NEAR EAST UNIVERSITY

INSTITUTE OF GRADUATE STUDIES

DEPARTMENT OF BANKING AND FINANCE

THE IMPACT OF FOREIGN DIRECT INVESTMENT ON

ECONOMIC GROWTH IN GHANA (1990–2019)

MSc. THESIS

DANIEL SAAH

Nicosia

JUNE, 2022

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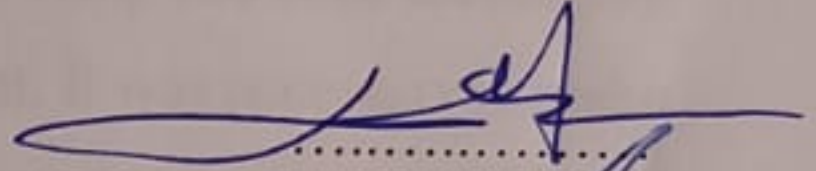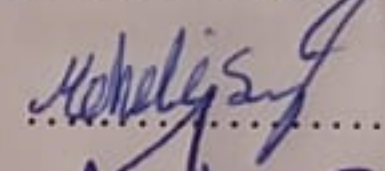**Vice Chairmen Banking and Finance Department.**
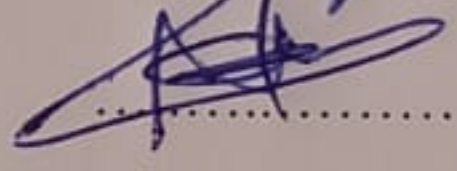
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Approval

This thesis, "THE IMPACT OF FOREIGN DIRECT INVESTMENT ON ECONOMIC GROWTH IN GHANA (1990-2019)," was submitted by DANIEL SAAH, and we confirm that it meets all of the requirements for the Master of Social Sciences degree, both in scope and quality.

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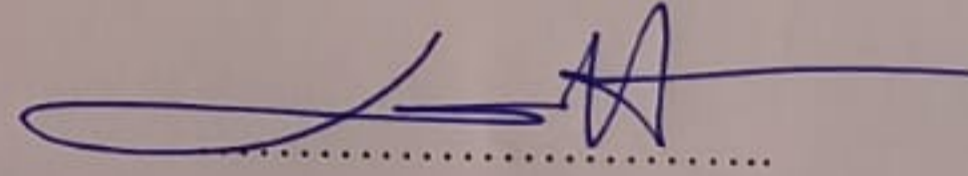
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Declaration

It is my firm belief that all of the material, papers, analysis, and results provided in this thesis were obtained and presented in compliance with the academic standards and ethical principles of the Institute of Graduate Studies at Near East University. My formal status as a graduate student at Near East University is shown by the fact that I have signed this certification. This work adheres to these principles and standards of conduct, and any material or data that is not unique to this study has been thoroughly cited or referenced. I'm the one that has to take care of them. It was necessary to make this declaration in order to comply with the requirements of these regulations and behave in an acceptable way.

DANIEL SAAH

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I am forever grateful to the Almighty God, the Source and Sustainer of my life for His grace that has kept me till now. I could not have done this thesis without His enablement.

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List Of Abbreviation

ADF: Augmented Dickey-Fuller

ARDL: Autoregressive Distributed Lag

CPI: Consumer Price Index

ECM: Error Correction Model

ERSAP: Economic Recovery and Structural Adjustment Program

ERP: Economic Recovery Program

FDI: Foreign Direct Investment

GDP: Gross Domestic Product

HIPC: Highly Indebted Poor Countries

IMF: International Monetary Fund

OLS: Ordinary Least Squares

PP: Philip Perron

REER: Real Effective Exchange Rate

SUR: Seemingly Unrelated Regression

UNCTAD: United Nations Conference for Trade And Development

VAR: Vector Autoregressive VAT Value Added Tax

WAIPA: World Association of Investment Promotion Agencies

WIR: World Investment Report

The Impact of Foreign Direct Investment on Economic Growth in Ghana.

Abstract

This thesis examines the relationship between foreign direct investment and economic growth in Ghana for the period 1990-2019, using secondary data derived from World Bank Indicators. The procedures of Augmented Dickey-Fuller and Philips-Perron were employed to ensure that the unit root of the series was adequately tested. While employing yearly time series data from 1990 to 2019, the thesis used an ARDL model with a bound testing technique rather than the more traditional Johansen co-integration analysis in order to capture both long-run co-integration and short-run dynamics of the connections. In both the long and short run, the findings of the co-integration tests indicated that foreign direct investment had a positive and complementary effect on economic growth in Ghana. In this thesis, the following aims are explored: how the foreign direct investment works; how economic growth has changed; and how foreign direct investment has worked in the past. to investigate the relationship between foreign direct investment and economic growth in Ghana; to determine the impact of foreign direct investment on the Ghanaian economy; to investigate the inflows of foreign direct investment into Ghana, and to make recommendations for increasing foreign direct investment in Ghana. Because the corresponding p-values of the t-statistic are less than 5 percent, we can conclude that the independent variables FDI, Inflation, and Exchange Rate are all significant in explaining GDP in Ghana. As a result, the independent variables FDI, Inflation, and Exchange Rate all have an impact on GDP in Ghana. These results have a wide range of practical ramifications for policymakers, government officials, and financial investors.

Key Words: FDI, GDP, Inflation, Economic growth, Ghana

Doğrudan Yabancı Yatırımın Gana'daki Ekonomik Büyüme Üzerindeki Etkisi.

özet

Bu tez, Dünya Bankası Göstergelerinden elde edilen ikincil verileri kullanarak 1990-2019 dönemi için Gana'da doğrudan yabancı yatırım ve ekonomik büyüme arasındaki ilişkiyi incelemektedir. Serinin birim kökünün yeterince test edilmesini sağlamak için Artırılmış Dickey-Fuller ve Philips-Perron prosedürleri kullanıldı. Tez, 1990'dan 2019'a kadar yıllık zaman serisi verilerini kullanırken, hem uzun vadeli eş bütünleşmeyi hem de bağlantılar. Hem uzun hem de kısa vadede, eş bütünleşme testlerinin bulguları, doğrudan yabancı yatırımın Gana'daki ekonomik büyüme üzerinde olumlu ve tamamlayıcı bir etkiye sahip olduğunu göstermiştir. Bu tezde, şu amaçlar araştırılmaktadır: doğrudan yabancı yatırımın nasıl çalıştığı; ekonomik büyümenin nasıl değiştiği; ve geçmişte doğrudan yabancı yatırımın nasıl çalıştığı. Gana'da doğrudan yabancı yatırım ve ekonomik büyüme arasındaki ilişkiyi araştırmak; doğrudan yabancı yatırımın Gana ekonomisi üzerindeki etkisini belirlemek; Gana'ya doğrudan yabancı yatırım girişlerini araştırmak ve Gana'da doğrudan yabancı yatırımı artırmak için önerilerde bulunmak. T istatistiğinin karşılık gelen p değerleri yüzde 5'ten az olduğu için, bağımsız değişkenlerin DYY, Enflasyon ve Döviz Kurunun Gana'da GSYİH'yi açıklamada önemli olduğu sonucuna varabiliriz. Sonuç olarak, bağımsız değişkenler DYY, Enflasyon ve Döviz Kuru, Gana'da GSYİH üzerinde bir etkiye sahiptir. Bu sonuçların politika yapıcılar, hükümet yetkilileri ve finansal yatırımcılar için çok çeşitli pratik sonuçları vardır.

Anahtar Kelimeler: DYY, GSYİH, Enflasyon, Ekonomik büyüme, Gana

CHAPTER ONE

1.1 Introduction

For decades, foreign direct investment (FDI) has been a significant source of economic growth and development. Much research has been conducted in both developing and developed nations to investigate the numerous elements that impact economic development (Akinlo, 2004). Many prominent economists and politicians are now interested in studying the impact of FDI on economic growth as a consequence of the dramatic rise in FDI over the previous decade. The majority of countries that have received FDI have had a favorable impact on economic growth as a result of empirical research. The key advantages include spillover knowledge such as capital packages, technical capabilities, management and organizational know-how, and so on (Astatike & Assefa, 2005). In 1996, Balasubramanyam and his colleagues started conducting research to better understand the significance of foreign direct investment in developing countries' economic development. Cross-sectional data and OLS regressions are used. According to his research, host nations with an export-oriented strategy benefit from foreign direct investment (FDI), while those with an import-substitution plan don't. In a comparative study, Olofsdotter (1998) compared the two alternatives. Cross-sectional data shows that a rise in FDI stock is positively linked to growth and that the benefit is larger for host nations with a better level of institutional competence, as defined by the degree of property rights protection and bureaucratic efficiency in the host country. FDI is crucial for developing nations because it gives them access to resources and technology that they would not otherwise have.

For rising nations, the dynamic role of FDI as an economic engine is becoming more critical. International FDI into poor nations has surged since 2006, according to the World Bank (World Bank, 2007), when it hit an all-time high of $1.1 trillion. As an important source of finance for development, in the receiving nation, FDI enhances the overall amount of investment while also boosting productivity through improving management and technology. It thus adds to GDP growth. In addition, foreign direct investment may harm the host economy in a variety of ways, such as when foreign enterprises take up

scarce resources or limit investment prospects for local businesses. A recent study by Herzer et al. (2006) and Mellow et al. Several studies have shown that a person's genetics may affect how well they do on a test. As a result, both developed and developing countries have produced substantial research evidence on the connection between FDI and economic development (Mello, 1997, 1999). A thorough examination of all factors, including growth and FDI as well as the engagement of TNCs in host countries, has been completed.

The relationship between FDI and economic development has been the topic of several studies. Despite this, empirical evidence in support of nation-groupings has been erratic at best. FDI and growth have long been thought to be linked, however recent research questions this long-held notion (Kholdy, 1995). Therefore, fresh research has been performed to evaluate the likelihood of a bidirectional or nonexistent causal relationship between FDI and growth.

Several studies have shown a connection between the pace of FDI-induced economic growth and the existence of a certain economic profile in the receiving country. A country-specific study, according to Chowdhury and Mavrotas (2005), should be carried out to assess the causal links between FDI and economic development. Because of Ghana's problematic economic background and the persistence of historically high inflation, the idea that high and irregular inflation might harm the country's economic growth has some truth. The argument has some sway because of these considerations (Kwakye, 1981). Friedman (1980) argues that a country's financial system might implode if it allows its inflation to continue unchecked. Inflation is a dreadful and deadly disease that may lead to a country's demise, as Friedman correctly predicted.

Inflation's harmful implications need a determined effort to control it. Simultaneously, the possibility of economic expansion is tempting and alluring. In Ghana, one of the most significant measures to manage inflation and attract FDI to drive development was the Economic Recovery and Structural Adjustment Program (ERSAP) was established in 1983 and put into effect the following year. Acquiring a new urgency in the battle against inflation and economic development, Ghana's central bank adopted inflation targeting in

2007. That low inflation would attract foreign investment and lead to higher economic development was the premise for this policy's creation. Macroeconomists are still concerned about the causality of the link between inflation, FDI, and GDP, as can be shown from a wide range of empirical evidence. This fear is based on research that investigates a broad range of nations. These three critical macroeconomic factors are unable to reach an agreement on how they should interact. As a consequence, the nature of the connection is highly determined by the structure of the economy. As a consequence, the outcomes of any empirical investigation seem to resist any effort at generalization (Bruno and Easterly, 1996).

Foreign direct investment (FDI) in emerging markets has increased significantly in recent years as a consequence of financial and political developments in the area. The majority of countries have taken steps to increase their share of FDI inflows, including easing restrictions on FDI and improving macroeconomic stability; privatizing public enterprises; enacting domestic financial reforms; liberalizing the capital account; and providing tax incentives and subsidies. As an example, Ghana, for example, has implemented special tax incentives and investor protection measures through the Ghana Investment Promotion Act of 1994 and the Ghana Free Zones Act of 1995, both of which were passed in 1995, in order to attract international investors and to create an environment conducive to their operations. In addition to growing foreign direct investment, Ghana's policies and actions have contributed to the country's economic growth.

Ghana's economic reforms and opening-up policies are targeted at attracting foreign direct investment (FDI). Global reformers, including the World Bank's Doing Business team, indicate that Ghana's successive governments have introduced laws to enhance the business environment and investment conditions in order to attract foreign direct investment (FDI). Global investment data from the World Investment Report 2008 show that Ghana's foreign direct investment (FDI) shares more than doubled from 2005 to $636 million in 2006, accounting for 19.4 percent of total fixed capital creation (WIR). Several international events, including the 2008 Africa Cup of Nations, United Nations Conference on Trade and Development XII (United Nations Conference on Trade and

Development), and the WAIPA (World Association of Investment Promotion Agencies) sessions, brought Ghana considerable international attention in 2008. This emphasis comes at a time when the country's GDP is rapidly expanding and foreign direct investment (FDI) inflows are substantially increasing (World Bank, 2008). In addition to providing money, foreign direct investment (FDI) is a significant source of cutting-edge technological innovation. It would be hard to obtain this money from local savings, and even if it did, importing the necessary technology from outside would be difficult since transferring technology to organizations that have never used it before is complicated, dangerous, and expensive.

More crucially, human capital development and educational advances in host nations are vital not just for absorbing and adapting foreign technology, but also for producing long-term prosperity. In other words, it is argued that the beginning circumstances of the host nation determine the productivity of foreign capital.

