vY_t' - [(\lambda - 1) + \delta]K_{t-1} = (1-\lambda)vY_t' - (1-\lambda\delta)K_{t-1} \quad (8)$$

Equation (8) represents the flexible accelerator or stock adjustment principle, which suggests that net investment is some fraction of the difference between planned capital stock and actual capital stock in the previous period while the coefficient $(1-\lambda)$ suggests the speed at which adjustment takes place such that if $\lambda = 0$, then adjustment takes place in the unit period given that: $(1-\lambda = 1-0 = 1)$.

B) Model Specification

Considering the above theoretical framework, the study adapts the model of Iheonu, Asongu, Odo and Ojiem (2020) that relates investment to macroeconomic fundamentals in order to establish the impact of macroeconomic fundamentals on domestic private investment.

$$DPI_i = f(INTR_{it}, EXR_{it}, INFR_{it}, TCPS_{it}, MS_{it}, GDP_{it}) \quad (9)$$

$$DPI_{it} = \beta_{0it} + \beta_{1it}INTR_{it} + \beta_{2it}EXR_{it} + \beta_{3it}INFR_{it} + \beta_{4it}TCPS_{it} + \beta_{5it}MS_{it} + \beta_{6it}GDP_{it} + \varepsilon_{it} \quad (10)$$

Where;

DPI_{it} = Domestic Private Investment for country *i* at time *t*.
$INTR_{it}$ = Interest Rate for country *i* at time *t*.
EXR_{it} = Exchange Rate for country *i* at time *t*.
$INFR_{it}$,= Inflation Rate for country *i* at time *t*
$TCPS_{it}$ = Total Credit to Private Sector for country *i* at time *t*.
MS_{it} = Money Supply for country *i* at time *t*.
GDP_{it} = Gross Domestic Product for country *i* at time *t*.
ε_{it} = Error term of country *i* at time *t*.

A Priori expectation: $\beta_{1it} - \beta_{3it} < 0$ while $\beta_{4it} - \beta_{6it} > 0$

V. PRESENTATION AND ANALYSIS OF EMPIRICAL RESULTS

A panel regression is used for 4 selected countries, including Nigeria, Ghana, Gambia and Cote D'Ivoire in ECOWAS. Data for the regression covers the period 1986-2022. Some data were taken in their natural logs. Hausman test results justified the preference for the fixed effect method. There were 148 panel observations.

Table 1: Summary of Results of Unit Root Tests (Im, Pesaran and Shin W-stat)

Null Hypothesis: Unit root (individual unit root process)								
Series: TCPS, INTR, EXR, INTR, GDP, MS, DPI								
Method: Im, Pesaran and Shin W-stat								
** Probabilities are computed assuming asympotic normality								
Intermediate ADF test results								
Series	**t-Statistics**	**Critical Value**	**Prob.**	**E(t)**	**E(Var)**	**Order of integration**	**Max. Lag**	**Obs**
DPI	8.10466	2.1433	1.000	-1.520	0.817	I(0)	1	35
GDP	11.0343	3.4674	1.000	-1.520	0.817	I(0)	1	35
INFR	-4.67759	-3.6335	0.000	-1.520	0.817	I(0)	1	35
D(INTR)	-6.21978	-4.8046	0.000	-2.175	0.715	I(1)	1	34
MS	11.7739	3.8016	1.000	-1.520	0.817	I(0)	1	35
D(EXR)	-5.57811	-4.5333	0.000	-2.175	0.715	I(1)	1	34
D(TCPS)	-5.03646	-4.3043	0.000	-2.175	0.715	I(1)	1	34

Source: Author's Computation, 2024, using EViews 10.

From Table 1, the results confirm that Domestic Private Investment (DPI), Economic Growth (GDP) and money supply (MS) are stationary at the level and could be considered as integrated of order zero, i.e. I(0). On the other hand, total credit to the private sector is confirmed to be nonstationary at the first level but at the first difference and thus could be considered as integrated of order one, i.e. I(1) with statistical significance at one percent.

