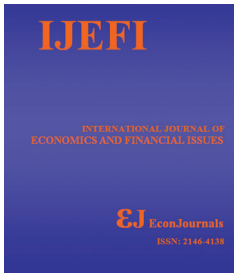

International Journal of Economics and Financial Issues

ISSN: 2146-4138

available at http: www.econjournals.com

International Journal of Economics and Financial Issues, 2025, 15(3), 351-363.

Foreign Direct Investment and Economic Growth: Evidence from United Kingdom

Osuji Christian Obinna*, Alugbuo Justin Chinweizu, Eze Emeka

Department of Economics, Michael Okpara University of Agriculture, Umudike, Nigeria. *Email: osuji.obinna@mouau.edu.ng

Received: 19 September 2024 **Accepted:** 18 March 2025 **DOI:** https://doi.org/10.32479/ijefi.17329

ABSTRACT

The study examined the relationship between foreign direct investment (FDI) and economic development in the United Kingdom using annual time series data from the World Bank spanning the years 1981-2021. The data was analyzed using the Auto-regressive distributed lag model (ARDL) and the Toda-Yamamoto causality test. The study's two main empirical findings were that, first, foreign direct investment and UK economic growth were positively correlated, and, second, that, in contrast to common opinion, strong economic growth stimulates the inflow of foreign direct investment. Therefore, it was suggested that the government of the United Kingdom and its policy makers should open up additional channels to draw in international investors in order to facilitate knowledge transfer, generate employment opportunities, and boost productivity. This can be achieved by providing unique FDI packages to international businesses, which may include reduced income taxes or income tax holidays, import duty exemptions, and infrastructure subsidies.

Keywords: Foreign Direct Investment, Capital Flows, Economic Growth
JEL Classifications: F21, F23, F43

1. INTRODUCTION

The contribution that foreign direct investment (FDI) makes to economic growth has generated so much interest amongst researchers and policymakers over the years. Foreign Direct Investment (FDI) according to Department for International Trade (DIT) (2021), refers to cross border investment from one country to another, with the aim of establishing a lasting interest in an enterprise where the investor's purpose is to have an effective voice in the management of the enterprise. An effective voice in this case refers to 10% or more ownership of the equity share capital. In the new growth theory, foreign private capital flow in the form of foreign direct investment is generally considered as a growth enhancing factor for most economies (Koojaroenprasit, 2012, Baiashvili and Gattini, 2019). It is considered to be a major contributor to economic growth due to its potential to increase productivity and innovation, generate employment with other several benefits attached. Policies promoting FDI is now common not just in developing countries but also in developed countries. Many countries according to Aitken and Harrison (1999) have even gone a step further to offer special incentives to foreign owned enterprises in the form of lower income taxes, income tax holidays, import duty waivers and subsidies for infrastructure. The reason for this special and favourable treatment stems from the conventional belief that the inflow of these foreign investment encourage technological transfers that increase the overall economic growth of the host and recipients countries (Carkovic and Levine, 2002). The Department for International Trade for instance seeks to attract new FDI and help existing foreign owned businesses to expand in the UK, offering services to new inward investors and foreign owned business planning to expand their UK operations. They do this in order to overcome a number of market failures some of which prevent investment from landing in the UK given information asymmetric which could lead to potential investors to underestimate the benefit

of an investment or other positive externalities which are not considered within the investor's decision process.

Though theory has highlighted the role that foreign direct investment (FDI) plays in the process of economic growth and development, some empirical research has revealed striking differences in opinions regarding FDI's potential to impact economic growth and provide significant benefits to host countries. While some authors (Boyd and Smith, 1999; Brecher, 1983; Brecher and Diaz-Alejandro, 1977) contend that foreign direct investment (FDI) will negatively affect resource allocation and impede growth in the presence of pre-existing trade, price, financial, and other distortions, others contend that FDI will only spur growth in the presence of specific policy conditions. For example, Khan (2007) argue that for FDI to positively impact on growth, the recipient nation's domestic financial sector must be developed. Borensztein et al. (1998) argue that in order to benefit from FDI spillovers, the host nation needs a highly educated labor force as a minimum requirement of the stock of human capita. In turn, Balasubramanyam et al. (1996) contend that trade openness is necessary to benefit from FDI. Furthermore, some authors are of the view that the benefits of FDI differ significantly amongst industries, emphasizing that not all industries have the same capacity to absorb foreign technology or forge connections with the rest of the economy (Alfaro, 2003). On the other hand, Haskel et al. (2007) questioned whether FDI actually boosts domestic companies' productivity and, if so, what should the host and recipient countries be ready to pay to attract FDI. According to Haskel et al. (2007), should government offer specific incentives to multinational corporations to induce local affiliate output and is there any reason for the frequently held belief that locally owned enterprises are more productive when foreign owned firms are present? The UK government for instance has spent hundreds of millions of pounds in incentive for foreign owned enterprises to both locate in the UK and to expand existing UK production. This reason for this is by virtue of being a high income country that it is among the top five R&D producers in the world and as such has sufficient absorptive capacity to realize FDI spillovers (Keller, 2001). Thus, it is in the light of the above that the present study aims at investigating the relationship between foreign direct investment and economic growth in the United Kingdom (UK).

Given the importance of FDI to the UK economy's employment, productivity, and economic growth, research on the effect of FDI on economic growth is essential. With an estimated GDP of $3.131 trillion in 2021, the United Kingdom is among the most developed economies in the world (World Bank, 2021). London, the capital of the United Kingdom, is regarded as a cultural and commercial center globally (Othman et al., 2019). According to Spickernell (2014), the UK led the European region in the 2013-2014 fiscal year and is ranked second to the US in terms of foreign direct investment inflow. The UK government views foreign direct investment as one of the main foundations in achieving growth and more than half of the UK new projects are directed to the energy and infrastructure sector. Over the years, the UK has seen a significant influx of foreign direct investment. The UK has the greatest FDI stock in Europe (OECD, 2020) and ranks second in the world for inward FDI stock overall (behind only the USA), according to DIT (2021). Europe still accounts for 56% of the UK's inward FDI stock, making it the primary source. When it comes to FDI coming into the UK, the USA holds the highest proportion at the individual level, making up slightly <25% of the total stock in 2019 (about 24.5%). International multinational firms contribute greatly to the growth of the British economy. Even while only 4% of UK local business units were owned by foreigners in 2018, they nevertheless generated 40% of the country's revenue and employed 4-9 million people, according to DIT (2021). However, the activity of multinational corporations with foreign ownership is not evenly distributed throughout the UK, with some regions more affected by FDI than others.

Furthermore, aside from the theoretical debate, the results of previous empirical studies on the effect of FDI on economic growth are mixed evidencing all possibilities such as positive, negative and null. While micro economic firm level based empirical studies provide evidence that FDI do not accelerate economic growth, macro-economic studies using aggregate flow of FDI on the other hand lend support for a positive influence of FDI in boosting economic growth especially under certain conditions. For instance, while studies such as Makiela and Ouattara (2018), Nketiah-Amponsah and Sarpong (2019), Muse and Mohd (2021), and Joshua et al. (2021) are of the view that FDI contributes positively to the growth of the economy a few others some influential find a negative and null relationship between FDI and economic growth. Some of these studies include the influential study of Aitken and Harrison (1999) which found a no evidence of a positive technology spillover from foreign firms to domestic owned ones in Venezula between 1979 and 1989, Alfaro (2003) who found out that FDI exerted a negative influence on growth in the primary sector, Khobai et al. (2019) which showed that FDI hurts lower extreme quantiles and the studies of Dinh et al. (2019) and Ayenew (2022) which found that FDI hurts economic growth in the short-run. Others include Mansfield and Romeo (1980), Haddad and Harrison (1993), Carkovic amd Levine (2002), Katerina et al. (2004), Herzer et al. (2006), Awe (2013) and Sohail et al. (2014). Thus, though a large number of literature find that foreign direct investment accelerates economic growth, it is still very unclear especially in empirical literature whether FDI increases economic growth and such still subject to empirical research. It is against this background that investigating the effect of FDI on economic growth becomes very imperative especially for the UK considering the substantial inflow of FDI it has received in recent decades.