1.2 Statement Problem

As a developing nation, long-term economic development is a top priority for Ghana. In this way, attracting FDI would give the country more motivation to achieve sustainable economic growth. Foreign direct investment (FDI) has had a significant impact on Ghana's economic development, and this research aims to perform an empirical assessment of that impact.

Because it is still not obvious exactly how inflation impacts real economic activity or what routes it goes through, the Ghanaian government is working hard to keep inflation under control in order to attract FDI and foster long-term development in Ghana. This is done to help Ghana's long-term progress. Fiscal and monetary reforms were achieved despite the global financial crisis, which resulted in inflation being below 10 percent from 2010 to 2012.

Price stability has clearly been prioritized by the Bank of Ghana since 2003, as evidenced by the decline in inflation (from 26.7 percent in 2003 to 8.7 percent in 2011) and the increase in net foreign direct investment (from US $13.7 million in 2003 to US $3.2 billion

in 2011), as well as the increase in real GDP growth (from 5.2 percent in 2003 to 14.4 percent in 2011). However, although the patterns outlined above suggest a link between inflation, foreign direct investment, and growth, they do not establish a causal relationship. As a consequence, determining whether lower inflation is to blame for Ghana's increased FDI and growth rates is challenging.

There has been no empirical study of the impact of this monetary policy on real sector activity despite the fact that this monetary strategy is likely to be the most important policy choice accessible to the nation. No matter how excellent a policy alternative it is, it isn't a sure thing (Quartey, 2010). FDI has a significant influence on Ghana's economic growth, and an empirical examination is thus necessary.

1.3 Purpose of the study

Too far, the injection of cash, technology, and managerial skills into developing nations has proved to be an important source of economic growth. We're trying to find out just how FDI affects economic growth in this country, specifically. International investment in services boosts the competitiveness of the host country by enhancing capital productivity and enabling it to attract new capital on more advantageous terms than would otherwise be achievable, as argued by Lippey et al. (2010) (Lipsey et al., 2010). With commodities and processes, as well as services that may be used in the traditional export sector to increase trade volume and improve production quality, the industry is benefiting from the outputs of this sector (Lipsey et al., 2007). Foreign direct investment (FDI) will have an influence on growth through enhancing total factor productivity and, more generally, the efficiency with which resources are employed in the receiving firm or economy, in addition to the initial macroeconomic boost from real investment, says the World Bank.

1.4 Research Questions

Accordingly, this thesis will seek to address these questions in further detail:

➢ Is there a correlation between FDI and Economic Growth in Ghana?
➢ What role does FDI play, in the Ghanaian Economy?
➢ What is the effect of FDI on Ghana's economic growth?

> ➢ What are some ways to increase foreign investment in Ghana?
>
> ➢ Is there a positive or negative correlation between foreign direct investment and economic growth?

1.5 Research Hypothesis

One of the goals of this study is to determine whether or not foreign direct investment contributes to economic development. At this step, we begin to look at the research issue in more detail. These hypotheses were then investigated using appropriate statistical and econometric techniques in accordance with the study objectives.

1.5.1 The null hypothesis:

> ➢ FDI has no effect on economic growth,
>
> ➢ FDI does not have a long-term impact on economic growth.
>
> ➢ FDI and Economic Growth are linked in a good way.

1.5.2 The alternative hypothesis:

> ➢ Economic growth is strongly linked to foreign direct investment.
>
> ➢ FDI's long-term impact on economic growth.
>
> ➢ There is a substitute link between FDI and Economic Growth

1.6 Significance of Research

Experts in international business have come to recognize that foreign direct investment (FDI) is one of the most fascinating and exciting areas of economics to research because of its attraction and intrigue. The greatest distinguishing feature of the developing world's economic system is the globalization of production, logistics, and consumption. Increasing economic interdependence has resulted in the globe reducing to the size of a global village in recent years, resulting in a global village. Foreign investment has grown in popularity in recent years as a consequence of globalization in industry and the expansion of the global economy. More than quadrupled from 2005 to 2006, FDI shares in Ghana accounted for 19.4% of total fixed capital creation, or $636 million in the 2008 World Investment Report (WIR). Foreign direct investment (FDI), according to proponents of globalization, will lead to economic growth. The study's major emphasis

will be on FDI and economic growth in developing countries. The purpose of this research is to examine the influence of foreign direct investment on economic growth. To examine the link between FDI and GDP growth, researchers utilized a statistical regression model. Government and policymakers are expected to consider foreign direct investment and economic growth as criterion for reviewing policies presently in place.

1.7 Justification of the Study

These studies will help us to better understand the dynamic link between FDI and economic growth. Foreign direct investment has a significant impact on Ghana's economic development and growth (FDI). Due to rising inflation, research on the link between FDI and economic development is very important. Before making a decision on whether or not to encourage foreign direct investment, you need to figure out which way the causation runs.

Furthermore, the bulk of research on the link between foreign direct investment and economic development is cross-national in nature, making this study particularly important. In contrast, the results of such research may not be as significant at the national level. For aggregate cross-country analysis, it is essential that inflation and foreign direct investment coefficients be consistent across nations. Because of this, questions have been raised about the sample's homogeneity in terms of political stability, structural features, and economic performance. As a result, issues have been raised concerning the validity of the sample. There was a glaring error in recent research on the dynamic relationship between growing inflation and an increase in foreign direct investment in Ghana. In certain cases, the effects that they both have are incompatible with the effects that the other one has (see Frimpong and Oteng, 2006; Antwi et al., 2013). One of a kind in terms of sample size, models utilized, and data handling, this study has all of these characteristics.

As a final point, our research will help to fill a previously identified research hole in this area. Anyone who wants to learn more about the relationship between Ghana's economy and FDI should read this report. In addition, it will act as a springboard for more investigation and data collecting.

1.8 Limitation

Despite the fact that this problem is connected to many nations, there hasn't been much study done on it. As a consequence, there isn't much information from the nation under consideration (Ghana) in the theoretical literature being studied here.

II. The findings of this study cannot be extrapolated to the whole population of Ghana since the sample size is too small.

1.9 Definition of terms

- ➢ Economic growth may be described as an increase or improvement in the market value of an economy's goods and services when the rate of inflation is taken into consideration. Statisticians commonly use the percentage rate of growth in the real gross domestic product to quantify this kind of growth. (also known as real GDP).

- ➢ Foreign direct investment (FDI) refers to a kind of international investment in which a national investor makes long-term investment and has substantial influence over a business based in a different country or economy. Direct investment from foreign countries is known as "FDI" (or simply "FDI").

- ➢ In economics, an increase in the price of goods and services in a specific economy is referred to as inflation. Each unit of currency loses purchasing power when prices increase, hence inflation is the opposite of a rise in prices.

- ➢ Exchange Rate (REER). According to current market pricing and exchange rates, the actual exchange rate measures how much one currency can be bought with another currency (REER). The exchange rate refers to the amount of currency required to buy a market basket in another country after purchasing the currency of that country on the foreign exchange market compared to the amount of currency needed to buy that market basket directly in that country.

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 Introduction

Research on FDI's impact on economic growth has been extensively covered in this chapter, which serves as a complete synthesis of the rich theoretical and empirical literature on the topic. The research's theoretical foundations were dissected in order to bring the investigation to a finish. Section 2 examines the empirical research, and Section 3 presents a summary of the findings from both the theoretical and empirical literature.

2.2 Foreign Direct Investment and Economic Growth Theories

According to endogenous growth theory, characteristics like as economies of scale, expanding returns, and inspired technical improvements that occur within the production process are the primary drivers of economic expansion.

According to endogenous growth theory, the link between foreign direct investment and economic growth was always assumed to be a two-way street. Romer (1990) and others created these prototypes. Using these models, it seems that technology advancement is the primary driver of economic development. The ideas emphasize the development and diffusion of technological knowledge, as well as innovation as important growth engines. As a result, these models emphasize human capital buildup and growth externalities. In this perspective, emerging economies' growth rates are considered as being dependent on their ability to absorb and use innovative technologies offered in more established economies. FDI, or "inward investment," is seen as the most crucial method for developing nations to gain cutting-edge technology, according to this school of thought. In general, less developed nations are unable to invent or create new types of technology. As a result, they must rely on FDI (foreign direct investment) in order to get the advanced technology that is the norm in wealthy nations. A causal linkage between FDI and economic development has been proposed in the new theories of globalization. This chain goes both ways. This is due to the idea that FDI encourages the absorption of new inputs and foreign technologies into the production function of the receiving nation. As a result of this, many people believe that foreign direct investment (FDI) improves the economy.

In addition, FDI contributes to economic growth by increasing the host country's knowledge base via the development of human resources and the provision of training opportunities. Foreign direct investment (FDI) also increases competition in the host nation by reducing entry barriers and decreasing the market power of enterprises already established there (Borensztein et al., 1998 De Mello, 1999).

In spite of this, Dowling and Hiemenz (1982) as well as Lee and Rana (1986) claim that a rise in economic growth leads to an increase in the volume of foreign direct investment (FDI) (FDI). If you believe this perspective, it's likely that high-sustained growth is a direct outcome of high capital demands in the receiving economy and hence requires more foreign investment in order to attract international investors. The rapid growth of the country that would host the investment also creates confidence in international investors contemplating making investments there. Therefore, FDI and economic development have been proved to have a positive link and have led to the establishment of bidirectional causality. FDI and economic development

2.3 Theories of Inflation and Economic Growth

It is in this part that the ideas of Keynesian and Neo-classical inflation and growth are explained.

2.3.1 The Keynesian Hypothesis

The foundations of economic theory are aggregate demand and supply research, which form the basis of the Keynesian model. An important component of this theory is that in the short future, AS curves are not vertical but rather upward. That's one of the most important components of this idea. Prices are only affected when the AS curve is vertical, which indicates that demand shocks have had no influence on the economy. Although Dornbusch et al. Despite the fact that the AS curve's upward sloping nature implies that changes in demand may now lead to adjustments in price and production, the data does not support this. (1996) Because of the AD and AS curves' short-term dynamic equilibrium, which first shows a positive link between inflation and growth before

becoming negative, an adjustment path is created. This is shown by the fact that inflation and growth first seem to have a positive connection. When there is an irregularity in the passage of time, the result is that inflation and growth are usually correlated positively. As a consequence, some producers perceive that their output prices are increasing, while others say that they are remaining stable or even decreasing somewhat. Consequently, they create more output, which in turn contributes to an overall increase in production (Dornbusch, et al, 1996).

For their part, Blanchard and Kiyotaki (1987) argue that this favorable link may be traced back to promises made by businesses that they would continue to make things at a greater price in the future. Shortly after that, the relationship shifts to the negative, which describes stagflation, which happens when production either decreases or stays constant in the face of increasing prices (Gokal & Hanif, 2004).

2.3.2 Theory of the Neo-Classical Period

The school of neoclassicism of thinking has a wide range of hypotheses on how nation-state economies are formed. A dynamic link between inflation and economic output growth may be established utilizing a wide range of methodologies. One of the earliest models to explain output growth was proposed by the economist Solow, and he wasn't the only one (1956). Solow's model shows that the components of size and labor have declining returns, as well as growing rewards with time. To put it another way, the bulk of long-term improvement comes from technical advances, which are impacted by external influences, says Solow (1956). This was the subject of a paper written by Todaro in the year 2000. Solow asserted in the early neo-classical period that inflation and growth had no connection since growth was regarded to be exogenously produced (Ray, 1998). A dynamic link between inflation and economic growth has been demonstrated, according to Mundell (1963). He was correct. According to his hypothesis, when inflation grows, it causes people's wealth to diminish rapidly. This is predicated on the fact that a person's actual money holdings earn a lower rate of return than his or her virtual money balances. Customers save more in other assets as a consequence, increasing the value of other assets and decreasing the interest rate. This accelerates the accumulation of capital in the economy, resulting in quicker

growth in manufacturing output. Tobin (1965) created Mundell's model in order to present a similar mechanism that connects inflation to economic progress in a comparable manner. Tobin embraced Solow's (1956) theory that money serves as a store of value in the economy, which he had previously rejected. Customers are more likely to replace interest-bearing assets with money when inflation rises, according to Tobin's model. This increases the capital intensity and helps the economy thrive. As a consequence, inflation is positively connected to the rate of growth in the economy. Sidrauski (1967) proposed a money idea he called "Superneutral." Mr. Friedman adds that super neutrality can only be maintained over the long run if actual variables (such as output growth) are not affected by changes in the growth rate of the money supply. The most essential conclusion of this is that the stable state capital stock in Sidrauski's economy is unaffected by an increase in inflation. Therefore, neither production nor growth are adversely affected. Stockman (1981), another neo-classical thinker, gave a different explanation for the link between inflation and growth in the United States. The author of this paper believes that a spike in inflation might result in a significant decrease in production. Stockman's view of money considers money to be a complementary asset to capital. To put it another way, a rise in inflation reduces the purchasing power of money, which in turn results in a decrease in the accumulation of capital and, therefore, a decrease in output growth. Mr. Stockman was able to make a persuasive argument for the existence of a causal link between inflation and the slowing of economic growth by using this technique. A broad variety of results may be found when neoclassical models are employed to examine the correlation between inflation and growth. As a consequence, inflation may have a positive or negative impact on economic growth, or it may have no effect at all.