Hausman's test was conducted to evaluate and choose the relative better effects between the fixed effects and the random effects estimation method. The test results justified the preference for the fixed effects method. The results are presented in Table 1a of the appendix. The test for the cointegration of the explanatory variable is contained in Table 1b of the appendix. The result shows that the variables are cointegrated in the long run.

Table 2: Descriptive Statistics of Domestic Private Investment and Macroeconomic Fundamentals

	LNTCPS	INTR	EXR	INFR	LNGDP	LNMS	LNDPI
Mean	2.346128	18.36021	114.4491	13.08969	26.64998	25.12024	21.71758
Median	2.351915	19.08583	100.0000	8.625734	26.64705	25.00088	21.65100
Maximum	3.635981	45.00000	273.0093	72.83550	32.94109	31.58601	30.02560
Minimum	1.143994	2.500000	49.77629	-1.106863	17.75006	15.74866	15.37443
Std. Dev.	0.516759	10.22233	43.60454	13.93314	3.973533	3.992816	4.729378
Skewness	0.179122	0.057687	1.550061	2.030387	-0.263652	-0.304043	0.202483

Kurtosis	3.122598	2.421650	4.862984	7.061260	1.947528	2.112604	1.743775
Jarque-Bera	0.884111	2.144767	80.66900	203.3996	8.545437	7.136320	10.74295
Probability	0.642714	0.342192	0.000000	0.000000	0.013944	0.028208	0.004647
Sum	347.2269	2717.312	16938.47	1937.274	3944.197	3717.796	3214.201
Sum Sq. Dev.	39.25485	15360.90	279499.4	28537.48	2320.977	2343.559	3287.952
Observations	148	148	148	148	148	148	148
Cross sections	4	4	4	4	4	4	4

Source: Author's Computation, 2024, using EViews 10.

Table 2 presents the descriptive statistics for the model of domestic private investment and macroeconomic fundamentals. The statistics reveal that the average growth of domestic private investment dropped to a low of 15 percent, accompanied by moderate volatility as reflected by the magnitude of the standard deviation. Similarly, during this period, the growth of the economy of ECOWAS countries declined in tandem to a low of 18 percent from an average growth rate of 27 percent. Interest rates during this period went high to a maximum of 45 percent with corresponding high volatility. In tandem with the interest rate, the exchange rate drastically depreciated to a maximum 273 cross rate from an average of 114 to US$1 with disturbing high volatility as reflected by the magnitude of the standard deviation. During this period, the inflation rate rose at an average of 13 percent annually, and the highest growth rate was recorded, followed by the exchange rate. Money supply growth was fairly stable and growing at an average of 25 percent annually. Total credit to the private sector grew at an average low level of 2 percent per annum and dropped to an abysmally low level of one percent. Following the command of the standard deviation, the series-TCPS, INTR, EXR, INFR, and DPI statistically deviate from their mean values. While the series- TCPS, INTR, EXR, and INFR are positively skewed, GDP and MS are negatively skewed. The estimates of domestic private investment with common intercept are presented in Table 2a of the appendix. The outcome, however, is not sensible and, therefore, has not been reported for pedagogy.

Table 3: Fixed Effect Panel Regression Results with Domestic Private Investment as Dependent Variable (DPI)

Dependent Variable: LNDPI				
Method: Pooled Least Squares				
Sample: 1986 2022				
Included observations: 37				
Cross-sections included: 4				
Total pool (balanced) observations: 148				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
C	4.206808	2.031869	2.070413	0.0403
LNGDP	1.067552	0.350271	3.047785	0.0028
INTR	-0.029967	0.017325	-1.729738	0.0859
EXR	-0.011491	0.002330	-4.930745	0.0000
INFR	0.011137	0.007384	1.508260	0.1338
LNMS	-0.364353	0.336227	-1.083652	0.2804
LNTCPS	-0.028671	0.263486	-0.108816	0.9135
Fixed Effects (Cross)				
_GHA—C	2.108456			
_GMB—C	2.647986			
_CIV—C	3.673867			
_NGA—C	-8.430309			
R-squared	0.866416			
Adjusted R-squared	0.864226			
F-statistic	441.2390	Durbin-Watson stat		2.200799
Prob(F-statistic)	0.000000			