The study therefore contributes to literature by examining the relationship between FDI inflow and UK economic growth hence addressing the country's specific dimension to the FDI - growth debate. The study differs from previous studies in methodology and scope as the number of years is considerably longer. In addition, the use of Auto regressive distributed lag model (ARDL) developed by Pesaran et al. (2001) allows us to make a clear distinction between long-run and short-run relationships and effects. This distinction is very important since some benefits of a policy decision may be realized in the short run while others may be in the long-run. Some may materialize in the short run and disappear in the long run as the economy grows and becomes mature. Finally, considering the

fact that correlation does not imply causation in any way, the study contributes to literature by testing for the direction of causality between foreign direct investment and economic growth in the United Kingdom by employing the augmented granger causality test developed by Toda and Yamamoto (1995) which is not prone to pre testing bias to ascertain whether changes in the economic growth of UK can be attributed to the inflow of FDI it receives.

2. LITERATURE REVIEW

2.1. Theoretical Review

The increase in foreign direct investment may be said to be a violation of Heckscher-Ohlins-Samuelson theory. Heckscher - Ohlins - Samuelson theory assumes that under free trade, factor rewards/prices would be equal as a result of no international factor movements, incomplete specialization and no factor intensity reversal. Thus, the failure of factor price equalization theorem to hold in many case provides an incentive for migration, international: 'portfolio investment, and foreign direct investment. It also explains why multinational corporations (MNCs) establish foreign subsidiaries to take advantage of lower labour cost in other countries. An important reason why differences in factor rewards occurs is that countries or industries do not have identical production function. This is due to differences in technological-know-how. Theories of FDI assert that the basis for such investment lies in the transaction costs of transferring technical and other knowledge. The Product Cycle Hypothesis, which contends that a company only transforms into a multinational business at a specific point in its growth process, is one of these significant theories of foreign direct investment. Growth is initially aided by export expansion into other markets, which takes advantage of variations in technological capacity across nations and industries. The international demonstration effects of wealthy nations establish and grow new markets. The company makes relationships with suppliers as well as the market for its products. The hypothesis states that after the company has standardized its production process, it searches outside for new markets and locations with lower costs. The company may assign several plants to produce and assemble its components. By lowering prices or differentiating its products in the event of an oligopoly, the company expands its market share on the demand side. Nevertheless, despite the product cycle theory's elegant theoretical framework, it is unable to account for MNCs' preference for using foreign direct investment over technology licensing to overseas companies.

Dunning (1977) made another attempt to bring the diverse theories of foreign direct investment together. In an effort to provide a comprehensive explanation of the factors influencing foreign direct investment, Dunning's eclectic theory integrates several existing theories of FDI. The OLI paradigm, which is often known as the eclectic theory, denotes the enabling conditions that need to be met by a corporation, industry, or company in order for it to be a source or host of foreign direct investment (FDI). These prerequisites include internalization gains, ownership advantages, and locational concerns. The core tenet of eclectic theory is that before there is a meaningful chance of attracting foreign direct investment, all three enabling environments have to be in place. While all three are necessary, it needs to be emphasized that no one is sufficient. Lastly, FDI raises social wellbeing and positively impacts the economic development of the host nation, according to neoclassical economic theory (Bergten et al., 1978). This theory is supported by the fact that foreign investors typically bring capital into the host nation, which affects both the quantity and quality of capital formation there. The nation's total savings rise as a result of capital influx and profit reinvestment. Taxes and other contributions raise government revenue (Seid, 2002). Furthermore, the host nation's pressures on its balance of payments are lessened by the influx of international capital.

2.2. Empirical Review

Many empirical studies have been conducted to examine the effects of FDI. Majority of the studies show how FDI can promote economic growth through different channels. Beginning with the conventional neo-classical growth model we x-ray some of these empirical works.

Solow (1956) asserted that there is a direct correlation between the rise in productivity and the quantity of capital required for each employee to carry out their duties. On the other hand, the marginal productivity of capital rises in tandem with an increase in capital per worker. At some point, productivity growth stops as the capital labor ratio stabilizes. In this long-term equilibrium, GDP, capital growth, and labor force growth were all exogenously established to be equal. This was the period when technical progress really took off. If there is technological growth, GDP per worker will rise at a pace equal to the long-term rate of growth. This trend should be further supported to the extent that capital is internationally mobile and moves to the nations with the best prospects. Therefore, it shouldn't matter how wealthy or poor a county is; it should be expected that the income gaps between them will eventually close. According to Solow's analysis, higher rates of capital profit, capital accumulation, and per capita growth should be expected in countries with low capital-to-labor ratios or scarce capital.

Using cross sectional data and ordinary least squares estimation technique, Balasubramanyam et al. (1996) examined the impact of FDI on economic growth for 46 developing countries spanning the years 1970-1985. Specifically, the study sought to o ascertain whether there exists any variation in the amount and effectiveness of foreign direct investment (FDI) when a nation pursues an import substituting (IS) or export promoting (EP) strategy. The study discovered that foreign direct investment (FDI) positively impacted economic growth, particularly in nations that used an export-oriented growth strategy. However, the results for the nations who used the import substitution method indicated a somewhat favorable impact.

Borensztein et al. (1998) used cross-sectional data for 69 developing countries from 1970 to 1989 to investigate the impact of foreign direct investment (FDI) on economic growth. Regression analysis was used in the study to determine that foreign direct investment (FDI) has a beneficial impact on economic growth, with the degree of this benefit being influenced by the quality of the human capital stock in the host nation. The analysis found that the primary cause of FDI's apparent beneficial impact on economic growth was

the spread of technology. Olofsdotter (1998) used ordinary least squares analysis to investigate the relationship between foreign direct investment (FDI), national capacities, and economic growth for 50 developed and developing nations between 1980 and 1990. The study's empirical findings demonstrated that foreign direct investment (FDI) had a favorable impact on economic growth. He attributed this to spillovers from technology. Additionally, the outcome demonstrated that the beneficial impact was greater for host nations with better institutional competence levels as determined by the effectiveness of their bureaucracy and the degree to which property rights are protected.

Using both time series and panel data fixed effects estimations for a sample size of 32 developed and developing nations, De Mello (1999) examined the impact of FDI on capital accumulation and output growth in the recipient economy. The study found that FDI leads to better technology and enhanced management in the host country. On whether FDI creates economic growth, the evidence from the study was relatively weak.

Similarly, by using panel data on Venezuelan plants from 1976 to 1989, Aitken and Harrison (1999) attempted to ascertain if domestic businesses profited from foreign direct investment. The study discovered that the productivity of plants held by domestic companies was negatively impacted by foreign investment. The study also discovered a favorable correlation between plant productivity and foreign ownership participation, but this association was only strong for small businesses. The analysis concluded that there is not much of a net impact of foreign ownership on the economy. The study concluded by noting that while there are advantages to foreign investment, these advantages seem to be absorbed by joint ventures. As a result, the study could not find any evidence to support the hypothesis that technology is transferred from foreign companies to companies that are held domestically.

Carkovic and Levine (2002) using a panel data set covering 72 developed and developing countries analyzed the connection between FDI and Economic growth. Employing OLS regression analysis, the study sought to determine whether FDI accelerated economic growth within the period 1960-1995. After resolving the biases which affected the earlier works, the study found that FDI did not exert any meaningful, robust and independent influence on economic growth for the period under review. Haskel et al. (2002) examined the relationship between FDI and productivity of domestic firms covering U.K manufacturing firms from 1973 to 1992. The study found a significantly positive relationship between domestic plants's total factor productivity and the foreign affiliate share of activity in that plant's industry which is consistent with positive FDI spillovers.

Choe (2003) used the conventional panel data causality testing approach developed by Holtz-Eakin et al. (1988) to examine the direction of causality between FDI and economic growth for 80 nations. The empirical conclusion demonstrated that FDI and economic growth are causally related in both directions. Additionally, the results indicated a weak causal link between FDI and economic expansion. Alfaro (2003) used cross-country data for the years 1981-1999 to investigate the impact of FDI on growth in the primary, manufacturing, and service sectors. According to the study, foreign direct investment (FDI) has an equivocal influence on growth because investments in the industrial sector tend to have a positive impact on growth while those in the primary sector likely to have a negative one.