2.4 Inflation and Foreign Direct Investment Theories

2.4.1 Fisher Equation

As stated in the Fisher equation, the nominal riskless interest rate (krf) is made up of two components: the real riskless interest rate (k*) and the anticipated inflation rate (EI). It is possible to write the Fisher equation numerically as (krf) =k*+EI. .... (1) The expectations of financial market

players were taken into consideration while developing Equation (1). This implies that investors must calculate their needed riskless rate of return before putting their money into an investment. Understanding how the nominal risk-free rate of interest is calculated is critical. This is because all other rates of return are built on top of the nominal risk-free rate of interest. Fisher's equation predicts that nominal interest rates will fall when inflation is low, and this is what it really does. This suggests that the rate of return on investment will be quite high in the near future. New investment costs might be reduced as a long-term effect of these developments. For international investors, low interest rates may allow them to locate more appropriate partners in the host country who have adequate domestic investment to complement their outside investment, as well as to optimize their return on investment." Because of low interest rates on the loans they take out, this is feasible (return on investment equals a return on investment). Because many foreign investors are concerned about keeping their prices competitive, this is a factor to keep in mind. The host country would be in a stronger position to attract more foreign investors, each of whom would benefit from the decline in nominal interest rates, if interest rates were to fall. It is expected that while inflation is low, the nominal interest rate will be low as well, according to the Fisher equation. When inflation is low, this is the case. This means that nominal interest rates are likely to rise as a result of inflationary pressures as well. Because of the advantageous tax climate, foreign investors may expect fewer transaction costs and greater returns when they invest outside the nation. For a country's overall economic growth, inflation rates that are too high for foreign direct investment may be harmful.

2.5 Economic growth, the real exchange rate, and inflation

Most of the time, the real exchange rate was not believed to be a significant influence in determining the pace of economic growth. The early generation of neoclassical economists did not incorporate exchange rates in their growth models or in their actual policy implementations, which were primarily concerned with saving and investment as sources of growth in the economy. After all, according to the previous discussion, these were closed-economy models in which the exchange rate, defined as the

ratio between relative values of nontraded items (all products being nontraded in closed economies), played no role in the process of growth.

Many different viewpoints may be taken into account when examining the relationship between inflation and economic growth. In the 1960s, many economists assumed that the output-inflation tradeoff would continue for the foreseeable future because of the Phillips curve's predictions. Scholars from a different school of thought presented theoretical explanations that were at odds with the above viewpoints and emotions. A statistically significant correlation between inflation and unemployment was not found following a thorough econometric analysis (Lucas 1990).

Over the long run, rather than showing linear links between inflation and economic progress, recent empirical research has found nonlinear correlations between the two. A specific level of inflation is required before it has a negative impact on economic growth, according to the conclusions of this empirical investigation. Allowing inflation to rise has no detrimental effect on economic expansion; on the contrary, it may serve to boost it. In spite of the fact that the value of a threshold might vary greatly from country to country and from time to time, the process used to determine the value of the threshold will not alter.

2.6 Empirical Literature Review

2.6.1 Foreign Direct Investment, Economic Growth, Infliction and Exchange Rate

Nigeria's currency rate and inflation were examined by Omankhanlen (2011), who found that FDI and economic progress were linked via the use of annual time series data from 1980 to 2009. Gross fixed capital formation and the federal government's budgetary expenditures were used as controls. Data spanning three decades was used to conduct an extensive investigation of the interplay between inflation, the dollar's value, FDI, and overall economic development. FDI is anticipated to have a positive impact on Nigeria's economic development, according to the findings of the study. Inflation does not seem to have much of an influence on foreign direct investment, according to the study.

A study by Mehmet (2011) examined yearly time series data from 1970 to 2008 to show that Turkey's economic development is linked to FDI, trade, and inflation. Cointegration

tests found that inflation and foreign direct investment (FDI) have a favorable impact on economic growth. A time series of data from 1990 to 2011 was utilized by Faiza et al. (2012) to examine the impact of Pakistan's economic progress and inflation on the amount of FDI received by the country. Increased economic growth and inflation, according to the research, have a detrimental effect on foreign direct investment (FDI). GDP and inflation are considered independent variables in this study, however foreign direct investment (FDI) is referred to as the "dependent variable." Time series data was included into a regression model to examine how FDI affects GDP and inflation. According to studies, there is a positive correlation between inflation and FDI, which is good for both growth and FDI. Comparing the findings of the two research reveals that the discrepancies between them are due to the use of different estimating methodologies. Johansen cointegration tests were utilized by Mehmet, while multiple regression analyses were used by Faiza and her colleagues. An extra control variable called as trade was introduced in the prior research in order to mitigate the unfavorable effects caused by omission biases.

The long-term co-integration between inflation in Nigeria, investment in Nigeria, and growth between 1980 and 2006 was also examined by Taiwo (2011). Inflation may have both a beneficial and a negative effect on a country's economy, according to the ordinary least squares approach. Foreign direct investment (FDI) and economic growth have been overlooked in both studies, according to the results. Foreign direct investment (FDI), growth in the economy, and the exchange rate are all linked. Study after study has shown inconsistent results when it comes to this link. In addition, there is no evidence of causation in the current corpus of studies.

2.6.2 FDI and Economic Growth

According to Balasubramanyam and colleagues (1996), trade openness was shown to be crucial in giving the predicted growth advantage of foreign direct investment in 46 developing countries between 1970 and 1985. (FDI). A cross-section of 46 nations at various stages of industrialisation was employed in the research. There is more evidence to back up the idea of foreign direct investment (FDI) as an effective means of transmitting knowledge from one country to another, according to the researchers. Using a cross-country regression technique, Borensztein and colleagues (1998) examined the

relationship between foreign direct investment and gross domestic product in 69 developing countries over two time periods: 1970–1979 and 1980–1989. Only when the level of education in a host country exceeds a certain threshold can foreign direct investment have a positive impact on an economy. Growth of a country's human capital may also be directly linked to the country's GDP. According to Borensztein and colleagues' research on the link between foreign direct investment and economic growth, their conclusions are in line with theirs. One-way or two-way causal relationships between the two features were not examined in any of the studies.

Increasing commercial openness is necessary to reap the predicted economic growth benefits of FDI, as Balasubramanyam and colleagues (1996) have demonstrated. From 1970 to 1985, data from 46 developing nations was averaged across all of them to get to this conclusion. The study included participants from 46 different underdeveloped countries throughout the globe. Anecdotal evidence supports the theory that foreign direct investment (FDI) functions as a conduit for global knowledge transfer by increasing economic development more than domestic investment. FDI has been found to have a bigger influence on growth than domestic investment, which lends credence to this theory. Over two time periods, 1970–1979 and 1980–1989, 69 developing nations were researched for the link between GDP and direct foreign investment. Borensztein and colleagues (1998) used a cross-country regression technique. Over both time periods, researchers discovered a favorable correlation between GDP and foreign direct investment in 69 developing nations. Foreign direct investment can only have a favorable influence on an economy when its citizens have an education level that is over a specific threshold, the researchers found after using this data as a springboard for their investigations. Accordingly, the results of Borensztein and colleagues that foreign direct investment has a favorable impact on economic growth are consistent with Borensztein and colleagues. Neither study, on the other hand, investigated the potential of a link between the two elements.

Foreign direct investment (FDI) and economic development in East Asia and Latin America were analyzed by Zhang (2000) between 1970 and 1995 in 11 emerging states in these areas. FDI and GDP have a Granger-causality link in five of the countries studied.

FDI and economic development in four developing nations were examined in a study by Bende et al. (2001) that used annual time series data from 1970 to 1998 to examine the link. There was a strong connection between the two people. The analysis demonstrated a statistically significant correlation between foreign direct investment and economic growth. Both analyses come to the same conclusion: FDI is good for development and boosts growth in less developed countries.

Côte d'Ivoire's economic development benefits from FDI and trade liberalization, according to Yaoxing (2010). It was determined to apply both the Bounds Testing Cointegration Approach and the Vector Auto-Regressive Granger Causality over the course of this investigation. In this case, the period from 1980 to 2007 is taken into account. Foreign direct investment (FDI), openness to trade, and industrial growth in the UK have historically been linked, according to the study's findings When these three factors were correlated, it was shown that output had a strong influence on these three variables as well. This, however, was a one-way relationship. FDI and trade openness in Côte d'Ivoire are key drivers to output growth, according to the report. Foreign direct investment (FDI) should be encouraged via the construction of an ideal union of direct investment and institutional framework, as outlined in the paper.

Researcher Choe (2003) studied the link between FDI and economic development in eighty countries between 1971 and 1995 by using panel data analysis. There is a strong correlation between foreign direct investment and economic growth in both directions, according to the experts. While conducting co-integration and causality studies on 23 developing nations between 1978 and 1996, the researchers came to the same conclusion as Choe: foreign direct investment did not lead to economic progress. They found a link between foreign direct investment (FDI) and gross domestic product (GDP) after conducting their research. The study found that open economies had a bidirectional causal link between the two features.

Foreign direct investment (FDI), financial markets, and economic growth were examined by Alfaro and colleagues (2004) using cross-country data from 71 developing countries between 1975 and 1995. FDI levels seem to have a significant impact on economic growth, according to the empirical results of the authors. These positive benefits on

economic growth can only be realized if local financial markets are well developed. Carkovic and Levine (Carkovic and Levine, 2005) studied the connection with both foreign direct investment and economic growth in 68 developing countries by averaging seven five-year time periods starting in 1960 and finishing in 1995, using a panel dataset. Carkovic and Levine (2005, p. 5). The researchers concluded that foreign direct investment (FDI) had a significant and favorable impact on economic growth based on their findings from the study. Economic attributes such as national wealth, trade openness, educational attainment, and local financial development allow foreign direct investment (FDI) to affect growth in a variety of ways. Developing countries benefit from foreign direct investment, according to Alfaro et al., and the researchers concur with this conclusion.

FDI Granger causes growth in Mexico from 1960 to 1995, according to Ramirez's (2000) results. Foreign direct investment (commonly known as FDI) seems to have both a short- and long-term impact on economic growth, according to the study's results. Using time-series data on economic development in Sri Lanka, Athukorala (2003) looked for a connection between economic growth and FDI in the country. There is a statistically significant correlation among both economic growth and foreign direct investment, according to the econometric analysis of the research. Growth and FDI have just a one-way causal link, according to the study's conclusions. It's possible that the discrepancy between the two studies' findings is due to the use of different estimating methodologies. There is a difference between Athukorala's and Ramrez's cointegration methods. Differences in sample sizes may be to blame for the discrepancies in the results of the two investigations.

Greece's economic growth from 1960 to 2002 was studied by Dritsaki et al. (2004). The long-term equilibrium between the two variables was identified via the co-integration analysis. Results from a Granger causality test show that there is a bidirectional relationship between the variables. It was found that GDP growth in Cyprus is not a consequence of FDI, but rather a result of FDI's impact on the economy, according to Feridun, a researcher at the University of Cyprus (2004). Due to Feridun's inclusion of commerce as a control variable, the findings of Dritsaki et al. are in conflict.

Annual time-series data from 1969 to 2000 were used by Chowdhury and Mavrotas (2003) to analyze the connection between FDI and GDP growth in three developing nations. The Johansen and Granger causality analyses indicated that GDP growth and FDI had a positive association.. As a result, the results of Chowdhury and Mavrotas corroborate those of Basu et al.

From 1972 to 2008, Anowar and Mohammad (2011) conducted a 42-year study on the link between FDI and economic development in Bangladesh and Pakistan and India. Cointegration was achieved using the Johansen method and the Granger causality test. Statistics demonstrate that in Bangladesh and India, foreign direct investment does not correspond with economic development, but in Pakistan it does.

The causality test shows that Bangladesh's GDP and foreign direct investment are not linked in any way.

According to Quiser and colleagues (2011), Members of the South Asian Association for Regional Cooperation benefit greatly from foreign direct investment (FDI). It was decided to use several regression models to figure out how the two variables interacted. Foreign direct investment (FDI) and inflation are regarded as independent factors whereas global GDP movements are considered dependent variables. Between 2001 and 2010, the study's data set was utilized. As a whole, the model was deemed to be quite credible. This association is statistically significant, as is the correlation between GDP and FDI. Because of discrepancies in technique, data collection, and sample size, the findings of Quiser et al. and Anowar and Mohammad contradict each other.

According to Loesse and coworkers, there is a favorable correlation between foreign direct investment (FDI) and economic development in Sub-Saharan Africa (2010). The fact that I'm not a mean-spirited person helps me out a lot (SSA). A link was identified between the rise of GDP in Angola, Liberia, Kenya, and South Africa, using the cointegration approach developed by Pesaran et al (2001) and the causality test developed by Toda and Yamamoto (1995). Researchers have discovered a direct link between the increase in GDP and the inflow of FDI. Environment-harming chemicals have been detected in Loesse et al. and Ogiagah et al's research. Foreign direct investment (FDI) and development in the economy. Some of the discrepancies between the two approaches to the problem might be

explained by differences in the methodologies used. Annual time series and panel data are unlikely to provide the same findings as yearly time series and panel data in the long run, although this remains to be seen. Another consideration is that Granger causality and Toda and Yamomanto may provide quite different results.