Source: Author's Computation, 2024, using EViews 10

Table 3 presents the results of the standard reduced form of the domestic private investment equation. The dependent variable is the aggregate domestic private investment. Table 3 reveals that interest rates and exchange rates negatively affect domestic private investment in ECOWAS countries. The exchange and interest rates are statistically significant at a one percent level. Money supply and total credit to the private sector are other variables negatively signed but not statistically significant in explaining variation in aggregate domestic private investment in the ECOWAS countries. On the other hand, economic growth and inflation positively affect domestic private investment, implying that an increase in any or both variables would raise

domestic private investment in the countries. The coefficient of determination of economic growth and inflation are statistically significant at one percent and 10 percent level, respectively.

The negative effect of money supply on domestic private investment is an indication of an inefficient bank intermediation role in the financial system of the countries. This position is corroborated by the effect of total domestic credit to the private sector on domestic private investment. The puzzling result is that total credit to the private sector is negatively signed contrary to expectation. The estimate is statistically insignificant, indicating that the banks are unable to transform deposits to enhance domestic private investment, suggestive of crowding out of the private sector investors (Iheonu et al., 2020). The results appear reasonable, with 86 percent of the variance the adjusted R-Squared indicates. There is no strong evidence of serial dependence in the model, as indicated by the Durbin-Watson statistic.

The results of the random effects estimation are presented in Table 3a of the appendix. Therefore, the outcome is not sensible and has not been reported to avoid irrelevance.

VI. CONCLUSION

The impact of macroeconomic fundamentals on domestic private investment has been examined. The panel regression results indicate that macroeconomic fundamentals such as interest rate, inflation exchange, money supply and domestic credit to the private sector have a causal relationship with domestic private investment during the period 1986-2022. Based on the results, improving on most of the macroeconomic fundamentals in ECOWAS countries is imperative. This includes the correction of macroeconomic imbalances, particularly those exacerbated by exchange rate fluctuation and interest rate instability. To facilitate high domestic private investment in ECOWAS countries would depend on the stability of the macroeconomic policies consistent with stable and low interest rates, inflation and exchange rates.

VII. REFERENCES

[1] Ababio O.J., Aboagye O.U.A., Barnor C. & Agyei K.S. (2020). Foreign and Domestic Private Investment in Developing and Emerging Economies: *A review of Literature Cogent Economies & Finance. Vol 10, 2022 – Issue.*

[2] Abdullahi, K. (2022) Monetary Policy Impact on Private Sector Performance in Nigeria. *Journal of Economics and Allied Research* Volume.7.Issue 3 (September, 2022) 536 to 7447.

[3] Adenuga, A.O. (2020). Time series analysis of interest rate on investment in Nigeria. *Nile Journal of Business and Economics (NileJBE), 14:* 52-79.

[4] Afful, L.S., & Kamasa (2020). Interest rate and its threshold effect on private investment: Evidence from Ghana. *African Journal of Economic Review, Vol. VIII,* Issue II, July.

[5] Akinlo, E.A., & Onatunji, G.O. (2020). Exchange volatility and domestic investment: Evidence from twelve ECOWAS countries. *AJER African Journal of Economic Review, Vol. VIII,* Issue II, July.

[6] Awad, M.I., Al-Jerashi, K.G., & Alabaddi (2021). Determinants of private domestic investment in Palestine: Time series analysis. *Journal of Business and Social Economic Development.*

[7] Ayeni R.K (2020) Determinants of Private Sector Investment in a Less Developed Country, *A case of the Gambia Cogent Economics and Finance.* ISSN 23322039, Taylor & Francis. Abingdon Vol.8 1ssue 1 PP 1-11 https.//doi.org/1080/23322039.2020.1794279

[8] Ayeni, R.K. (2014). Macroeconomic determinants of private sector investment: An ARDL approach; Evidence from Nigeria. *Global Advanced Research Journal of Management and Business Studies, 3*(2): 082-089.