In order to examine the factors influencing the spatial distribution of FDI inflows, Campos and Kinoshita (2003) used a special panel data set that included 25 transition economies and covered the years 1990-1998. The study discovered that trade openness, agglomeration, and institutions are the primary drivers that determine where FDI flows. In a similar vein, Katerina et al. (2004) studied the relationship between foreign direct investment and economic growth in transition economies using data from 17 different countries between 1995 and 1998. Their results show that there is no meaningful connection between economic growth and foreign direct investment.

Braithwaite and Greenidge (2005) examined the link between FDI and growth in Barbados using co-integration analysis. The empirical result from the study showed that in the long-run, FDI inflows contributed to growth while in the short-run it slowed the growth of Barbados economy. Using Toda and Yamamoto causality test Chowdhury and Mavrotas (2006) examined the causal relationship between FD and economic growth for three developing countries from 1969 to 2000. The study found that FDI did not granger cause economic growth in Chile and strong evidence of bi-directional causality between FDI and growth in Malaysia and Thailand. Herzer et al. (2006) used co-integration methodologies to investigate the impact of FDI on economic growth in 28 developing nations individually. Their findings showed that in majority of countries, foreign direct investment did not have any statistically significant impact on economic growth, especially in the short term.

Khan (2007) examined the role of domestic financial sector in the relationship between FDI and economic growth in Pakistan from 1972 to 2005. The study employed the ARDL bound testing approach developed by Pesaran et al. (2001). The study found that FDI inflows exerted a positive influence on economic growth both in the short-run and long-run if the domestic financial system has achieved a certain minimum level of development. The result of the study further showed that efficient domestic financial conditions not only attracted foreign companies to invest in Pakistan but also allowed them to maximize the benefits of foreign investment.

Using a production function based on the endogenous growth model, Falki (2009) analyzed the relationship between FDI and economic growth in Pakistan for the period 1980-2006. The result of the study showed a negative and statistically insignificant relationship between FDI inflows in Pakistan and its gross domestic output. Agrawal and Khan (2011) used multiple regression analysis to look into how FDI affected China's and India's GDP between 1993 and 2009. According to the study, for every 1% increase in FDI, China's GDP increased by 0.07%, whereas India's GDP increased by 0.02%

as a result of the same FDI rise. Additionally, the analysis discovered that FDI had a greater impact on China's growth than India's. Koojaroenprasit (2012) looked into how foreign direct investment (FDI) affected South Korea's economic growth between 1980 and 2009 using multiple regression analysis. The study's empirical data demonstrated a substantial positive correlation between foreign direct investment (FDI) and South Korea's economic expansion.

Awe (2013) examined the impact of FDI on economic growth in Nigeria from 1976 to 2006 using two-stage least squares (2SLS) method of simultaneous equation model. The empirical findings from the study indicated a negative significant relationship between economic growth and foreign direct investment in Nigeria. The study therefore recommended that Nigeria should encourage domestic investment to accelerate and boost economic growth instead of relying on inward FDI. Sohail et al. (2014) investigated the impact of FDI on economic growth in Pakistan from 2000 to 2010 using two stages least squares method of simultaneous equation model. The study found that there exists a negative relationship between FDI and economic growth which is in line with the earlier finding of Falki (2009). In a related study which also involved Pakistan Naz et al. (2015) found a positive relationship between FDI and economic growth. Siddique (2017) examined the causal relationship between FDI and economic growth for Pakistan using auto-regressive distributed lag bounds co-integration and granger causality test from 1980 to 2016. The empirical finding of the study provided evidence of a unidirectional causality from economic growth to FDI which suggest that in Pakistan, growth granger causes FDI.

In a country specific study for Spain, Carbonell and Werner (2018) using improved empirical methodology investigated whether FDI has influenced economic growth in Spain for the period 1984-2010. The result from the study showed that FDI did not stimulate economic growth even though within this period, FDI rose significantly, and Spain offered the ideal conditions for FDI to unfold its acclaimed positive effects on growth. The result further revealed that the Spanish EU and euro entry had no positive effect on growth. Dinh et al. (2019) used VECM and FMOL to analyze emerging nations between 2000 and 2014. Their short-run finding indicates that foreign direct investment is detrimental to economic growth, but that it is beneficial in the long run. Othman et al. (2019) examined the impact of FDI on the economy of the United Kingdom using regression analysis which covered the period 2000-2010. The result from the study revealed that FDI had a positive effect on UK's GDP as well as the total employment figures in the United Kingdom.

Baiashvili and Gattini (2019) investigated the impact of FDI on economic growth using a comprehensive and global database which included 111 countries that spanned from 1980 to 2014 and stretched from developed, developing and emerging markets economies. Employing dynamic panel methods of Generalized Method of Moments (GMM) estimators, the study examined the role of country income levels and institutional strengths in the FDI and economic growth debate. The study found that the benefits of FDI do not accrue mechanically and evenly across countries. The empirical result provided evidence of an inverted U-shaped relationship between country income levels and the size of FDI impact on growth. Moving from low to middle income countries the effect became larger. However, the effect diminishes as the transition to high income countries settles. Furthermore, the study found that institutional factors has a mediating positive influence on FDI within country income groups whereby countries with better institutions relative to their income group peers had a positive impact of FDI on economic growth.

Sohail and Mirza (2020) investigated the Impact of foreign direct investment on economic growth of Pakistan for the period 1996-2015 using correlation matrix and regression. The result showed that there is a significant positive relationship between foreign direct investment and gross domestic product of Pakistan. Acquah and Ibrahim (2020) in a study which involved 45 African countries examined the link between foreign direct investment (FDI), economic growth and financial sector development relying on annual panel data spanning from 1980 to 2016. Empirical results from the two-system generalized method of moments revealed an ambiguous effect of FDI on economic growth although, for most part, higher FDI is associated with higher growth. The result further revealed that financial sector development dampens the positive effect of FDI on economic growth. Qabrati (2021) investigated the impact of FDI on Kosovo's economic growth from 2007 to 2017 using regression analysis. The study found that FDI had a significant effect on economic growth. The result further revealed that the changes in economic growth were induced and driven by changes in FDI.

Using Pooled mean group in an Auto Regressive Distributed Lag model, Ayenew (2022) examined the effect of FDI on the economic growth of 22 sub-Saharan African countries from 1988 to 2019. Specifically, the study looked at the short and long run effects of FDI on economic growth. Empirical findings from the study showed that in the long run FDI has a positive and significant effect, however in the short-run the effect is statistically insignificant. The study there concluded that FDI increases long-term economic growth and so countries of the sub-Saharan Africa should focus on attraction FDI. Utilizing the data which were collected from 6 countries of the Association of Southeast Asian Nations (ASEAN-6) in the period 2002-2019, including: Indonesia, Malaysia, Thailand, Singapore, the Philippines, and Vietnam, Nguyen (2022) conducted a study with the aim of examining the role of financial development in the impact of foreign direct investment on economic growth. Specifically, the study sought to determine the level of financial development needed to maximize the spillover effects of foreign direct investment on economic growth. In Order to estimate the research model, the study used the threshold effects and system GMM estimators and found that foreign direct investment had a favourable effect on regional economic growth both before and after the set threshold values. Furthermore, the positive impact of foreign direct investment on economic growth became stronger when financial development exceeds the defined threshold value.

3. METHODOLOGY

3.1. Theoretical Model

The Endogenous growth theory provides the theoretical foundation for analyzing the connection between FDI and economic growth. The growth theory highlights the role of improved technology, efficiency and productivity in promoting growth. Thus, the role of FDI in promoting economic growth can be analyzed within the framework of augmented Solow production function. According to Solow (1956) output is a linear function of capital stock, labour, human capital and Productivity. This is represented in equation (1) below

$$Y_t = A_t\ K_{dt}^{\propto}\ K_{ft}^{\lambda} L_t^{\beta}\ H_t^{\gamma} \tag{1}$$

Where Y_t = is the flow of output, K is capital stock which in our case comprises of two components namely domestic owned capital K_{dt} and foreign owned capital K_{ft}, L is Labour, H is the stock of human capital while A is the total factor productivity which explains the growth in output that is not captured by the growth in factors of production specified.