Foreign direct investment and economic growth in Nigeria were studied by Edoumiekumo (2009) using the Johansen co-integration technique over a period of 40 years. Growth and FDI have been found to be positively and statistically significant for each other. After carrying out this experiment, researchers discovered a bidirectional relationship between FDI and economic growth. Ogiagah et al. (2010) used yearly time series data from Sub-Saharan Africa Region from 1970 to 2007 to assess FDI and GDP growth in Nigeria. Foreign direct investment and GDP growth have a long-term, positive relationship, according to the research.

Research examining the FDI-led development hypothesis was carried out by Herzer and colleagues (2008) in 28 developing nations. They used Engle-Granger cointegration and error correction models to demonstrate that FDI does not have a direct impact on economic growth. An earlier study by Abdus Samad (2009) found a negative correlation between foreign direct investment (FDI) and economic development in 19 developing countries in Southeast Asia and Latin America (2009). An error correction model, cointegration and Granger causality tests were all used to evaluate the variables. Researchers identified a close link between economic development and foreign direct investment in five Latin American countries and one Asian country (FDI). According to a second study, foreign direct investment and economic development were shown to be associated in seven countries (two from Latin America and five from East and SoSoutheastsia). In four countries, FDI has been proved to have a short-term beneficial impact on economic growth. There are four people from Latin America, three from Eastern and Southeast Asia, and one from the Middle East in this group.

Hansen and Rand (2005) state that they looked at the link between GDP and FDI in 31 developing countries and found no correlation. For the first time, statistics from many panel datasets show that foreign direct investment (FDI) is beneficial to economic growth. A host country's economic development may be greatly influenced by incoming FDI

infusions. Between 1980 and 2002, researchers analyzed panel data from 90 nations. Studies show that foreign direct investment may boost economic growth, which is in line with Hansen and Rand's results, which show that FDI and economic development go hand in hand.

Soltani Hassen and Ochi Anis determined that foreign direct investment had a positive influence on Tunisia's economic development in 2012 when they investigated the issue. According to their results, FDI has a favorable impact on the economic growth of a specific host nation. The study focused on the period from 1975 to 2009 utilizing contemporary time-series research methods. By using Valid Error Correction, they discovered that the model variable had a short-term link when modeled with the ECM. However, FDI has a negative impact on the great majority of growth-promoting elements, including human capital and financial development.

Hansen and Rand (2005) performed a research that examined the relationship between GDP and foreign direct investment (FDI). Over 30 developing nations have signed on. One-way causality between the FDI/GDP ratio and growth was found due to the use of heterogeneous panel data estimators. An economic model created by Johnson in 2006 estimates the impact of inflows of foreign direct investment (FDI) on a host country's economic growth. Over a period of 30 years, panel data from 90 countries was gathered for this study. According to the findings, inflows of foreign direct investment (FDI) boost economic development and are likely to continue. Foreign direct investment is linked to growth according to Hansen and Rand, thus this conclusion is a logical one to draw.

Obiamaka and Onwumere (2011) used yearly time series data to assess the influence of rising FDI on Nigeria's economic development between 1980 and 2007. FDI had a positive impact on Nigeria's economic growth between 1980 and 2007, according to studies undertaken at the time. Using the Johansen cointegration approach, a long-term positive relationship between GDP growth and foreign direct investment was discovered in this research. An investigation by Saibu et al. looked at the connection between Nigeria's financial progress and FDI. (2011). Data from 1970 to 2009 was used to establish whether the variables exhibited time series characteristics. The model was estimated using the Autoregressive Distributed Lag (ARDL) method, which was then evaluated for time series

characteristics. According to the findings of the research, Nigeria's economic progress has been harmed by FDI. Further research shows that, as previously indicated, FDI only has relevance when paired with stock market indices. Obiamaka and Onwumere's conclusions say Saibu and colleagues, are wrong. Changes in approach may be to blame. Differential findings may be found when using the ARDL and the Johansen Cointegration tests. However, there has been no investigation of the relationship between Nigeria's economic progress and FDI.

Both before and after the liberalization of Nigeria's economy, foreign direct investment (FDI) had a substantial influence. Between 1970 and 2010, researchers used the Granger causality test as part of their analysis. The inquiry was carried out from 1970 to 2010. Foreign direct investment (FDI) and economic growth have been examined by scholars over a period of almost 40 years. It has been shown that GDP is the driving factor behind FDI inflows in studies undertaken prior to deregulation (1970–1986) that were conducted. After deregulation, FDI inflows were found to have a causal link to GDP (1986–2010), proving that GDP does not impact FDI. A direct association existed between GDP growth and the inflows of foreign direct investment (FDI) between 1970 and 2010. Releasing capital flow restrictions may help Nigeria attract more FDI, based on recent experience. In order for foreign direct investment (FDI) to have a positive influence on Nigeria's economy, the Nigerian government must ensure that the policies are efficiently executed.

From 1970 to 2007, Adjaye (2009) analyzed the link between Ghana's GDP growth and FDI (foreign direct investment). The Johansen and Juselius multivariate maximum likelihood technique was used (1990). According to the study's results, foreign direct investment and economic growth are significantly linked. Economic growth and FDI have a two-way link, according to Granger's causality tests (FDI). Frimpong et al. (2011) found no link between FDI and Ghana's economic performance between 1970 and 2002, but they did discover a link between FDI and the decrease of poverty in their analysis. For the duration of the study and before the advent of SAP, there was no correlation between FDI and economic growth. As an alternative, the one-way relationship between FDI and economic success was discovered after SAP and has remained in existence ever since. Different research may have come to various conclusions because of different methods

for estimating. Foreign direct investment (FDI) and economic growth have been studied in Frimpong et al(1996) .'s study, in contrast to Adjaye's (1995) multivariate maximum likelihood approach.

Economists from Sackey et al. (2012) employed econometric approaches such as Augmented Dickey-Fuller testing, Vector Auto Regression, and the Johansen Co Integration Test to study the impact of foreign direct investment on Ghana's economic performance. Ghana's GDP growth and foreign direct investment (FDI) have historically gone hand in hand. In a separate study, researchers found a strong and unidirectional link between GDP growth and FDI (FDI). Antwi et al. (2013) also used yearly time series data from Ghana between 1980 and 2010 to corroborate their findings. They employed simple least squares regressions to show a connection between FDI and economic progress. No consideration was given to a possible causal link between the two variables, on the other hand.

2.6.3 Inflation and Foreign Direct Investment

Data from 1970 to 2005 were used by Udoh and Egwaikhide (2008) to assess the influence of currency volatility and inflation uncertainty on FDI. A generalized additive random walk (GARCH) model was employed to estimate inflation risk and currency volatility. A statistically significant decrease in FDI occurs when inflation increases over a certain threshold level. From 1990 to 2009, annual time-series data from Ade et al. (2011) was used to evaluate the connection between corruption, FDI, and economic progress in Nigeria. The results of Udoh and Egwaikhide (2008) that low and constant inflation improves FDI inflows into impoverished countries, thereby aiding growth, are supported by the Johansen approach to cointegration. However, the Granger causality test demonstrates that inflation and foreign direct investment are not linked in any way.

Foreign direct investment (FDI) has a positive influence on economic growth and development in Pakistan, according to research by Sajib and coworkers in 2012. Annual time series data covering the years 1990-2008 were used to carry out this study's research. Inflation and foreign direct investment (FDI) seem to have no statistically meaningful correlation. Between 1980 and 2010, the influence of capital influxes on Pakistan's

inflation rate was studied using a cointegration test and an error correction model, according to Shumaila et al. (2012). Using an error correction model, Sajib et al. (2012) found the same results when they examined how Pakistan's inflation rate was affected between 1980 and 2010. (2012). This is despite the fact that Djokoto (2012) found no association between inflation and foreign direct investment in Ghana from 1970 to 2009 when he analyzed investment promotion. With inflation as a control variable and the co-integration approach, Djokoto comes to an unexpectedly contradictory conclusion about the economy.

2.6.4 Economic growth and Inflation

Barro (1995) utilized yearly data from more than 100 countries and an enhanced version of the neoclassical growth model to study the link between inflation and economic advancement between 1961 and 1992. In addition to the investment-to-GDP ratio and the fertility rate, the researchers included additional factors in their model. Economic growth is only negatively impacted by high inflation experiences when they are included in the model. Annual data sets from 26 nations that underwent major inflation crises between 1961 and 1992 were studied by Bruno and Easterly (1995). Uses for these data sets include assessing the country's performance before and after the long-lasting high inflation issue. Once events like revolution, war, and changes in trade circumstances have been taken into consideration, they reinforce Barro (1995) findings that excessive inflation is harmful to economic progress. Low-to-moderate inflation, according to Bruno and Easterly, has a mixed effect on GDP. Consequently, their findings support the idea that inflation only becomes a problem when inflation rates are very high.

According to Sarel (1995), between 1970 and 1990, researchers in 87 nations looked at how inflation affected economic development. All of these parameters were used to keep the effects of the experimental variables under control: population, GDP, consumer prices, terms of trade, real exchange rates, and government spending and investment. For this research, which employed the ordinary least squares estimate approach, the structural break in the relationship between inflation and growth may emerge when inflation gets to 8%. Above a certain level, inflationary pressures have minimal effect on economic

growth. When inflation rises beyond 8%, it is predicted to have a significant negative influence on economic growth, which is what happens in the majority of situations.

From 1960 through 1996, Ghosh and Philips (1998) used panel data to examine the relationship between inflation and economic growth in the United States. Panel regression and linear regression were used in tandem to investigate the link between inflation and economic growth. The robustness of the model was tested using multivariate regression to see whether there was a nonlinear link between inflation and growth. According to Sarel, inflation has a detrimental impact on growth even if there is no indication that the link between inflation and GDP has broken fundamentally. Ghosh and Phillips, on the other hand, observed a positive link between inflation and growth when inflation was low. It has also been discovered that the relationship is not what it seems to be. Inflation and growth have a negative correlation even when nonlinearity is taken into account, according to their data.

Rather of studying a broader cross-section of countries, Malla (1997) focused on a small subset of Asian and OECD countries. First, after accounting for labor and capital, researchers discovered a statistically significant negative link between economic growth and inflation. While this is true in Asia's developing countries, there is no statistically significant correlation between the two. Based on data from 1967 to 1992, (Sarel 1995) used a modification of Sarel's (1995) technique, which they used to investigate 21 industrialized nations and 51 developing nations (including Ghana).In order to guarantee that the omitted variable biases would not affect the findings, real GDP per capita, population growth, and government spending were included as control variables. According to Malla's criteria for destitute countries, which demand up to 3% GDP, their conclusions are in direct conflict with their findings. Malla's results hold up to an 8 percent limit for developed countries, though. According to Malla, the divergence between his results and those of other researchers may be attributed to the fact that he included control variables in his model to address concerns about omission bias and model misspecification.

Using data from India, Bangladesh, Pakistan, and Sri Lanka, Malik and Chowdhury (2001) investigated the long-term connection between inflation and growth. To evaluate the relationship between inflation and growth, Khan and Senhadji (2001) employ panel data sets from 140 wealthy and developing nations, as opposed to Malik and Chowdhury (2001). To demonstrate this, the authors looked at nations with inflation rates between 3–6 percent in industrialized countries and 11–12 percent in developing ones.

Cross-sectional data from 140 nations from 1970 to 2005 was used by Chih (2009) to study the causal links between inflation and economic progress in the United States and Europe. The data was collected between 1970 and 2005. While inflation may seem to be a drag on economy, it really serves a purpose by helping to bring inflation down. The findings of this research suggest that inflation may have a negative impact on economic growth. Growth and inflation seem to have a causal link, according to Chih's Granger causality test, Bidirectionality was shown for this relationship.

A bivariate time-series model was employed by Faria and Carneiro (2001) to examine the link between inflation and economic growth in Brazil, while previous empirical research concentrated on the relationship between inflation and economic development across countries. Researchers discovered a statistically significant link among both inflation and economic growth.

Academics Gokal and Hanif (2004), who also conducted the Granger causality test in 2004, found that Fiji's inflation rate was statistically significant. Faria and Carneiro, who conducted a comparable investigation, agree with our results. According to their results, the relationship between inflation and economic expansion is one-directional.

An analysis of the relationship between money growth, inflation, and currency depreciation in Indonesia was undertaken by Hossain (2005), utilizing data collected from 1954 to 2002 by the author. Economic growth has been shown to have a negative correlation with rising inflation after completing causality tests on the connection for each sample period. Odhiambo (2011) used a limits testing approach to evaluate the period from 1990 to 2009 in his analysis of the link between inflation, investment, and Tanzanian growth. According to the study's findings, inflation and economic growth have a unique

relationship. There was a huge one-way causal flow from inflation to growth in the absence of feedback.

According to Shahzad and Shahnawaz (2011), inflation and economic development in Pakistan may be linked using yearly data from 1960 to 2006. According to the Johansen and Granger causality test, inflation boosts economic growth. According to the findings of this research, there seems to be a single path from inflation to growth. As a consequence, Pakistan's development is driven by inflation rather than economic expansion. Researchers in Malaysia have discovered that Kanchan and Chandan were the ones who first uncovered the link between inflation and growth (2011). according to Shahzad and Shahnawaz (2011), using data from 1970 to 2007. A short-term negative effect of inflation on growth is offset by its long-term beneficial effect on growth. In addition, the research found that the link between inflation and economic growth in Malaysia is a one-way street.