[9] Berko, D., Hammond, P., & Amissah, E. (2022). The effect of interest rate spread on economic growth: Ghana's perspective. *International Journal of Business and Management Review, Vol. 10,* No. 2, pp. 1-24.

[10] Brima, S., & Brima, S.A. (2017). Monetary policy effects on private sector investment: Evidence from Sierra Leone. *International Journal of Economics and Finance, 7,* 476-488.

[11] Charles F.B, & Okoro U.C (2019) Macroeconomic variables and private investment: *A Two-Dimensional Study from Nigeria's Economy.* American International Journal of Business and Management Studies. Vol.1, No.1; 2019. Published by American Cent of Science and Education, USA.

[12] Chebet S. & Muriu W.P (2016) Factors Influencing the Demand for Credit by Private Sector in Kenya. *European Scientific Journal, June 2016 edition,* Vol. 12, No 16 ISSN. 1857-7881 (print) e- ISSN 1857 – 7431.

[13] Davis, O., & Emerenini, F.M. (2015). Impact of interest rate on investment in Nigeria. *Developing Country Studies, 5*(3): 103-109.

[14] Ejedegba, R.U. (2022). Macroeconomic Instability, Policy Uncertainty, and Investment Performance: The case of Nigeria. International Review of Economics & Finance, 83(9), 1-17.

[15] Ejedegba, R. U. (2022). Fiscal Deficit, Policy Making and Economic Growth in Nigeria. *Journal of International Review of Economics and Finance, Vol.81(7),1-22, Elsevier*

[16] Eshun, M.E., Adu, G., & Buabeng, E. (2014). The financial determinants of private investment in Ghana. *Munich Personal RePEC Acrchive (MPRA). African Centre for Economic Transformation, Kwame Nkrumah University of Science and Technology.*

[17] Foday, J., & Jallow, O. (2020). The impact of interest rate and inflation on the exchange rate of the Gambia. *International Journal of Economics, Commerce and Management, Vol. VIII,* Issue 1, January.

[18] Frimpong, M.J. & Marbuah, G. (2010). The determinants of private sector investment in Ghana: An ARDL approach. *Article in European Journal of Social Sciences, Vol. 15,* No. 2.

[19] Hess, R. (2000). *Constraints on foreign direct investment. In gaining from trade in Southern Africa* (pp. 89-101). London: Palgrave Macmillan.

[20] Iheonu O.C, Asongu A.S, Odo O.K & Ojeim K.P (2020) Financial Sector Development and Investment in Selected ECOWAS Countries: *Empirical Evidence using Heterogeneous Panel Data Method. African Governance and Development Research Department.* WP/20/045

[21] Jhingan, M.L. (2016). *Macroeconomic theory* (13th edition). Delhi-India: Vrinda Publications (P) Ltd.

[22] Korsu, R.D., & Tamuke, E. (2023). Bank credit, private investment and macroeconomic uncertainty in Sierra Leone. *MPRA Munich Personal RePEc Archive.*