Transforming equation (1) into estimation equation by logging and differentiating with respect to time, we obtain a familiar growth equation below:

$$y_t = a_t + \alpha k_{dt} + \lambda k_{ft} + \beta l_t + \gamma h_t \tag{2}$$

Where (y_t, k_{dt}, k_{ft}, l_t, h_t) are the growth rates of output, domestic capital stock, foreign capital stock, labour and human capital respectively, while (α, λ, β, γ) on the other hand represent the elasticity of output, domestic capital stock, foreign capital stock, labour and human capital respectively. According, Ayanwale (2007), in a world of perfect competition and constant returns to scale these elasticity coefficients can be interpreted as respective factor shares in total output and following the standard practice in literature K_{dt} and K_{ft}, are proxied by ratio domestic investment to GDP and ratio of FDI to GDP respectively. This therefore forms the basis for the analytical model specified in the next section.

3.2. Analytical Model

To achieve objective one of our study which is to empirically determine the effect of foreign direct investment on economic growth in UK, we specify the model below based on the theoretical framework spelt out in 3.1 above. The model is specified first in its functional form then transformed into an Auto regressive distributed lag (ARDL) model following Carkovic and Levine (2002), Campos and Kinoshita (2003), Alfaro (2003) and Ayenew (2022). The choice of an ARDL model is based on the fact that the method does not require variables in a time series regression equation to be integrated of order one. The ARDL Bound test could be carried out whether the underlying variables are I (0), I (1), or fractionally integrated. Second, the bound testing procedure avoids the pre-testing of unit roots. Third, the test allows the long run and short run parameters of the model to be estimated simultaneously. Fourth, all the variables are assumed to be endogenous. Finally, the bound testing procedure of co integration does well in small sample size as against the bivariate co integration test introduced by Engle and Granger and the multivariate co integration technique proposed by Johansen which are more appropriate for large sample size.

$$\text{RGDP} = f(\text{FDI, DI, LBF, EXCHR, INF, TO}) \tag{3}$$

The ARDL form of the model is specified below;

$$\begin{aligned}\Delta RGDP_t = {} & \alpha_0 + \sum_{i=0}^{n}\alpha_{1t}\,\Delta RGDP_{t-1} + \sum_{i=0}^{n}\alpha_{2t}\,\Delta FDI_{t-1} + \sum_{i=0}^{n}\alpha_{3t}\,\Delta DI_{t-1} \\ & + \sum_{i=0}^{n}\alpha_{4t}\,\Delta LBF_{t-1} + \sum_{i=0}^{n}\alpha_{5t}\,\Delta EXCR_{t-1} + \sum_{i=0}^{n}\alpha_{6t}\,\Delta INF_{t-1} \\ & + \sum_{i=0}^{n}\alpha_{7t}\,\Delta TO_{t-1} + \alpha_8 FDI_{t-1} + \alpha_9 DI_{t-1} + \alpha_{10} LBF_{t-1} \\ & + \alpha_{11} EXCHR_{t-1} + \alpha_{12} INF_{t-1} + \alpha_{13} TO_{t-1} + \mu_t\end{aligned} \tag{4}$$

Where: RGDP is real per capita gross domestic product growth rate which measures economic growth; FDI is foreign direct investment which equals gross FDI inflow as a share of GDP; DI is domestic investment; LBF is labour force; EXCHR is exchange rate; INF is inflation rate which is a proxy for macroeconomic stability and Trade Openness is TO. Exchange rate, Inflation rate and Trade Openness were included as control variables while α_8, α_9, α_{10}, α_{11}, α_{12}, α_{13} = long run coefficient; α_1, α_2, α_3, α_4, α_5, α_6, α_7 = Short run coefficient; μ_t = white noise error term; Δ = first difference operator and i is the lag length.

The bounds test involves performing the F-test on the null hypothesis of no co integration (i.e. Ho: $\alpha_8 = \alpha_9 = \alpha_{10} = \alpha_{11} = \alpha_{12} = \alpha_{13} = 0$) against the alternative: H_1: $\alpha_8 \neq 0$; $\alpha_9 \neq 0$; $\alpha_{10} \neq 0$; $\alpha_{11} \neq 0$; $\alpha_{12} \neq 0$; $\alpha_{13} \neq 0$). When the computed F-statistic exceeds the upper critical bounds value then the Ho hypothesis is rejected. When the F-statistic is lower than the lower bounds value then the null hypothesis of no co integration cannot be rejected. However, when the F statistic falls within the bounds, the co-integration test becomes inconclusive. For the short run relationship between foreign direct investment and economic growth, we use unrestricted error correction version of ARDL model by estimating the equation below:

$$\begin{aligned}\Delta RGDP_t = {} & \alpha_0 + \sum_{i=0}^{n}\alpha_{1t}\,\Delta RGDP_{t-1} + \sum_{i=0}^{n}\alpha_{2t}\,\Delta FDI_{t-1} + \sum_{i=0}^{n}\alpha_{3t}\,\Delta DI_{t-1} \\ & + \sum_{i=0}^{n}\alpha_{4t}\,\Delta LBF_{t-1} + \sum_{i=0}^{n}\alpha_{5t}\,\Delta EXCR_{t-1} + \sum_{i=0}^{n}\alpha_{6t}\,\Delta INF_{t-1} \\ & + \sum_{i=0}^{n}\alpha_{7t}\,\Delta TO_{t-1} + ECM_{t-1} + \mu_t\end{aligned} \tag{5}$$

Where: ECM_{t-1} is the lagged error – correction term obtained from the long run relationship.

3.3. Model II for Objective Two

In order to estimate objective two of our study which is to determine the direction of causality between foreign direct investment and economic growth in UK, a Vector Auto regression (VAR) estimation technique is employed. The specification is as follows:

$$RGDP_t = \alpha_1 + \beta_{11}\sum_{i=1}^{n} RGDP_{t-i} + \beta_{12}\sum_{i=1}^{n} FDI_{t-i} + \beta_{13}\sum_{i=1}^{n} DI_{t-i} + \beta_{14}\sum_{i=1}^{n} LBF_{t-i} + \beta_{15}\sum_{i=1}^{n} EXCHR_{t-i} + \beta_{16}\sum_{i=1}^{n} INF_{t-i} + \beta_{17}\sum_{i=1}^{n} TO_{t-i} + U_1$$

$$FDI_t = \alpha_2 + \beta_{21}\sum_{i=1}^{n} RGDP_{t-i} + \beta_{22}\sum_{i=1}^{n} FDI_{t-i} + \beta_{23}\sum_{i=1}^{n} DI_{t-i} + \beta_{24}\sum_{i=1}^{n} LBF_{t-i} + \beta_{25}\sum_{i=1}^{n} EXCHR_{t-i} + \beta_{26}\sum_{i=1}^{n} INF_{t-i} + \beta_{27}\sum_{i=1}^{n} TO_{t-i} + U_2$$

$$DI_t = \alpha_3 + \beta_{31}\sum_{i=1}^{n} RGDP_{t-i} + \beta_{32}\sum_{i=1}^{n} FDI_{t-i} + \beta_{33}\sum_{i=1}^{n} DI_{t-i} + \beta_{34}\sum_{i=1}^{n} LBF_{t-i} + \beta_{35}\sum_{i=1}^{n} EXCHR_{t-i} + \beta_{36}\sum_{i=1}^{n} INF_{t-i} + \beta_{37}\sum_{i=1}^{n} TO_{t-i} + U_3$$