Ghana's inflation and economic development were studied using the traditional Granger causality test from 1955 to 2009. A correlation between growth and inflation has been proved to exist, and growth is the major cause of inflation. Researchers recently (2010) discovered the inflation rate that maximized revenues using data from Ghana from 1970 to 2006, while also researching if the same inflation rate also maximized growth in Ghana (Quartey, 2010). The Johansen cointegration technique demonstrates that inflation has a negative impact on growth throughout all time periods investigated. When it comes to determining whether or not there was a causal association in, either way, Quartey's research falls short.

Data from 1980 to 2005 was used to examine the relationship between inflation and Bangladesh's economic growth. ADF and PP tests were used by Ahmed and Mortazat (2005), et al to examine the long-term link between inflation and Bangladesh's economic growth.. Ahmed and Mortazat's findings are consistent with previous Bangladeshi research that found a link between inflation and economic development.

In Turkey, the link between inflation and economic development was examined by Erbaykal and Okuyan (2008) using data spanning the years 1987 to 2006. According to

Pesaran et al., they discovered a statistically significant link between the variables they studied when they used the Bound Test (2001). According to Toda and Yamamoto, there is only one straight path from inflation to economic growth (1995). Because of this, Edgar and Carrera (2009) used co-integration to investigate the long-term relationship between inflation and growth in Mexico from 1970 to 2007. There is a strong link between inflation and growth. A statistically substantial correlation was found between long-term inflation and growth. Between two time series, we investigated the causal connection using Granger Causation. Inflation and economic growth were shown to have a one-way causal link, according to the findings. Because Edgar and Carrera's results are in line with those of Erbaykal and Okuyan, this research was necessary.

Using data from 1987 to 2006, Erbaykal and Okutan (2008) performed an investigation of the link between inflation and economic growth in Turkey. A statistically significant link was found between numerous factors studied by Pesaran et al. using the Bound Test in their study (2001). That's what Toda and Yamamoto (1995) thinks. Cointegration was utilized by Edgar and Carrera (2009) in Mexico between 1970 and 2007 to explore the long-term relationship between inflation and growth. There is a substantial correlation between inflation and economic growth. The long-term relationship between growth and inflation was shown to be statistically significant. Using the Granger Causation approach, we searched for a link between the two time series. According to the data, there was a direct correlation between inflation and economic growth. As a consequence of Edgar and Carrera's and Erbaykal and Okuyan's findings, this study was deemed necessary.

Because of this, experts researching the link between inflation and economic growth have discovered that inflation has a dampening effect on the expansion of the economy. Research into causation, on the other hand, produces a mixed bag of results.

2.7 Conclusion

Data on foreign direct investment and economic growth accompanying this article evaluation yields some interesting results. According to the research, growth and inflation may have a positive or negative influence on each other. Inflation and foreign direct investment have a strong link. In addition, growth and the value of a currency, as well as

foreign direct investment, are linked in a beneficial manner. According to existing empirical data, it may be difficult to draw inferences about the direction of causation between variables based on assumptions about causality between variables. An empirical and crucial topic, it changes based on the kind and style of the economy that is being explored. In the following chapter, we'll go through the research process in depth.

CHAPTER THREE

3.0 Methodology

3.1 Introduction

This chapter provides an overview of the study's methodology. To examine the long-term relationship and causation between FDI and economic development, infliction, and the exchange rate in various approaches, there are theoretical and empirical models available. Finally, a few words of wisdom.

3.2 Data

This inquiry relies on data that was previously collected. Over a period of 30 years from 1990 to 2019, the effects of FDI, infliction, real GDP growth, and currency rates on Ghana were studied. The World Development Indicators database provided the data for this research.

For the purposes of this study, the difference between the logs of the consumer price index at the beginning of the period is used to compute inflation. Over the next several years, inflation is likely to have a detrimental impact on both FDI and economic growth in China. For the purposes of calculating FDI, the difference between the log of net FDI inflows and outflows at the start of the period is utilized (FDI). A rise in GDP is one of the many benefits that come from FDI, according to the study results. Finally, the initial difference in the log of real GDP growth is removed from the total in order to calculate economic growth. A beneficial effect of foreign direct investment on economic development is expected, but inflation and the currency rate are expected to have a negative impact on this growth.

3.3 Variables

The World Development Indicator database, which is housed at the World Bank data center, provided the information for this research. The information acquired is primarily concerned with the link between foreign direct investment and economic

development in Ghana. The data is presented as an annual series with a total of 30 observations spanning the years 1990–2019. In this research, there are four variables: one dependent variable, GDP growth, and three independent variables, Foreign Direct Investment, Inflction, and Real Effective Exchange Rate.

Gross Domestic Product (GDP) may be described as an increase or improvement in the market value of an economy's goods and services when the rate of inflation is taken into consideration. Statisticians commonly use the percentage rate of growth in the real gross domestic product to quantify this kind of growth.

Foreign direct investment (FDI) refers to a kind of international investment in which a national investor makes long-term investment and has substantial influence over a business based in a different country or economy. Direct investment from foreign countries is known as "FDI" (or simply "FDI").

Inflation can be measured over time as the rate at which prices rise as a function of time. Inflation is frequently defined as a broad indicator, such as an increase in overall prices or an increase in the cost of living in a country. It can, however, be determined more precisely for certain items, such as food, or for specific services, such as haircuts. Inflation is defined as a rise in the prices of a specific set of goods and services over a set period of time, usually a year, in any environment.

The real Effect Exchange Rate is use in the study because it tells us how many times more or fewer goods services can be purchased after conversion into a foreign currency; than in the domestic market fora given amount.

3.4 Stationary

Time series analysis tests often utilize past data to detect correlations between variables, which may subsequently be used to predict the future. It's conceivable that these links won't be effective for forecasting the future if it's different from the past. This

phenomenon is more likely to occur when the variables are non-stationary and include unit-roots. Time series variables must thus be treated to a stochastic process and maintain a stable state. According to the definition of "stationary," the phrase refers to a stochastic process where the mean and variance of a variable stay constant across time. An incorrect estimate, which may have a minimal economic impact, is conceivable if the variables are not stable enough. The series will not become stationary even if the change is made. The terms "unit root" and "non-stationary," as well as many others, are often used interchangeably. When attempting to forecast the future of a time series, it is widely accepted that data rationalization is important.

ADF and Phillips-Perron tests are employed in this research to examine whether or not the variables are distributed uniformly. The following model is used by the ADF test to assess whether or not the variables have a unit root:

$\Delta y_t = \beta_1 + \beta_2 t + \delta y_{t-1} + \alpha_t t_{-1} + \varepsilon_t$

Where,

- ✓ Y_t is the variable in question.

✓ t is a time trend.

✓ Δ is the difference operator.

✓ εt is a white noise process.

The following hypothesis is evaluated for stationery using equation.

H0: δ=0 (yt is non- stationery)

H1: δ<0 (yt stationery)

There had been a problem with Dickey and Fuller's method, which was based on the t-statistic, which had been demonstrated to be ineffective. When the estimated statistic is smaller than MacKinnon's key values, the null hypothesis is rejected, and the alternative hypothesis, that the variable has reached a stationary state, is accepted. An alternative to the ADF test, the Phillips-Perron (PP) test may be employed when the ADF test is deemed inaccurate due to structural fractures. Because of this vulnerability to external shock, Perron found that the real data-generating process is essentially static around a trend function (1989). As a result, ADF testing cannot rule out the null hypothesis of non-stationarity. It's also necessary to compare MacKinnon's crucial PP test statistics to the PP test statistic findings for determining the null hypothesis. The Newey-West formula, rather than the ADF approach, is used to evaluate the error variance.

3.5 Lag Structure Testing

Eiders (1995) argues that choosing an adequate lag time is equally critical to the overall relevance of a system of equations. Using a model with a high number of delays has the potential to yield residuals that are similar to those produced by a white noise process, although this is not always the case. As a result of this, although the model will likely be sparse, the residuals may not be random enough to simulate a white noise process when the delay duration is lengthy. This research indicated that two delays were the ideal duration to prevent misunderstanding and the loss of degrees of freedom.

3.5.1 The Augmented Dickey-Fuller (ADF)

For their experiment, Dickey and Fuller (1979) devised and constructed a computer program that could be used to detect if an a priori random walk was taking place or not. The extended Dickey-Fuller test may be used to demonstrate its applicability and effectiveness in the following four ways: No matter what the conditions, the null hypothesis states that every place in the distribution has a single unit root.

If a drift term is included in the null hypothesis, then the second approach, which is the more usual way, will provide the test statistic with a constant term and a temporal trend. The most notable distinctions between the two methods are these two. However, it's basically the same test as the preceding DDickey-Fullertest, except that it's used on the model instead of being used on the model.

$$\Delta y_t = \alpha + \beta t + \gamma y_{t-1} + \delta_1 \Delta y_{t-1} + \cdots + \delta_{p-1} \Delta y_{t-p+1} + \varepsilon_t$$

Higher-order autoregressive processes may be supported by the ADF formulation, which includes delays of the order p. Higher-order autoregressive processes are possible using the ADF formulation. As a result, before the test can be performed to the data in an efficient way, the duration of the lag p must be determined.

3.5.2 Philip-Perron Test

It is a statistical analysis technique known as the Phillips–Perron test. Two statisticians, Peter C. B. Phillips and Pierre-Perron, were the inspiration for the institute's name. Consequently, while doing a time series analysis, it is used to test the null hypothesis that the first order of integration is used to integrate a time series. Here, rather than using the Dickey-Fuller test to rule out the null hypothesis, a new strategy is used.

$$y_t = c + \delta t + a \, y_{t-1} + e(t)$$

The null hypothesis states that the value of a = 1 is 1. Test variants have been developed for use in regulating distinct series' development characteristics. The test's versions are meant to regulate the growth characteristics of the series by reducing drift and

deterministic trend coefficients to zero. The serial correlations that arise throughout the invention process may be taken into consideration using Dickey-Fuller statistics (t).

3.5.3 ARDL Bound Test

Pesaran et al. (2001) developed the ARDL cointegration approach (2001). In comparison to previous and traditional cointegration methods, it has three advantages. The first is that the ARDL does not require that all variables under study be integrated in the same order; it can be used when the underlying variables are integrated in order one, order zero, or fractionally integrated. The ARDL test is also relatively more efficient in the case of small and finite sample data sizes.

3.5.4 ARDL Model

The ARDL / EC model can be used to forecast and separate long-run relationships from short-run dynamics. Relationship over time: Even though the individual time series may move significantly, some time series are bound together due to equilibrium forces.

In econometric literature, the ARDL model is one of the most general dynamic unrestricted models. The dependent variable in this model is expressed by the lag and current values of the independent variables, as well as its own lag value.

As part of a univariate equilibrium correction system, ARDL modeling may be used to examine delayed levels of variables in order to identify whether a time series is trending or has first-difference stationary characteristics.

Another advantage of the ARDL limits testing approach, according to Haug (2002), is that when small sample size is utilized, both short and long-term parameters may be estimated simultaneously in the short run, resulting in improved results.

An example of how the ARDL representation of the link between FDI and economic development may be constructed:

$InGDP = \beta 0 + \beta 1 In\ (FDI\text{-}1) + \beta 2\ In\ (INF\text{-}1) + \beta 3 In\ (REER\ \text{-}1) + \varepsilon t$

The following are the areas that are addressed by the theory of no co-integration:H0: β_1 = β_2 = β_3 = 0 and H1: $\beta_1 \neq \beta_2 \neq \beta_3 \neq 0$ is an alternate version of the co-integration theory.

3.6 Pearson's Correlation

No correlation can be established between two or more variables unless the first step of establishing statistical significance has been taken. The correlation coefficient mayalso be used to gauge how closely two variables are linked. There are two independent variables in this study, which will be analyzed using a similar manner to the other two. The correlation coefficient may be depended upon to provide an unequivocal result when it comes to linear connections.

Formula: $r = \dfrac{1}{n-1} \dfrac{\left(x - x^F\right)\left(y - y^F\right)}{\sigma x \; \sigma y}$

Where, R= Correlation

σx = Standard Deviation of X

σy = Standard Deviation of Y

n = No. Of Observations

3.7. Regression analysis

Using regression as a statistical strategy, we can figure out what's occurring when two variables are connected by looking at the values of the other variables. A mathematical equation describing the link between the dependent variable (GDP), the forecasting variable, and numerous independent variables, all of which are factors the researcher thinks are connected to the dependent variable, is developed using this approach (GDP) (FDI, INF, REER). The dependent variables have been shown to be linked to FDI, INF, and REER. $\ln(GDP) = \beta_0 + \beta_1 \ln(FDI) + \beta_2 \ln(INF) + \beta_3 \ln(REER) + \varepsilon_t$

In the equation, $\ln(GDP) = \beta_0 + \beta_1 \ln(FDI) + \beta_2 \ln(INF) + \beta_3 \ln(REER) + \varepsilon_t$, where the coefficient β_0, β_1, β_2, β_3 are to be determined and ε_t is the error term

GDP is abbreviated for Gross Domestic Product, and

Foreign Direct Investment is denoted by FDI.

INF is an abbreviation for Infliction.

REER is an abbreviation for Exchange Rate.

3.8 Granger Causality Test

Granger causality testing was employed in this study to aid in the investigation of correlation patterns based on real data, and it was found that it worked. The Granger causality technique may be used to identify the relationship between two variables over time. These patterns of association may be uncovered by using empirical data sets to look for correlations in a statistical sense. The notion of causality is strongly linked to the concept of cause and effect in the idea of cause and effect.