[23] Leshoro, L.A.T., & Wabiga, P. (2023). The asymmetric effects of interest rates on private investment in South Africa. *ECONOMICA AUDOE, Vol. 19*, No. 3, pp. 161-182.
[24] Matwanga, F.L. (2020) Determinants and Constraints to Private Investment; The Case Study of Kenyan African Institute for Economic Development and Planning (IDEP)
[25] Mohsen, S.A. (2022). Determinants of investments: A case study of Cote D'Ivoire. *Press Academia Journal of Business, Economics and Finance, Vol. 11*, Issue 4, pp. 153-160.
[26] Moses N. Jepchumba I., & Ovru L. (2020) Macroeconomic Determinants of Domestic Private Investment Behaviour. African Journal of Economics and Sustainable Development. ISSN. 2689 – 5080 Vol.3 Issue 2. 2020 (Pp 30-37)
[27] Ngoma, G., Bonga, G.W., & Nyoni, T. (2019). Macroeconomic determinants of private investment in Sub-Saharan Africa. *Dynamic Research Journals (DRJ), Journal of Economics and Finance (DRJ-JEF), Vol. 4,* Issue 3, October, pp. 01-08. ISSN (Online) 2520-7490.
[28] Ntie, M., & Badjie, M. (2021). The effects of interest rate on economic growth: Further insights from the Gambia. *Academic Journal of Economics and International Finance, Vol. 13*, No. 2, April, pp. 100-105.
[29] Nwankwo & Allison (2021) Effect of Macroeconomic Determinants on Private Sector Investments in Nigeria, 1986-2020. *Contemporary Journal of Management | ISSN 2766-1431,* Published by ACADEMIC INK REVIEW | https://airjournal.org/cjm 12011 WestBrae Pkwy, Houston, TX 77031, United States
[30] Okorie & Chikwendu F.N. (2019) Does private sector Credit impact on private investment in
[31] Nigeria? *International Journal of research and scientific Innovations (IJRSI) 6(12. December 2019 | ISSN 2321-2705*
[32] Utile, B.J., Okwori, A.D., & Ikpambebe (2018). Effect of interest rate on economic growth in Nigeria. *International Journal of Advanced Academic Research, Social and Management Science, 4*(1).
[33] Wanjuru M., Muturi W. & Njeru A. (2015). Money Supply, Inflation Rate, Exchange Rate, and Growth of Domestic Private Investment in Kenya. *International Journal of Sciences: Basic and Applied Research* (IJSBAR). ISSN 2307 – 4531 (Print & online).

[34] APPENDIX

Table 1a: Hausman Test

Correlated Random Effects - Hausman Test				
Pool: POOL01				
Test period random effects				
Test Summary		Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Period random		15.046191	6	0.0199
** WARNING: The estimated period random effects variance is zero.				
Period random effects test comparisons:				
Variable	Fixed	Random	Var(Diff.)	Prob.
LNGDP?	1.524717	1.293460	0.030976	0.1889
INTR?	-0.042365	-0.024461	0.000111	0.0894
EXR?	-0.017165	-0.013685	0.000002	0.0103
INFR?	0.023553	0.018427	0.000033	0.3709
LNMS?	-0.885808	-0.546591	0.033290	0.0630
DTCPS?	0.021623	0.020785	0.000502	0.9702
Period random effects test equation:				
Dependent Variable: LNDPI				
Method: Panel Least Squares				
Sample (adjusted): 1987 2022				
Included observations: 36 after adjustments				
Cross-sections included: 4				
Total pool (balanced) observations: 144				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	5.757132	3.296926	1.746212	0.0839
LNGDP?	1.524717	0.339428	4.492015	0.0000
INTR?	-0.042365	0.019917	-2.127139	0.0359
EXR?	-0.017165	0.002677	-6.412765	0.0000
INFR?	0.023553	0.009781	2.408070	0.0179
LNMS?	-0.885808	0.319475	-2.772699	0.0066
DTCPS?	0.021623	0.042770	0.505566	0.6143
R-squared	0.976316	Mean dependent var		21.78739
Adjusted R-squared	0.965789	S.D. dependent var		4.714951
F-statistic	92.74906	Durbin-Watson stat		0.303648
Prob(F-statistic)	0.000000			