$$LBF_t = \alpha_4 + \beta_{41}\sum_{i=1}^{n} RGDP_{t-i} + \beta_{42}\sum_{i=1}^{n} FDI_{t-i} + \beta_{43}\sum_{i=1}^{n} DI_{t-i} + \beta_{44}\sum_{i=1}^{n} LBF_{t-i} + \beta_{45}\sum_{i=1}^{n} EXCHR_{t-i} + \beta_{46}\sum_{i=1}^{n} INF_{t-i} + \beta_{47}\sum_{i=1}^{n} TO_{t-i} + U_4$$

$$EXCHR_t = \alpha_5 + \beta_{51}\sum_{i=1}^{n} RGDP_{t-i} + \beta_{52}\sum_{i=1}^{n} FDI_{t-i} + \beta_{53}\sum_{i=1}^{n} DI_{t-i} + \beta_{54}\sum_{i=1}^{n} LBF_{t-i} + \beta_{55}\sum_{i=1}^{n} EXCHR_{t-i} + \beta_{56}\sum_{i=1}^{n} INF_{t-i} + \beta_{57}\sum_{i=1}^{n} TO_{t-i} + U_5$$

$$INF_t = \alpha_6 + \beta_{61}\sum_{i=1}^{n} RGDP_{t-i} + \beta_{62}\sum_{i=1}^{n} FDI_{t-i} + \beta_{63}\sum_{i=1}^{n} DI_{t-i} + \beta_{64}\sum_{i=1}^{n} LBF_{t-i} + \beta_{65}\sum_{i=1}^{n} EXCHR_{t-i} + \beta_{66}\sum_{i=1}^{n} INF_{t-i} + \beta_{67}\sum_{i=1}^{n} TO_{t-i} + U_6$$

$$TO_t = \alpha_7 + \beta_{71}\sum_{i=1}^{n} RGDP_{t-i} + \beta_{72}\sum_{i=1}^{n} FDI_{t-i} + \beta_{73}\sum_{i=1}^{n} DI_{t-i} + \beta_{74}\sum_{i=1}^{n} LBF_{t-i} + \beta_{75}\sum_{i=1}^{n} EXCHR_{t-i} + \beta_{76}\sum_{i=1}^{n} INF_{t-i} + \beta_{77}\sum_{i=1}^{n} TO_{t-i} + U_7$$

Where: All variables are as defined below
K= lag order/length
α_1 - α_7 = parameters
u_t = Structural innovations (error term)

The model above can be stated more compactly as below:

$$Y_{it} = \alpha_i + \beta_i \sum_{i=1}^{n} y_{t-i} + \lambda_i \sum_{i=1}^{n} x_{it-i} + V_i \quad (6)$$

Where
Y_{it} = vector of endogenous variables (such that $y_{it} = RGDP_t \ldots TO_t$)
α_i = vector of constant terms
β_i = Coefficient of the autoregressive terms
λ_i = Coefficients of the explanatory variables (vector of coefficients)
v_i = Vector of innovations.

3.4. Definition and Source of Variables

The study will utilize annual time series data covering the period 1981-2021. The data will be obtained from different secondary sources which include World Bank development indicator 2021 database and United Nations Conference on Trade and Development (UNCTAD) World Investment Directory.

3.4.1. Economic growth (RGDP)

Economic growth or growth rate of output is the increase in the total quantity of real goods and services produced per person in an economy over a period of time. Economic growth is measured by the percentage change or the growth rate of real GDP in constant dollars. This indicator has been widely used in other studies such as Campos and Kinoshita (2003), Alfaro (2003) and Baiashvili and Gattini (2019). It will be sourced from World Bank development indicator 2021 database.

3.4.2. Foreign direct investment (FDI)

Foreign direct investment (FDI) inflows are generally defined as the measure of the net inflows of investment needed to acquire a lasting management interest (10% or more of voting stock) in an enterprise operating in an economy other than that of the investor. FDI as a % of GDP was used in this analysis. FDI data on UK

would be sourced from UNCTAD's World Investment Directory for the period under review. Its expected sign is positive and was used in Campos and Kinoshita (2003), Alfaro (2003), Baiashvili and Gattini (2019) and Ayenew (2022).

3.4.3. Domestic investment (DI)

Domestic investment is normally concentrated in capacity building areas such as education, health and transportation, it is expected to lead to an increase in both physical and human capital stocks and hence the rate of economic growth (Braithwaite and Greenidge 2005). Domestic Investment will be proxied by gross fixed capital formation which is the net value of investments in the host country within a given period of time. This has been used in studies such as Sohail et al. (2014), Othman et al. (2019), Baiashvili and Gattini (2019) and Ayenew (2022). Its expected sign is positive.

3.4.4. Labour force (LBF)

This is the active working population and its expected sign is positive. The Variable was used in Khan (2007) and Baiashvili and Gattini (2019).

3.4.5. Exchange rate (EXCHR)

This variable was used in Braithwaite and Greenidge (2005), Awe (2013) and would be sourced from World Bank development database. Its expected sign is positive.

3.4.6. Inflation rate (INF)

This represents the increase in the level of prices of goods and services that households consume. It is calculated as percentage changes in GDP deflator and was used in Alfaro (2003) Naz et al. (2015) and Baiashvili and Gattini (2019). It was added as a control variable for macroeconomic stability. A stable macroeconomic environment implies less investment risk and one major indicator of a stable macroeconomic environment is price stability. Empirical evidence from literature shows that a country with a history of low inflation and prudent fiscal activity signals to investors how committed and credible the government is Campos and Kinoshita (2003). It would be sourced from World Bank development indicators. Its expected sign is negative.

3.4.7. Trade openness (TO)

Trade openness is the sum of exports and imports as a share of GDP. It captures the degree of international openness. According to Balasubramanyam et al. (1996) greater trade openness (TO) is important for enjoying the growth effects of FDI. In agreement, Campos and Kinoshita (2003) argue that increase in trade openness contributes more to FDI inflows since insufficient information on local conditions increases uncertainty and risk of investment as potential investors are more encouraged to invest in a country they know better. It was used in Alfaro (2003), Baiashvili and Gattini (2019) and would be sourced from World Bank development indicators. Its expected sign is positive.

4. RESULTS AND DISCUSSION

4.1. Unit Root Test Result

Though the ARDL modelling approach does not require unit root test, it is important to conduct the unit root test in order to ensure that no variable is integrated of order two I (2) or higher. This is so because the ARDL procedure assumes that all variables are either I (0) or I (1). If a variable is found to be I (2) then the computed F-statistic produced by Pesaran et al. (2001) are no longer valid. The time series behaviour of each of the series is presented in Table 1.

From Table 1 it is observed that while economic growth (GDPG), foreign direct investment (FDI) and inflation rate (INF) were stationary (i.e. integrated of order zero) in their respective level forms, domestic investment (DI), labour force (LBF), exchange rate (EXCHR) and trade openness (TO) on the other hand were non-stationary in their various level forms. At 1% critical value, the null hypothesis of non-stationary (i.e. a case of unit root) was rejected in the case of (GDPG, FDI and INF) while it could not be rejected in the case of (DI, LBF, EXCHR and TO). However, the non-stationary variables (DI, LBF, EXCHR and TO) were made stationary after first difference. Hence, we conclude that while economic growth (GDPG), foreign direct investment (FDI) and inflation rate (INF) are integrated of order zero, I (0), domestic investment (DI), labour force (LBF), exchange rate (EXCHR) and trade openness (TO) on the other hand are integrated of order one I (1).

4.2. Co-integration Test Result

From the unit root test result above it could be seen that the stationary properties of the variables are a combination of I (0) and I (1) thereby making the use of ARDL bounds testing technique appropriate. Hence, to test for co-integration, the study employed the ARDL Bounds Testing Approach to determine whether there is a long-run relationship between economic growth (GDPG) and foreign direct investment in UK and the result is presented in the Table 2.

The result of the bounds test presented in Table 2 shows that the computed F-statistics (6.84) exceeds the upper Bound Critical value (4.43) at 1% level of significance. This implies that there is a stable long-run relationship between foreign direct investment and economic growth.