3.9 Stability and diagnostic tests

An additional diagnostic test is being used in this study to ensure that the model's predictions are accurate. Autocorrelation and White tests are examples of heteroscedasticity tests, as are the normality of residuals and the series correlation test (which measures correlation). For example, it's easy to identify the extent of autocorrelation in a dataset by comparing its residual values and their values with those predicted and then comparing those differences. This means that the null hypothesis cannot be true, and we can thus conclude that the model has heteroscedasticity.

3.10 Conclusion

Foreign direct investment, growth, inflation, and the value of a currency have all been studied theoretically. FDI, economic growth, infliction, and the Ghanaian currency rate were all examined using ARDL. The ADF and PP unit root tests were used in the article to establish whether or not the analyzed variables had a stationary distribution. In addition, researchers used regression analysis to anticipate the value of one variable based on the values of other variables and to describe the relationship between two variables. Regression analysis was also used. Pearson's Correlation test was used for determining if and to what extent two or more variables were connected in order to exhibit statistically significant relationships between the variables in order to guarantee that the model was dependable. Following that, you'll get a more in-depth look at the estimates and findings.

CHAPTER FOUR

4.0 FINDING AND DISCUSSIONS

4.1 Introduction

The ARDL model was discussed in the preceding chapter as a tool for determining the link between GDP, FDI, Inflation, and the Real Effective Exchange Rate. As a result, this chapter will be divided into four sections. The section after that explains how FDI has influenced economic growth and how that effect has been understood, while the one after that summarizes the research findings. This paper's first portion delves into descriptive statistics and data analysis methodologies in depth. The second section examines and discusses a data set's stationary test, and the third section examines and discusses co-integration. Toward the end of this part, we'll look at regression analysis, diagnostic tests, and data, or the results of stability tests, among other things, Despite this, the presentation followed the research objectives, and the tests were successfully completed using E-views software.

4.2 Descriptive Statistics

Economists will investigate the link between FDI and economic growth. This section will describe the relationship's directional movement. The descriptive statistics in this study were prepared with EVIEWS to give readers a heads-up on the data they'll be looking at. The following table summarizes the findings of the tests:

Table 4.1 Descriptive Statistics

	GDP	FDI	INF	REER
Mean	5.467736	1.38E+09	23.91154	105.4122
Medium	4.772439	2.38E+08	19.01908	98.17391
Maximum	14.04712	3.88E+09	80.75458	165.9855
Minimum	2.120759	14800000	8.481073	64.23868

Std. Dev.	2.4146677	1.49E+09	15.19521	28.97593
Skewness	1.670999	0.430424	2.063672	0.493197
Kurtosis	6.463742	1.347544	7.82668	2.399032
Jarque-Bera	28.95807	4.339588	50.41475	1.66767
Probability	0.000001	0.114201	0	0.43438
Sum	164.0321	4.14E+10	717.3463	3162.366
Sum Sq. Dev.	169.3695	6.48E+19	6695.941	24348.54
Observations	30	30	30	30

Over the study period, GDP grew at an average rate of 5.467736 percent. "Moderate" by developing-country norms. This period saw an average of 1.38 percent of foreign direct investment pour into Ghana. There was an inflation rate of 23.91154 and a real effective exchange rate of 105.4122 throughout the course of the year. The rate of inflation was somewhat high. A lack of growth in GDP and FDI might be ascribed to this, according to some economists.

The highest GDP growth rate was 14.04712, while the lowest was 2.120759. The greatest amount of foreign direct investment in Ghana was 3.88, while the least was 148000000. Over the entire period, the maximum inflation rate was 80.75458, compared to a minimum of 8.481073, and the maximum Exchange Rate was 165.9855, compared to a minimum of 64.23868.

The GDP growth skewness of 1.670999 shows that low GDP levels outnumbered high GDP levels. The country's foreign direct investment (FDI) flow was skewed in the country's favor, showing an increase in FDI. Skewed by 2.063672 and 0.493919, inflation was similarly positively-skewed. There were several years in which inflation was much higher than it was when it was lower than it was. According to the results of the Jarque-

Bera statistical test, the variables GDP, FDI, inflation, and exchange rate are not normally distributed, therefore refuting the null hypothesis.

4.3. Stationary test

Researchers in this research employed the ADF and PP experiments, both of which involve a two-unit root test. The need for high contrast and precision in measurements impacted the selection of these metrics. Hamilton (1994), claims that PP unit root tests are more dependable than ADF testing. This is due to the fact that PP unit root tests are less susceptible to serial correlation and heteroscedasticity than other unit root tests. It does, however, have its own set of advantages and disadvantages to consider. In addition to established estimate approaches (Pesaran 1997, Shin & Smith 1999), the proposed autoregressive distributive lag (ARDL) system developed by Pesaran and colleagues will be assessed utilizing bounds testing, a unique estimating methodology. The statistical significance of the difference was established by comparing the p-value to 0.05.

Table 4.2: Unit root test

AUGMENTED DICKEY-FULLER (ADF) UNIT ROOT TEST			
VARIABLE	LEVEL	1ST DIFFERENCE	ORDER OF INTEGRATION
GDP	0.6207	0.0001*	I (1)
FDI	0.9617	0.0021*	I (1)
INFLICTION	0.2411	0.0000*	I(1)
REER	0.4121	0.0010*	I(1)
PHILIP - PERRON (PP) UNIT ROOT TEST			
VARIABLE	LEVEL	1ST DIFFERENCE	
GDP	0.6731	0.0000*	I(1)

FDI	0.9604	0.0021*	I(1)
INFLICTION	0.0539	0.0000*	I(1)
REER	0.4715	0.0002*	I(1)

Note: Sign. 1%* source: Mackinnon (1996) t-statistic

PP and ADF tests were used to verify that the variables were stationary at the level and first difference for the unit root test. We can find a correlation between FDI and economic growth by doing a unit root computation on the data. Because all of the probabilities are less than 5%, the findings reveal that all the variables are stationary at the first difference, with a 1% significant level. When a regression is conducted on these variables, no misleading results are predicted, and the GDP, FDI, INF, and REER probability values are less than 5% at their 1ST differences, indicating that the variables are also stable. The null hypothesis of no unit root is therefore rejected.

Table 4.2 also shows that all of the variables are non-stationary at the level, with a probability greater than 0.05 illustrating this non-stationarity. In spite of this, the table indicates that the t-statistic surpasses the essential threshold of 5 percent and that there is less than a 0.05 chance of a first difference. Stationarity may be said to exist at the 1st difference. No unit root is also a notion that has been disproved.

4.4 ARDL Test

Table 4.3: ARDL Bond Test

Model	Lag.	F-Statistic	Decision
GDP, FDI, INF, REER	(2, 4, 3, 2)	6.9693359***	Co-Integration Exist
Bond Critical Value			
		I(0)	I(1)
Sign.	10%	2.37	3.2
	5%	2.79	3.67
	2.5%	3.15	4.08

| | 1% | 3.65 | 4.66 |

The Bound Test, devised using the ARDL technique, was used to identify whether or not the data set under examination had co-integration. It is not possible to utilize F-statistics below the lower limit (critical values for I) to reject the null hypothesis (0).

If the statistic exceeds the upper limit I, the null hypothesis of no co-integration is rejected (1). This results in inconclusive results when the statistic falls within permissible limits. Using the F statistic (6.963359), we may conclude that the independent variables and the dependent variable have a long-term statistically significant correlation that is statistically significant at 1%, 5%, and 10% levels of significance. Therefore we reject the null hypothesis of no co-integration.

4.3.2 ARDL **Long Run Results**

4.4 ARDL LONG RUN TEST		
Variable	Coefficient	Probability
D(FDI)	2.98E-09	0.0042***
INF(-1)	-0.070984	0.0558**
D(REER)	0.047351	0.1266
C	3.283919	0.2600

Note: Sing. Level *** 1%, ** 10% source: ARDL long run

With a significant level of 1% and a positive coefficient of 2.98, the statistics in the table above imply that there is a long-run or positive relationship between foreign direct investment and economic growth. This demonstrates that, in the long term, FDI is beneficial to economic development. As a result, as economic growth increases, FDI increases by 2.98 percent over time. This suggests that FDI is more of a complement to economic development than a replacement in the long term. Therefore, the null hypothesis

has been rejected, and we have arrived at the conclusion that FDI and economic growth have a substantial positive association over the long term. This result confirmed both Ramorez's (2000) and Edoumiekumo's (2009).

Infliction, on the other hand, is statistically significant and occurs at a 10% level with a probability of 0.0558, despite the coefficient being -0.070984. As a result, therefore Infliction and economic growth have a long-term negative connection.

With a probability of 0.2600, the exchange rate is statistically not significant at a 10% level. This also reveals that the coefficient is positive at 0.047351.

Table 4.5: Short-run ARDL

Variable	Coefficient	Probability
FDI	2.98E-09	0.0042***
INF (-1)	0.060278	0.0186**
REER	0.047361	0.1266
ECM(-1)	-0.94909	0.0000

Note: Sign. *** 1%, ** 10%. Source: ARDL short run

Table 4.3.3 shows the impact of FDI on economic development. The data shows that FDI has a 0.0042 likelihood of affecting economic growth, which is statistically significant at a 1% level. Economic development is boosted by foreign direct investment (FDI). The FDI coefficient rises 2.98 percent with an increase in economic growth. As a consequence, we reject the null hypothesis and conclude that there is a short-run and significant relationship among the variables.

Infliction INF (-1) has a probability of 0.0186 and is statistically significant at a 5 percent level. The Real Effective Exchange Rate (REER) is not significant with a probability of 0.1266. Our results show that there is a positive short-term effect between variables, or

that variables have a positive short-term association, therefore we reject the null hypothesis.

The coefficient of the ECM is 0.949090 which shows the speed of adjustment toward the equilibrium. The speed of equilibrium is 94.9 % per unit time. The result shows that there is a high speed of adjustment of equilibrium from the short run to the long run..

4.5 Residual Diagnostic test

Table 4.6: Residual Diagnostic test result

Name of the Test	Null Hypothesis result	Statistics value	Probability
Seria Correlation Test	No serial correlation at up to 2 lags	1.533518	0.2413
Normality Test	Residuals are normally distributed at 5% level	1.223625	0.542366
White (CH-sq) Test	No conditional heteroskedasticity at 5%	1.283590	0.3056

The residuals have no serial correlation, no conditional heteroskedasticity, and are normally distributed, according to the data in Table 4.4. The residuals, in reality, follow a normal distribution. The model does not support either the null hypothesis or the alternative hypothesis about the existence of serial correlation. a probability of 0.2413 is more probable than the expected value of 0.05. That's why we infer that this model does not have any serial connections. An important null hypothesis, in this cas is that there is no heteroskedasticity at all at a 5 percent confidence level. The probability value of 0.3056 is higher than the threshold of 0.05 percent according to the residual diagnostic test, indicating that the problem is more severe. The model does not show heteroskedasticity if we reject the null hypothesis at 5%, but if we reject the null hypothesis at 10%, then we can say with certainty the model does.

It is clear that the null hypothesis states that residuals are normally distributed with a probability of 0.00142, which is less than 0.05 percent. Our conclusion is that residuals at 5% probability are normally distributed, and we reject the alternative hypothesis that residuals are normally distributed at 5% probability or more.

4.6 Pairwise Granger Causality Test

Table 4.7: **Granger Causality**

Test

Simple: 30

Logs: 7

Table: 4.5

Null Hypothesis:	Obs.	F-Statistic	Prob.
FDI does not Granger Cause GDP	23	4.42227	0.0267**
GDP does not Granger Cause FDI		3.74555	0.0509**
INF does not Granger Cause GDP	23	2.74555	0.0902
GDP does not Granger Cause INF		0.73764	0.6493
REER does not Granger Cause GDP	23	0.19445	0.9780
GDP does not Granger Cause REER		0.40616	0.8738
INF does not Granger Cause FDI	23	2.90698	0.0790
FDI does not Granger Cause INF		0.48510	0.8219
REER does not Granger cause FDI	23	1.43028	0.3120
FDI does not Granger cause REER		0.81687	0.5987
REER does not Granger cause INF	23	3.02197	0.0720
INF does not Granger Cause REER		1.85025	0.2036

The findings of the tests of causality between the dependent variable GDP and the independent variables FDI, INF, and REER are shown in Table 4.5. The findings point to the existence of a causal relationship that runs in both directions, from GDP (0.0509**) to FDI (0.0267**). By inference, it may be said that the null hypothesis that there is no influence of FDI on GDP and GDP on FDI is rejected. The overall significance based on the probability findings demonstrated that the model is fit and that foreign direct investment (FDI) has a causal influence on GDP, as well as the same effect that GDP also has on FDI. Our result is in confirmative with choe (2003).