Source: *Author's Computation, 2024, using EViews 10.*

Table 1b: Cointegration Test

Pedroni Residual Cointegration Test					
Series: MS DPI GDP TCPS					
Sample: 1986 2022					
Included observations: 37					
Cross-sections included: 4					
Null Hypothesis: No cointegration					
Trend assumption: No deterministic intercept or trend					
User-specified lag length: 1					
Newey-West automatic bandwidth selection and Bartlett kernel					
Alternative hypothesis: common AR coefs. (within-dimension)					
				Weighted	
		Statistic	Prob.	Statistic	Prob.
Panel v-Statistic		-0.038181	0.5152	0.627336	0.2652
Panel rho-Statistic		-1.962337	0.0249	-1.541869	0.0616
Panel PP-Statistic		-2.476675	0.0066	-2.487356	0.0064
Panel ADF-Statistic		-1.383458	0.0833	-2.097930	0.0180
Alternative hypothesis: individual AR coefs. (between-dimension)					
		Statistic	Prob.		
Group rho-Statistic		-0.269468	0.3938		
Group PP-Statistic		-3.588093	0.0002		
Group ADF-Statistic		-3.114245	0.0009		
Cross section specific results					
Phillips-Peron results (non-parametric)					
Cross ID	AR(1)	Variance	HAC	Bandwidth	Obs
_GHA	0.331	9.33E+18	9.74E+17	35.00	36
_GMB	0.251	4.57E+18	1.55E+18	9.00	36
_CIV	0.653	3.67E+23	3.98E+23	1.00	36
_NGA	0.390	1.11E+24	1.08E+24	2.00	36
Augmented Dickey-Fuller results (parametric)					
Cross ID	AR(1)	Variance	Lag	Max lag	Obs
_GHA	0.115	8.83E+18	1	--	35
_GMB	0.067	4.45E+18	1	--	35
_CIV	0.583	3.70E+23	1	--	35
_NGA	0.424	1.13E+24	1	--	35

Source: *Author's construction, 2024.*

Table 2a: Panel Estimates of Domestic Private Investment (DPI) with Common Intercept.

Dependent Variable: LNDPI?				
Method: Pooled Least Squares				
Sample (adjusted): 1987 2022				
Included observations: 36 after adjustments				
Cross-sections included: 4				
Total pool (balanced) observations: 144				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNGDP?	-1.559059	1.158379	-1.345897	0.1805
INTR?	0.054284	0.043790	1.239634	0.2172
EXR?	0.022559	0.011063	2.039146	0.0433
INFR?	-0.083879	0.035669	-2.351587	0.0201
LNMS?	2.407987	1.196007	2.013355	0.0460
DTCPS?	-0.268084	0.199659	-1.342709	0.1816
R-squared	-0.052533	Mean dependent var		21.78739

Adjusted R-squared	-0.090668	S.D. dependent var	4.714951
S.E. of regression	4.924062	Akaike info criterion	6.066918
Sum squared resid	3346.001	Schwarz criterion	6.190660
Log likelihood	-430.8181	Hannan-Quinn criter.	6.117200
Durbin-Watson stat	0.054063		

Source: *Author's Computation, 2024, using EViews 10.*

Table 3a: Random Effect Estimates

Dependent Variable: LNDPI?				
Method: Pooled EGLS (Period random effects)				
Sample (adjusted): 1987 2022				
Included observations: 36 after adjustments				
Cross-sections included: 4				
Total pool (balanced) observations: 144				
Swamy and Arora estimator of component variances				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	50.30284	3.355496	14.99118	0.0000
LNGDP?	-3.553738	0.734517	-4.838199	0.0000
INTR?	-0.336174	0.037737	-8.908319	0.0000
EXR?	-0.020973	0.007485	-2.802009	0.0058
INFR?	-0.093559	0.022253	-4.204368	0.0000
LNMS?	3.024104	0.746961	4.048544	0.0001
DTCPS?	-0.188437	0.124621	-1.512083	0.1328
Random Effects (Period)				
	Effects Specification			
			S.D.	Rho
Period random			0.000000	0.0000
Idiosyncratic random			3.070643	1.0000
	Weighted Statistics			
R-squared	0.614028	Mean dependent var		21.78739
Adjusted R-squared	0.597124	S.D. dependent var		4.714951
S.E. of regression	2.992698	Sum squared resid		1227.005
F-statistic	36.32467	Durbin-Watson stat		0.382610
Prob(F-statistic)	0.000000			
	Unweighted Statistics			
R-squared	0.614028	Mean dependent var		21.78739
Sum squared resid	1227.005	Durbin-Watson stat		0.382610

Source: *Author's Computation, 2024, using EViews 10.*