4.3. Presentation of ARDL Model Estimation Results

Presented below is the result of the ARDL model which addresses the first objective of our study. In the model, the dependent variable is economic growth which is proxied by gross domestic product per capita growth (GDPG) while the independent variables (FDI, DI, LBF, EXCHR, INF and TO) are as earlier defined. The result of the long-run and short-run ARDL model based on (2, 4, 4, 4, 4, 4 and 4) is presented in Table 3.

The estimated coefficient of the long run relationship in panel A of Table 3 showed that there is a positive and significant relationship between foreign direct investment (FDI) and economic growth (GDPG) in UK. Specifically, the result showed that a one unit increase in FDI would lead to 0.50 units increase in economic growth (GDPG). This finding is in perfect consonance with theoretical expectation whereby FDI is considered to be a major contributor to economic growth due to its potential to increase productivity and innovation, generate employment with other

Table 1: Augmented Dickey fuller (ADF) test

Variable	Level form		First difference		Order of integration
	ADF statistic	1% critical value	ADF statistic	1% critical value	
GDPG	−4.0706	−3.6105			I (0)
FDI	−3.6362	−3.6105			I (0)
DI	−1.2229	−3.6105	−4.4708	−3.6105	I (1)
LBF	−2.4344	−3.6105	−4.0329	−3.6105	I (1)
EXCHR	−2.5732	−3.6105	−4.8522	−3.6105	I (1)
INF	−4.3117	−3.6105			I (0)
TO	−1.6579	−3.6105	−5.0650		I (1)

Source: Author's computation using E-Views 9

Table 2: ARDL bounds test result

Computed F- Statistics: 6.84*	I (0)	I (1)
Critical value bounds (10%)	2.12	3.23
Critical value bounds (5%)	2.45	3.61
Critical value bounds (1%)	3.15	4.43

Source: Author's computation using E-Views 9, *Denotes 1% level of significance

several benefits attached It is also in line with the studies of studies of Makiela and Ouattara (2018), Nketiah-Amponsah and Sarpong (2019), Muse and Mohd (2021), and Joshua et al. (2021) all of which argued that FDI contributes positively to the growth of the economy.

A similar result was obtained in the short-run as shown in Panel B of Table 3. The co-efficient of growth (FDI) was positive and statistically significant (at 5%) both in the current period, one and two period lag and at lag 3 in the third period. This implies that in the short-run, foreign direct investment exerts a positive effect on economic growth in the current period, lag 1, lag 2 and lag 3. This is in sharp contrast to the earlier finding of Dinh et al. (2019) and Ayenew (2022) who found that FDI hurts economic growth in the short-run. A major policy implication of these findings is that foreign direct investment directly helps to stimulate economic growth both in the short run and long-run.

Similarly, domestic investment (DI) proxied by gross fixed capital formation had a positive and significant relationship with economic growth. This was the case in the long-run and also at lags 2 and 3 in the short-run as seen in panels A and B of Table 3 respectively. In the long-run (Panel A) a unit increase in domestic investment led to 0.05 units increase in economic growth while in the short run a unit increase in domestic investment at lag 2 and 3 caused a 0.12 and 0.10 units increase in economic growth respectively. This is in line with our theoretical framework where both domestic and foreign investment contributed positively to economic growth. The positive coefficient of domestic investment also confirms the finding of Ayenew (2022) in which gross fixed capital formation exerted a positive effect on economic growth.

With regard to labour force (LBF), results presented in Table 3, Panel A and Panel B show that the coefficients are statistically insignificant both in the short and long-run. The above result suggests that labour force is not a significant statistical variable influencing changes in in economic growth within the period under review.

Exchange rate (EXCHR) on the other hand, had a negative and significant effect on economic growth both in the short and long run. This indicates that increase in real effective exchange rate negatively affected economic growth in the UK.

Inflation rate variable (INF) which was used as proxy for macroeconomic instability had a negative relationship with economic growth thus suggesting that an unstable macroeconomic environment discourages growth. The coefficient of inflation rate was negative and statistically significant at 1% both in the long and short run. Specifically, a unit increase in inflation rate led to 5.52 and 5.45 units decrease in economic growth in the long and short run respectively. This is in line with the arguments put forward by Campos and Kinoshita (2003) that countries with relatively low average inflation rates are expected to attract more capital flows as macroeconomic risks are lower in these countries. Borensztein et al. (1998), Ayanwale (2007), Naz et al. (2015) and Baiashvili and Gattini (2019) all reported a negative relationship between inflation and economic growth.

Likewise, trade openness (TO) had a positive and significant (at 1%) relationship with economic growth in the long run thus suggesting that openness encourages growth in the UK. Specifically, the result showed in the long-run (Panel A), keeping other things constant, a one unit increase in imports plus exports to GDP will lead to a corresponding increase of 1.82 units increase in economic growth. This finding is consistent with the proponents of trade openness who argue that trade openness contributes to more FDI inflows as potential investors are more encouraged to invest in countries they know better about their local conditions on trade. It also agrees with the empirical result of Campos and Kinoshita (2003), Ayanwale (2007), Ayenew (2022) who found a positive link between Openness and economic growth.

With regards to the post estimation result and other residual diagnostic test, the result of the unrestricted error correction version of ARDL model showed that the coefficient of the error correction term (−2.1125) is negative and statistically significant. This implies that following short run disequilibrium, 2.11% of disequilibrium errors from the previous year's shock converge back to long run equilibrium in the current year.

The adjusted value of the coefficient of determination (R^2) from our ARDL result is 0.9049. This implies that about 90.49% of the total variations in the dependent variables are accounted by

Table 3: Result of ARDL model estimation

Panel A: Long run coefficients – dependent variable is economic growth (GDPG)				
Variable	**Coefficient**	**Standard error**	**t-statistic**	**Prob.**
FDI	0.503367	0.049934	10.080604	0.0005
DI	0.049868	0.011289	4.417409	0.0115
LBF	−0.023335	0.021706	−1.075050	0.3429
EXCHR	−0.007056	0.002125	−3.319565	0.0294
INF	−0.088497	0.016018	−5.524867	0.0052
TO	1.817262	0.293127	6.199581	0.0034
C	2.559795	1.518255	1.686011	0.1671
Panel B: Short run coefficients – dependent variable is economic growth (GDPG)				
Variable	**Coefficient**	**Standard error**	**t-statistic**	**Prob.**
C	5.407530	3.347591	1.615350	0.1815
D (GDPG(−1))	−0.910211	0.153131	−5.943992	0.0040
D (FDI)	0.704534	0.000218	3227.049724	0.0000
D (FDI(−1))	0.004026	0.000154	26.142143	0.0000
D (FDI(−2))	0.000607	0.000194	3.128840	0.0352
D (FDI(−3))	0.000105	0.000170	0.616210	0.5711
D (DI)	0.078405	0.038025	2.061914	0.1082
D (DI(−1))	0.122361	0.046662	2.622280	0.0587
D (DI(−2))	0.102345	0.036805	2.780764	0.0498
D (DI(−3))	−0.048153	0.023153	−2.079795	0.1060
D (LBF)	0.072592	0.078490	0.924859	0.4074
D (LBF(−1))	0.332361	0.065049	5.109397	0.0069
D (LBF(−2))	−0.096628	0.061897	−1.561107	0.1935
D (LBF(−3))	0.095427	0.037525	2.543056	0.0638
D (EXCHR)	0.013533	0.001923	7.038343	0.0021
D (EXCHR(−1))	0.001634	0.003390	0.481875	0.6551
D (EXCHR(−2))	−0.000101	0.003012	−0.033451	0.9749
D (EXCHR(−3))	−0.004844	0.002302	−2.104302	0.1032
D (INF)	−0.040106	0.007360	−5.449175	0.0055
D (INF(−1))	0.073052	0.015895	4.595817	0.0101
D (INF(−2))	0.007930	0.005606	1.414448	0.2301
D (INF(−4))	0.033595	0.011650	2.883650	0.0448
D (TO)	2.520400	1.033477	2.438757	0.0713
D (TO(−1))	4.974628	0.764177	6.509781	0.0029
D (TO(−2))	1.184605	0.891281	1.329103	0.2546
D (TO(−3))	2.008441	0.807975	2.485771	0.0678
CointEq(−1)	−2.112486	0.209920	−10.063309	0.0005
R-squared	0.989442	F-statistic	11.71380	
Adjusted R-squared	0.904974	Prob (F-statistic)	0.013646	
Durbin-Watson stat	2.433760			
Breusch-Godfrey serial correlation LM test				
F-statistic	1.064207	Prob. F (2, 2)	0.4844	
Heteroskedasticity test: Breusch-Pagan-Godfrey				
F-statistic	0.732177	Prob. F (32, 4)	0.7323	

Source: Author's computation using E-Views 9

the independent variables employed in the model. This shows excellent goodness of fit as the model can be said to fit the data well.