4.7 Stability test

It is necessary to determine the model's stability in order to verify its accuracy. Brown et al. CUSUM test, allows us to do this (1975). The model must be stable at all times if the post-estimation test is to be believed. In the words of Hansen: (2000)

Fıgure4.8CUSUM-TEST
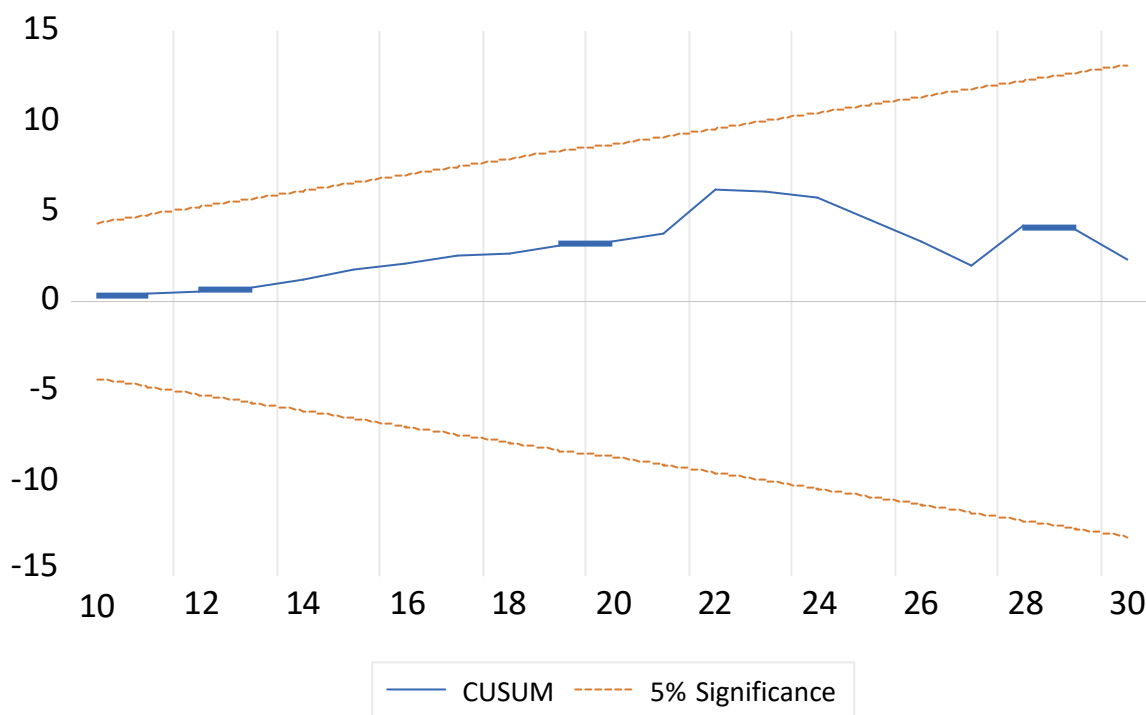
Fıgure4.9CUSUM SQUARE
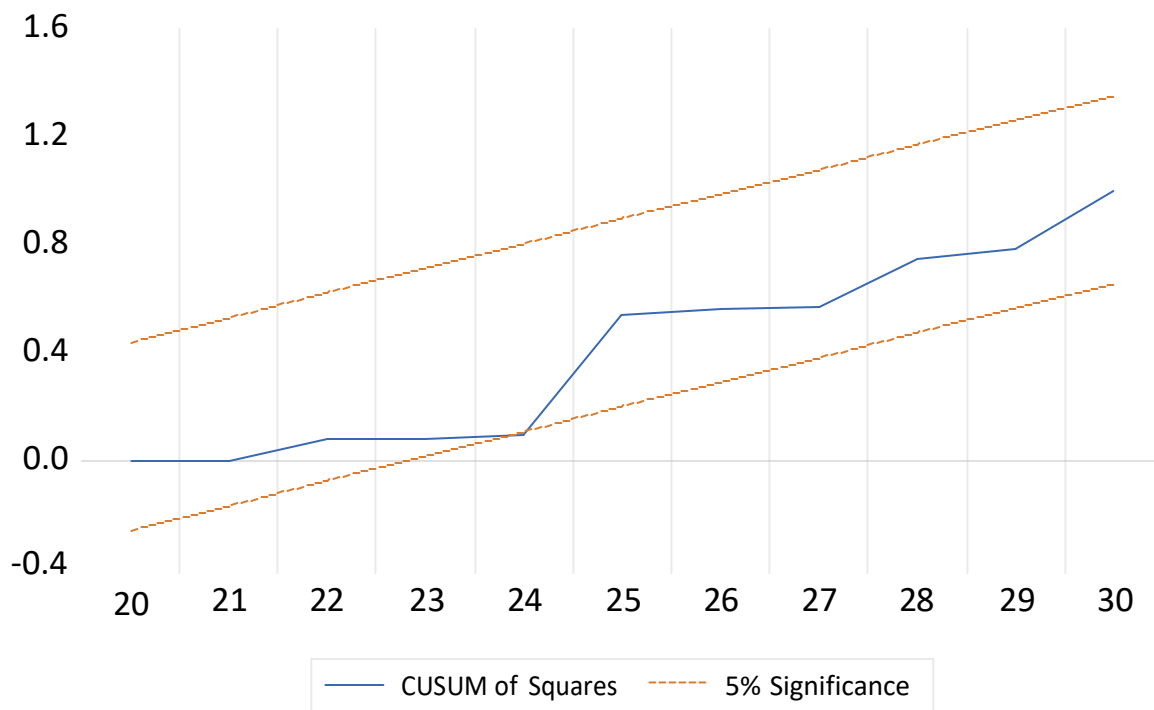
It is clear, looking at the table that displays the stability plots. The plots provide us with important information about the model's stability. This is evident by looking at the table. The fact that the plots are contained inside the approved region demonstrates that the parameters are reliable, and it also demonstrates that the variance estimates are contained within the 5% significance limit. This demonstrates the model's capacity for accuracy (ECM).

4.8 Conclusion

GDL, FDI, INF, and REER were all discussed in the chapter. It was determined whether or not these variables were stationary and how they related to one another via the use of many tests, including the ADF unit root test and the PP unit root test. Results from both the ADF and PP tests indicated that the variables under study had unit roots and are stationary at their first difference. The long-run ARDL test assesses whether or not the variables have a significant long-term connection, it was found that the variable have a long run relationship. Results from the short-run ARDL test showed a short run correlation

between the variables. The Bound test was used to determine whether or not the variables under inquiry, which were integrated, had co-integration. The components were found to be co-integrated over the course of the research. In other words, these elements tend to change in tandem with each other throughout time. In addition, the study examines the relationship between the variables under investigation and the direction of causality. The overall significance based on the probability findings demonstrated that the model is fit and that foreign direct investment (FDI) has a causal influence on GDP, as well as the same effect that GDP also has on FDI. Both CUSUM-TEST and the CUSUM OF SQUARES tests were found to be stable in the stability test, concluding the chapter.

CHAPTER FIVE

5.0 Summary, Conclusion, and Recommendations

5.1 Summary

The study's purpose, according to the researchers, was to measure the impact of FDI on economic growth from 1990 to 2019. This analysis found that foreign direct investment (FDI) has a considerable impact on economic growth. The analysis uses a time-series technique, which covers GDP, FDI, infliction, and currency rates, among other factors, to fulfill its objectives. While a lot of economic research continues to be carried out at present, it is unclear whether or not foreign direct investment has a substantial impact on economic growth. According to the conclusions of the research, the relationship between foreign direct investment and economic growth is either complimentary or substitutive. Descriptive research approaches were used to gather data for this study. Eviews software was used to analyze the World Bank's secondary data, which was retrieved from the database.

With a 5% chance of occurring, the results of the long-run co-integration test showed that FDI and economic growth have a statistically significant relationship, showing a positive coefficient for FDI, which is in line with Zhang (2000). According to the research, in emerging nations, foreign direct investment is more of a complement to economic development than a replacement. To put it another way, when the economy grows, FDI rises at a pace of 2.98 percent each year on average.

The ARDL Bound test findings demonstrate that we can reject the null hypothesis since the F-statistic is 6.969359, which indicates that the independent factors and the dependent variable have a long-term connection.

The short-run ARDL co-integration test findings reveal that foreign direct investment and economic growth have a statistically significant association in the near term. The link between GDP and FDI (foreign direct investment) is positive. The increase in economic growth will be accompanied by an increase in the coefficient of foreign direct investment, which will rise by 2.98 percentage points. The normality test indicates that the residuals

are normally distributed, and the stability test indicates that the parameters have a stable distribution.

5.2 Conclusion

This is the case, as outlined in the thesis, which investigates the effect that foreign direct investment has on the expansion of Ghana's economy. The expansion of Ghana's economy is favorably affected by FDI, which has a large and beneficial bearing on the process. It is a common belief that the link between an increase in economic output and inflows of foreign direct investment are complementary to one another. This study's contribution is an inquiry into the impact of foreign direct investment on economic development in Ghana. This research is the study's main contribution.

To establish whether the variables have unit roots, we used two distinct statistical tests. The Augmented Dickey-Fuller test and the Phillip-Perron test, which the finding reveal that all of the variables were stationary at first difference.

The ARDL long-run test reveals that the variables have a significant long-term association. The short-run ARDL test was used to look for a significant short-run connection, which was found. It was required to apply the Bound test in order to determine whether or not the variables under inquiry were co-integrated. The factors were found to be interconnected in the research. To put it another way, these factors tend to move in lockstep throughout time. The direction of causation between these factors is also investigated. FDI and GDP showed a causal relationship, but the data showed no correlations between the other variables. CUSUM-TEST was found to be stable, and the findings of the stability test were also found to be consistent.

5.3 Recommendations

Ghana, like many other developing nations, relies heavily on foreign direct investment for its growth. Policymakers should pay special attention to the economy's arrears in order to attract more foreign direct investment. In light of this, a few policy recommendations have been made to be put in place by policymakers to attract foreign direct investment.

Many aspects of Ghana's economy might be negatively impacted by an increase in inflation because of the negative correlation between inflation and economic growth. Due to the one-way relationship between Ghana's real GDP growth and inflation, higher levels of productivity growth are needed to keep prices stable in Ghana. The country's economic progress is being choked off by fundamental economic problems, and in order to win the battle against inflation, measures must be put in place that addresses these issues front-on. For two reasons, rising inflation in Ghana deters foreign direct investment (FDI) since the two are linked. Due to the one-way relationship between FDI and inflation, a lack of inflation may make it difficult to bring in outside investment. High levels of FDI from other countries have a significant impact on the country's low inflation. Fiscal and monetary policies designed to encourage FDI would thus help Ghana achieve long-term high and sustained development success because agriculture is the backbone of Ghana's economy, and export-oriented foreign direct investment (FDI) should be promoted in the industrial sector. It is imperative that the government provide an enticing environment to encourage FDI.. The upgrading of Ghana's transportation system and industry, as well as the supply of sustainable energy and water, the management of waste, the growth of communication technologies, and the building and repair of ports and harbors, are all necessary conditions for attracting FDI. As a result of this, it is imperative to focus more on the role and quality of growth, as well as the overall quality of human capital.

Other key elements of these variables, such as the multivariate VAR system, should be included in future research on the causal link between foreign direct investment and economic growth. As a result, we expect to get better results and be able to draw more solid conclusions.

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APPENDIX

Appendix 1: Descriptive Statistics

	GDP	FDI	INF	REER
Mean	5.467736	1.38E+09	23.91154	105.4122
Median	4.772439	2.38E+08	19.01908	98.17391
Maxim um	14.04712	3.88E+09	80.75458	165.9855
Minimum	2.120759	14800000	8.481073	64.23868
Std. Dev.	2.416677	1.49E+09	15.19521	28.97593
Skewness	1.670999	0.430424	2.063672	0.493197
Kurtos is	6.463742	1.347544	7.826680	2.399032
Jarque-Bera	28.95807	4.339588	50.41475	1.667670
Probability	0.000001	0.114201	0.000000	0.434380
Sum	164.0321	4.14E+10	717.3463	3162.366
Sum Sq. Dev.	169.3695	6.48E+19	6695.941	24348.54
Observations	30	30	30	30

Appendix 2: GDP UNIT ROOT

Null Hypothesis: GDP has a unit root
Exogenous: None
Lag Length: 4 (Automatic - based on t-statistic, lagpval=0.1, maxlag=7)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-0.153469	0.6207
Test critical values:	1% level	-2.660720	
	5% level	-1.955020	
	10% level	-1.609070	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: D(GDP) has a unit root
Exogenous: None
Lag Length: 3 (Automatic - based on t-statistic, lagpval=0.1, maxlag=7)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-4.314889	0.0001
Test critical values:	1% level	-2.660720	
	5% level	-1.955020	
	10% level	-1.609070	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: GDP has a unit root
Exogenous: None
Lag length: 4 (Spectral OLS AR based on t-statistic, lagpval=0.1, maxlag=7)

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-0.004280	0.6731
Test critical values:	1% level	-2.647120	
	5% level	-1.952910	
	10% level	-1.610011	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: D(GDP) has a unit root
Exogenous: None
Lag length: 3 (Spectral OLS AR based on t-statistic, lagpval=0.1, maxlag=7)

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-7.271259	0.0000
Test critical values:	1% level	-2.650145	
	5% level	-1.953381	
	10% level	-1.609798	

*MacKinnon (1996) one-sided p-values.

Appendix 3: FDI UNIT ROOT

Null Hypothesis: GHANA_GHA_FOREIGN_DIRECT_INVESTMENT_NET_INFLOWS__BOP_...
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=7)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		0.117784	0.9617
Test critical values:	1% level	-3.679322	
	5% level	-2.967767	
	10% level	-2.622989	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: D(GHANA_GHA_FOREIGN_DIRECT_INVESTMENT__NET_INFLOWS__BOP...
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=7)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-4.333925	0.0021
Test critical values:	1% level	-3.689194	
	5% level	-2.971853	
	10% level	-2.625121	

*MacKinnon (1996) one-sided p-values.