Furthermore, conducting a test for the statistical stability of the estimated model using the F-test showed that the calculated F-statistic value (11.71) is statistically significant since the probability value (0.01) is <(0.05).

Using Durbin Watson statistic to test for the existence or otherwise the presence of autocorrelation reveals that the model is free from the problem of serial autocorrelation. This is because the DW statistic value (2.43) is greater than the DU value (1.86). A similar result was obtained using Breusch-Godfrey serial correlation Lm test we arrives at this conclusion because the probability value (0.48) of its F-statistic is >5% i.e. (0.05) significant level. Finally, a test for heteroskedasticity using Breush-Pagan-Godfrey shows that the residuals of the regression are not also heteroskedastic. This is because the probability value of the F-statistic is also >5% (i.e. 0.73 > 0.05). Hence the null hypothesis of no heteroskedasticity was not rejected.

4.4. Toda Yamamoto Granger Non-Causality Test Result

Presented in the tables below (Table 4a and b) is the result of the Toda-Yamamoto granger causality test which addresses the second objective of our study which is to determine the direction of causality between foreign direct investment and economic growth in UK.

In Table 4a, it is observed that the coefficient of FDI is not statistically significant. This shows that foreign direct investment

Table 4a: VEC granger causality/block exogeneity wald tests

Dependent variable: D (GDPG)			
Excluded	**Chi-square**	**df**	**Prob.**
D (FDI)	0.929671	2	0.6282
D (DI)	0.781188	2	0.6767
D (LBF)	1.536607	2	0.4638
D (EXCHR)	4.715477	2	0.0946
D (INF)	0.401988	2	0.8179
D (TO)	1.095899	2	0.5781

Source: Author's computation using E-Views 9

Table 4b: VEC granger causality/block exogeneity wald tests

Dependent variable: D (FDI)			
Excluded	**Chi-square**	**df**	**Prob.**
D (GDPG)	6.381470	2	0.0411
D (DI)	1.831713	2	0.4002
D (LBF)	1.992000	2	0.3694
D (EXCHR)	2.830163	2	0.2429
D (INF)	0.697507	2	0.7056
D (TO)	0.037607	2	0.9814

Source: Author's computation using E-Views 9

(FDI) does not granger cause economic growth (GDPG). We arrived at this conclusion based on the fact that the Chi-squares was not statistically significant as indicated by their P-values. This finding conforms to the earlier finding of Choe (2003) and Chowdhury and Mavrotas (2006) who found a no causal relationship between FDI and economic growth. However, the result from Table 4b clearly shows that the coefficient of the economic growth variable (GDPG) is significant at 5% indicating a unidirectional causality from economic growth to foreign direct investment. This implies that in UK, growth granger causes the inflow of FDI into the country. This finding is line with the earlier finding of Siddique (2017) who found that in Pakistan that it is economic growth that granger causes FDI.

5. CONCLUSION AND RECOMMENDATION

The study examined the effect of foreign direct investment on economic growth in the case of UK using annual time series data sourced from the World Bank from 1981 to 2021. In order to achieve the objectives of the study which is to determine the empirical relationship and the direction causality between foreign direct investment and economic growth, the study employed the Auto-regressive distributed lag model (ARDL) and Toda-Yamamoto causality test.

On the effect of foreign direct investment on economic growth in the UK, the result of the ARDL model revealed that foreign direct investment had a positive and significant effect on economic growth implying that FDI is a driving factor to economic growth. in the UK both in the short and long run. Domestic investment proxied by Gross capital formation and trade openness had a positive significant effect on economic growth while exchange rate and inflation rate had a negative significant effect on economic growth in UK. This was the case in the long and short run. The result further showed that labour force did not have any significant effect on UK economic growth within the period under review.

On the question of causality, the result of the Toda-Yamamoto causality test revealed that economic growth granger caused foreign direct investment within the period under review. The result further showed that foreign direct investment did not granger cause economic growth in UK.

Based on the findings above, the following policy recommendations are suggested for consideration.

1. Foreign direct investment promotes economic growth as shown through its significant and positive coefficient from our empirical result. Hence the UK government and its policy makers should create more avenues to attract foreign investors which will enhance technology transfer, create more job opportunities and increase productivity. This can be done by offering special FDI packages such as special incentives to foreign enterprises which includes lower income taxes or income tax holidays, import duty exemptions, and subsidies for infrastructure.
2. There is the need to strengthen the long run relationship between foreign direct investment and economic growth. One way this can be done is through strengthening the intellectual property rights (IPRs) which is an important component of the regulatory system, including taxes, investment regulations, production incentives, trade policies, and competition rules.
3. In the quest of attracting foreign direct investment, special attention should be given to domestic investment as empirical findings from our study provided evidence that it positively contributes to economic growth. It is thus recommended that domestic investors need not to be ignored in formulating policy that could attract and motivate existing and potential domestic investors in the UK.
4. Since trade openness accelerated economic growth, it is therefore recommended that economies that wish to increase their attractiveness to foreign investors would be advised to first undertake significant market and trade liberalization which reduces barriers to trade, investment, and technology flows. This is because freer market access, together with sensible competition rules and related regulatory systems, promise to promote the greatest net benefits from incoming investment.
5. Macro-economic stability is one of the necessary conditions for a positive impact of foreign direct investment on economic growth as an unstable macroeconomic environment discourages economic growth. Hence, it is recommended that UK government at all times should strive to maintain low and predictable rates of inflation and exchange. A history of low inflation and prudent fiscal activity signals to investors how committed and credible the government is.

REFERENCES

Acquah, A.M., Ibrahim, M. (2020), Foreign direct investment, economic growth and financial sector development in Africa. Journal of Sustainable Finance and Investment, 10(4), 315-334.