Appendix: 4 INFLATION UNIT ROOT

Null Hypothesis: INF has a unit root
Exogenous: None
Lag Length: 6 (Automatic - based on t-statistic, lagpval=0.1, maxlag=7)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-1.090790	0.2411
Test critical values:	1% level	-2.669359	
	5% level	-1.956406	
	10% level	-1.608495	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: D(INF) has a unit root
Exogenous: None
Lag Length: 5 (Automatic - based on t-statistic, lagpval=0.1, maxlag=7)

		t-Statistic	Prob.*
Augmented Dickey-Full r test statistic		-4.846453	0.0000
Test critical values:	1% level	-2.669359	
	5% level	-1.956406	
	10% level	-1.608495	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: INF has a unit root
Exogenous: None
Lag length: 1 (Spectral OLS AR based on t-statistic, lagpval=0.1, maxlag=5)

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-1.917115	0.0539
Test critical values:	1% level	-2.647120	
	5% level	-1.952910	
	10% level	-1.610011	

*MacKinnon (1996) one-sided p-values.

Residual variance (no correction)	369.1445
HAC corrected variance (Spectral OLS autoregression)	196.5750

Appendix: 5 REER UNIT ROOT

Null Hypothesis: GHANA_GHA_REAL_EFFECTIVE_EXCHANGE_RATE_INDEX__2010___100...
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=7)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-1.717796	0.4121
Test critical values:	1% level	-3.679322	
	5% level	-2.967767	
	10% level	-2.622989	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: D(GHANA_GHA_REAL_EFFECTIVE_EXCHANGE_RATE_INDEX__2010___1...
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=7)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-4.641523	0.0010
Test critical values:	1% level	-3.689194	
	5% level	-2.971853	
	10% level	-2.625121	

Appendix: 6 Bond Test

F-Bounds Test		Null Hypothesis: No levels relationship		
Test Statistic	Value	Signif.	I(0)	I(1)
		Asymptotic: n=1000		
F-statistic	6.969359	10%	2.37	3.2
k	3	5%	2.79	3.67
		2.5%	3.15	4.08
		1%	3.65	4.66

Appendix: 7 ARDL Long Run Test

Levels Equation				
Case 2: Restricted Constant and No Trend				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
INF	-0.241921	0.070770	-3.418386	0.0057
FDI	-1.58E-10	4.66E-10	-0.338807	0.7411
REER	0.004803	0.024228	0.198239	0.8465
C	10.58775	3.697865	2.863205	0.0154

Appendix: 8 ARDL Short Run Test

Dependent Variable: GDP
Method: ARDL
Date: 03/23/22 Time: 15:34
Sample (adjusted): 2 30
Included observations : 29 after adjustments
Maxim um dependent lags: 2 (Autom atic selection)
Model selection method: Akaike info criterion (AIC)
Dynam ic regressors (2 lags, automatic): FDI INF REER
Fixed regressors: C
Number of models evaluated: 54
Selected Model: ARDL(1, 1, 1, 1)
Note: final equation sample is larger than selection sample

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
GDP(-1)	0.443461	0.163704	2.708926	0.0131
FDI	2.98E-09	9.31E-10	3.207119	0.0042
FDI(-1)	-2.81E-09	1.03E-09	-2.733605	0.0124
INF	-0.010705	0.024224	-0.441935	0.6631
INF(-1)	-0.060278	0.023630	-2.550900	0.0186
REER	0.047361	0.029768	1.590991	0.1266
REER(-1)	-0.036982	0.028105	-1.315833	0.2024
C	3.283919	2.836405	1.157775	0.2600

R-squared	0.581878	Mean dependent var		5.541492
Adjus ted R-squared	0.442504	S.D. dependent var		2.424848
S.E. of regression	1.810529	Akaike info criterion		4.254066
Sum squared resid	68.83831	Schwarz criterion		4.631251
Log likelihood	-53.68395	Hannan-Quinn criter.		4.372195
F-s tatis tic	4.174935	Durbin-Watson stat		1.895110
Prob(F-s tatistic)	0.005025			

*Note: p-values and any subsequent tests do not account for model
     selection.

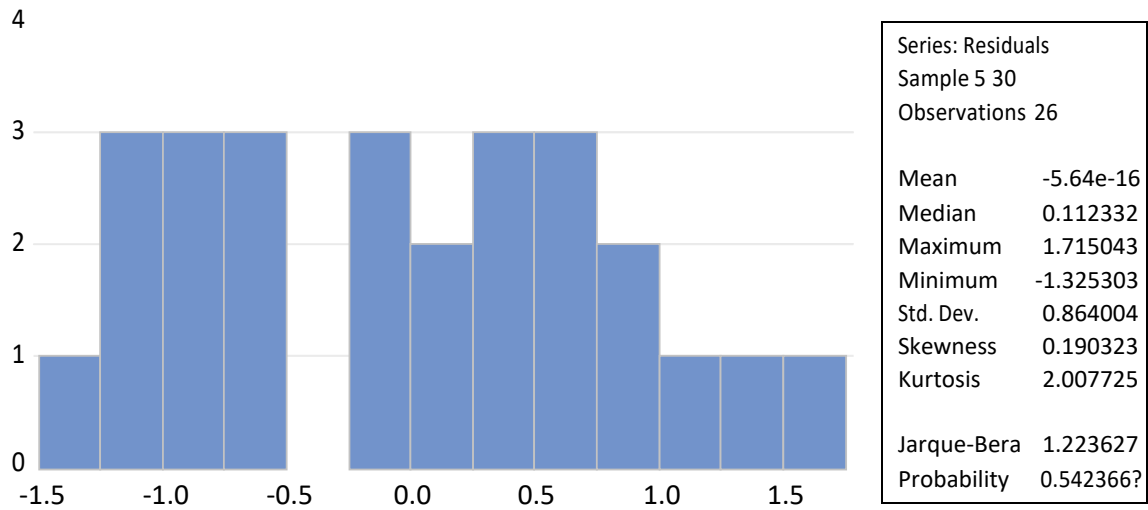## Appendix: 9 Serial Correlation

Breusch-Godfrey Serial Correlation LM Test:
Null hypothesis: No serial correlation at up to 2 lags

F-statistic	1.533518	Prob. F(2,19)	0.2413
Obs*R-squared	4.030630	Prob. Chi-Square(2)	0.1333

Appendix: 10 Normality Test

Series: Residuals	
Sample 5 30	
Observations 26	
Mean	-5.64e-16
Median	0.112332
Maximum	1.715043
Minimum	-1.325303
Std. Dev.	0.864004
Skewness	0.190323
Kurtosis	2.007725
Jarque-Bera	1.223627
Probability	0.542366?

Appendix: 11 Heteroskedasticity Test

Heteroskedasticity Test: Breusch-Pagan-Godfrey
Null hypothesis: Homoskedasticity

F-statistic	1.064467	Prob. F(14,11)	0.4664
Obs*R-squared	14.95861	Prob. Chi-Square(14)	0.3810
Scaled explained SS	1.349093	Prob. Chi-Square(14)	1.0000

**Appendix: 12 Granger Causality Test**

Pairwise Granger Causality Tests
Date: 05/30/22 Time: 13:24
Sample: 1 30
Lags: 7

Null Hypothesis:	Obs	F-Statistic	Prob.
FDI does not Granger Cause GDP	23	4.42227	0.0267
GDP does not Granger Cause FDI		3.47532	0.0509
INF does not Granger Cause GDP	23	2.74555	0.0902
GDP does not Granger Cause INF		0.73764	0.6493
REER does not Granger Cause GDP	23	0.19445	0.9780
GDP does not Granger Cause REER		0.40616	0.8738
INF does not Granger Cause FDI	23	2.90698	0.0790
FDI does not Granger Cause INF		0.48510	0.8219
REER does not Granger Cause FDI	23	1.43028	0.3120
FDI does not Granger Cause REER		0.81687	0.5987
REER does not Granger Cause INF	23	3.02197	0.0720
INF does not Granger Cause REER		1.85025	0.2036

Appendix: 13 Stability Test
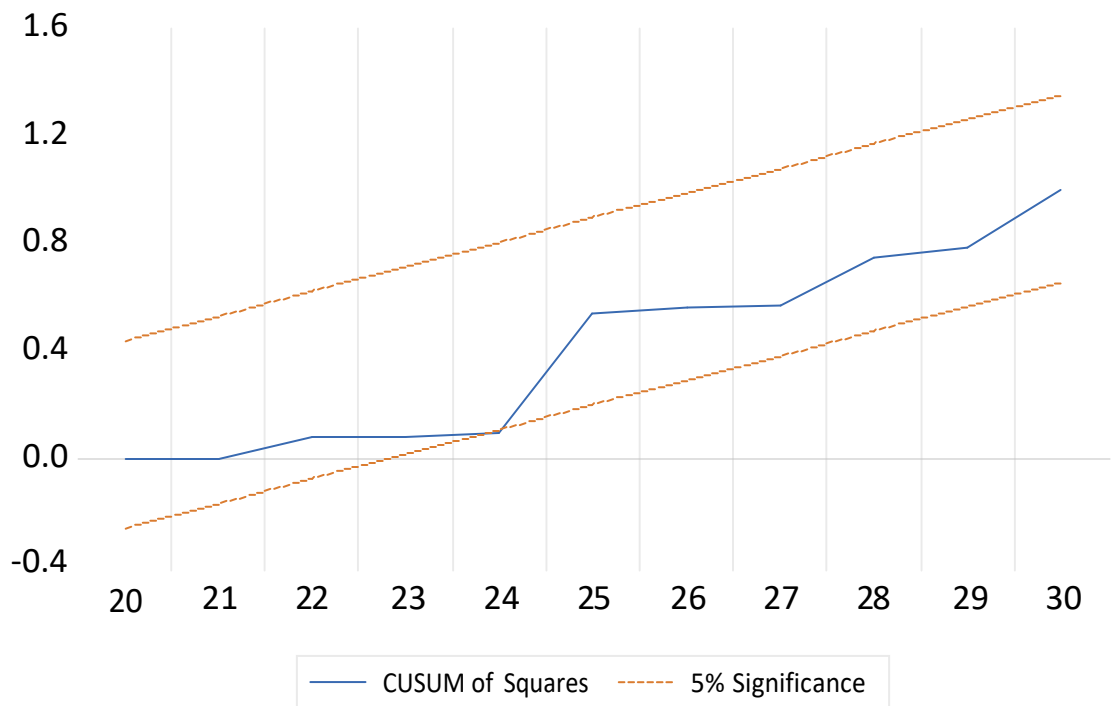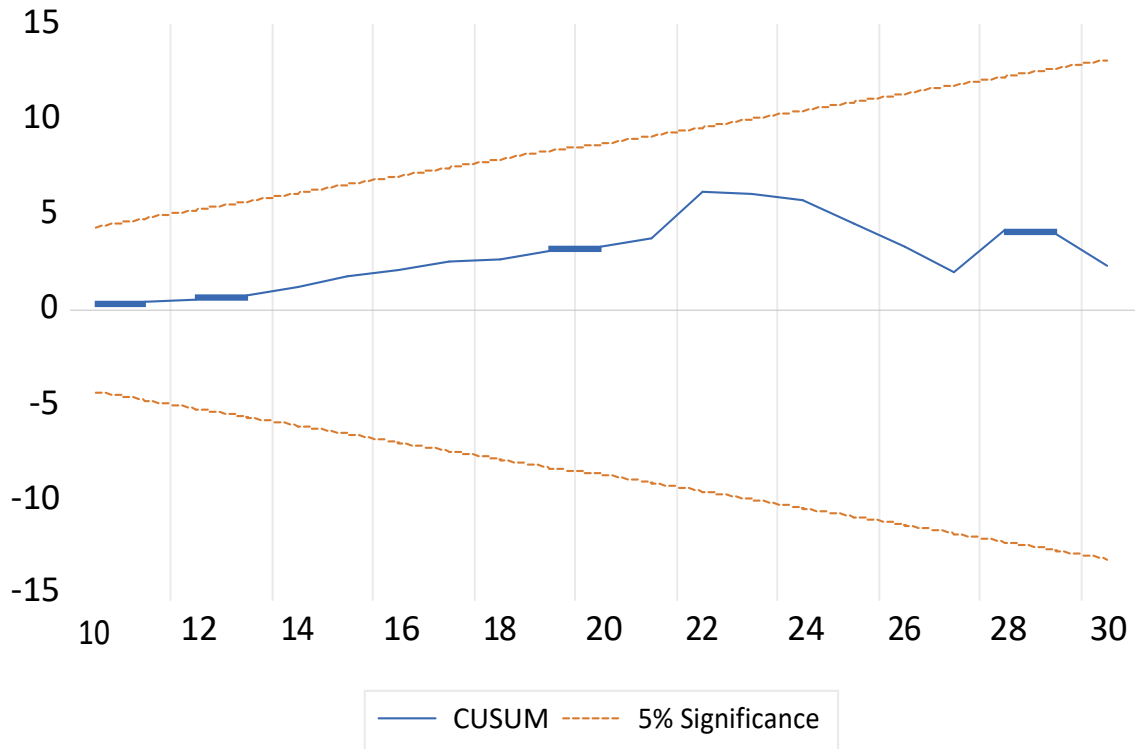
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