Agrawal, G., Khan, M.A. (2011), Impact of FDI on GDP: A comparative

study of China and India. International Journal of Business and Management, 6(10), 71-78.
Aitken, B.J., Harrison, A.E. (1999), Do domestic firms benefit from direct foreign investment? Evidence from Venezuela. The American Economic Review, 89(3), 605-618.
Alfaro, L. (2003), Foreign Direct Investment and Growth: Does the Sector Matter? Working Paper, Harvard Business School, Harvard. Available from: https://www.grips.ac.jp/teacher/oono/hp/docu01/paper14.pdf
Awe, A.A. (2013), The impact of foreign direct investment on economic growth in Nigeria. Journal of Economics and Sustainable Development, 4(2), 122-132.
Ayanwale, A.B. (2007), FDI and Economic Growth: Evidence from Nigeria. African Economic Research Consortium (AERC) Research Paper 165.
Ayenew, B.B. (2022), The effect of foreign direct investment on the economic growth of Sub-Saharan African countries: An empirical approach. Cogent Economics and Finance, 10(1), 1-12.
Baiashvili, T., Gattini, L. (2019), Impact of FDI on Economic Growth: The Role of Country Income Levels and Institutional Strength. European Investment Bank (EIB), Working Paper 2020/02.
Balasubramanyam, V.N., Salisu, M., Sapsford, D. (1996), Foreign direct investment and growth in EP and IS countries. The Economic Journal, 106(434), 92-105.
Bergten, C.F., Horst, T., Moran, H. (1978), American Multinationals and American Interests. Washington, D.C.: Brookings Institute.
Borensztein, E., De Gregorio, J., Lee, J.W. (1998), How does foreign investment affect growth? Journal of International Economics, 45(1), 115-135.
Boyd, J.H., Smith, B.D. (1992), Intermediation and the equilibrium allocation of investment capital: Implications for economic development. Journal of Monetary Economics, 30(3), 409-432.
Braithwaite, K., Greenidge, K. (2005), Foreign Direct Investment and Growth in Barbados. In: Presented at the 26th Annual Review Seminar, Research Department, Central Bank of Barbados.
Brecher, R. (1983), Second-best policy for international trade and investment. Journal of International Economics, 14(3-4), 313-320.
Brecher, R., Diaz-Alejandro, C. (1977), Tariffs, foreign capital and immiserizing growth. Journal of International Economics, 7(4), 317-322.
Campos, N.F., Kinoshita, Y. (2003), Why Does FDI go where it Goes? New Evidence from the Transition Economies. IMF Working Paper, WP/03/228.
Carbonell, J.B., Werner, R.A. (2018), Does foreign direct investment generate economic growth? A new empirical approach applied to Spain. Economic Geography, 94(4), 425-456.
Carkovic, M.V., Levine, R.E. (2002), Does Foreign Direct Investment Accelerate Economic Growth? University of Minnesota, Department of Finance Working Paper. Available from: https://ssrn.com/abstract=314924
Choe, J.I. (2003), Do foreign direct investment and gross domestic investment promote economic growth? Review of Development Economics, 7(1), 44-57.
Chowdhury, A., Mavrotas, G. (2006), FDI and growth: What causes what? World Economy, 29(1), 9-19.
De Mello, L. (1999), Foreign Direct Investment-led growth: Evidence from time series and panel data. Oxford Economic Papers, 51(1), 133-151.
Department for International Trade. (2021), Understanding FDI and its Impact in the United Kingdom for DIT's Investment Promotion and Services. Available from: https://assets.publishing.service.gov.uk/media/604205b8d3bf7f021e25c0a3/Understanding-Fdi-and-its-impact-in-the-united_kingdom-for-dit_s-investment-promotion-activities-and-services-phase-2-analytical-report.pdf
Dinh, T.T., Vo, D.H., Vo, A.T., Nguyen, T.C. (2019), Foreign direct investment and economic growth in the short run and long run: Empirical evidence from developing countries. Journal of Risk and Financial Management, 12(4), 176.
Dunning, J. (1977), In: Ohlin, B., Hasselborn, P.O., Wijkman, P.M., editors. Trade Location and Economic Activity and the MNE: A Search for an Eclectic Approach in International Allocation of Economic Activity. London: MacMillan.
Falki, N. (2009), Impact of foreign direct investment on economic growth in Pakistan. International Review of Business Research Papers, 5(5), 110-120.
Haddad, M., Harrison, A. (1993), Are there positive spillovers from direct foreign investment? Evidence from panel data for Morocco. Journal of Development Economics, 42(1), 51-74.
Haskel, J.E., Pereira, S.C., Slaughter, M.J. (2002), Does Inward Foreign Direct Investment Boost the Productivity of Domestic Firms? NBER Working Paper No 8724.
Haskel, J.E., Pereira, S.C., Slaughter, M.J. (2007), Does inward foreign direct investment boost the productivity of domestic firms? The Review of Economics and Statistics, 89(3), 482-496.
Herzer, D., Klasen, S., Nowak-Lehmann, D.F. (2006), In Search of FDI-Led Growth in Developing Countries. IBERO America Institute for Economic Research (IAI), Discussion Papers 150, IBERO-America Institute for Economic Research.
Holtz-Eakin, D., Newey, W., Rosen, H.S. (1988), Estimating vector autoregressions with panel data. Econometrica, 56(6), 1371-1395.
Joshua, U., Babatunde, D., Sarkodie, S. (2021), Sustaining economic growth in Sub-Saharan Africa: Do FDI inflows and external debt count? Journal of Risk and Financial Management, 14(4), 1-13.
Katerina, L., John, P., Athanasios, V. (2004), Foreign direct investment and economic growth in transition economies. Southeastern Europe Journal of Economics, 1, 97-110.
Keller, W. (2001), The Geography and Channels of Diffusion at the World's Technology Frontier. National Bureau of Economic Research Working Paper No. 8150.
Khan, M.A. (2007), Foreign Direct Investment and Economic Growth: The Role of Domestic Financial Sector. Pakistan Institute of Development Economics (PIDE) Working Papers 2007. p18.
Khobai, H., Hamman, N., Mkhombo, T., Mhaka, S., Mavikela, N., Phiri, A. (2018), The FDI-growth nexus in South Africa: A Re-examination using Quantile regression approach. Studia Universitatis Babes-Bolyai Oeconomica, 63(3), 33-55.
Koojaroenprasit, S. (2012), The impact of foreign direct investment on economic growth: A case study of South Korea. International Journal of Business and Social Science, 3(12), 8-18.
Makiela, K., Ouattara, B. (2018), Foreign direct investment and economic growth: Exploring the transmission channels. Economic Modelling, 72(C), 296-305.
Mansfield, E., Romeo, A. (1980), Technology transfers to overseas subsidiaries by US-based firms. Quarterly Journal of Economics, 95(4), 737-750.
Muse, A.N., Mohd, S. (2021), Impact of foreign direct investment on economic growth in Ethiopia: Empirical evidence. Latin American Journal of Trade Policy, 4(10), 56-77.
Naz, S., Sabir, G.M., Ahmed, M. (2015), Impact of foreign direct investment on economic growth: Empirical Results from Pakistan. Journal of Poverty, Investment and Development, 12, 101-105.
Nguyen, M.T. (2022), Foreign direct investment and economic growth: The role of financial development. Cogent Business and Management, 9(1), 1-15.
Nketiah-Amponsah, E., Sarpong, B. (2019), Effect of infrastructure and foreign direct investment on economic growth in Sub-Saharan Africa.

Global Journal of Emerging Market Economies, 11(3), 183-201.
OECD. (2020), OECD Economic Outlook. Vol. 2020. Paris: OECD Publishing.
Olofsdotter, K. (1998), Foreign direct investment, country capabilities and economic growth. Weltwirtschaftliches Archiv, 134(3), 534-547.
Othman, B.J., Al-Kake, F., Diah, M.L., Othman, B., Hussein, S., Hasan, N.M. (2019), Impact of the foreign direct investment on the economy of the United Kingdom. International Journal of Psychosocial Rehabilitation, 23(2), 743-763.
Pesaran, M.H., Shin, Y., Smith, R.J. (2001), Bounds testing approaches to the analysis of level relationships. Journal of Applied Econometrics, 16(3), 289-326.
Qabrati, I. (2021), The effect of foreign direct investment on economic growth in Kosovo. European Journal of Economic and Financial Research, 5(1), 106-117.
Seid, S.H. (2002), Global Regulations of Foreign Direct Investment. United Kingdom: Ashgate Publishing Company.
Siddique, H.M.A., Ansar, R., Naeem, M.M., Yaqoob, S. (2017), Impact of FDI on economic growth: Evidence from Pakistan. Bulletin of Business and Economics, 6(3), 111-116.
Sohail, H., Sohail, A., Azeem, M. (2014), Impact of foreign direct investment on economic growth in Pakistan. International Journal of African and Asian Studies, 5, 56-60.
Sohail, S., Mirza, S.S. (2020), Impact of foreign direct investment on economic growth of Pakistan. Asian Journal of Economics, Finance and Management, 2(1), 106-118.
Solow, R.M. (1956), A contribution to the theory of economic growth. Quarterly Journal of Economics, 70(1), 65-94.
Spickernell, S. (2014), Foreign Investment into UK is Highest in Europe and Second Highest in World. Available from: https://www.cityam.com/1405852602/uk-foreign-investment-highest-europe-andsecond-highest-world
Toda, H.Y., Yamamoto, T. (1995), Statistical inference in vector auto regression with possibility integrated processes. Journal of Econometrics, 66(1-2), 225-250.
World Development Report. (2021), Data for Better Lives-Concept Note. World Development Indicators, World Development Report. Washington, D.C., World Bank Group.