Studying the Impact of Foreign Direct Investment on Economic Growth in the Kingdom of Saudi Arabia (1990 – 2023): Using the Autoregressive Distributed Lag (ARDL) Approach

دراسة أثر الاستثمار الأجنبي المباشر على النمو الاقتصادي في المملكة العربية السعودية (1990 – 2023)

باستخدام منهجية الانحدار الذاتي للفجوات الزمنية المتباطئة

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Abstract:

The main objective of this study is to analyze the relationship between foreign direct investment and economic growth in the KSA, in addition to evaluating the influence of economic openness on this relationship. It utilized time series data from 1990 to 2023, for FDI, economic openness, and GDP per capita. ARDL model was employed to explore both short-term and long-term impacts. The study found a long-term equilibrium relationship between three variables, with both FDI and economic openness having a positive long-term impact on economic growth. However, economic openness had a more significant effect. In the short term, FDI had a temporary negative effect before its long-term advantages appeared, while economic openness showed a negative impact in the second lag. The error correction rate revealed the economy's ability to return to equilibrium at a rate of 25.4% annually after economic shocks. The study recommends implementing balanced economic policies to maximize FDI advantages and minimize the negative consequences of economic openness,

Key words: *Foreign Direct Investment, Economic Growth, Economic Openness, ARDL Approach*

ملخص:

الهدف الرئيسي لهذه الدراسة هو تحليل العلاقة بين الاستثمار الأجنبي المباشر والنمو الاقتصادي في المملكة العربية السعودية، إضافةً إلى تقييم أثر الانفتاح الاقتصادي في هذه العلاقة. غطت بيانات الدراسة الفترة من 1990 إلى 2023 وهي عبارة عن سلاسل زمنية سنوية للمتغيرات محل الاهتمام. اعتمدت الدراسة على منهجية الانحدار الذاتي ذو الفجوات الزمنية المتباطئة لدراسة التأثيرات قصيرة وطويلة الأجل بين متغيرات الدراسة. ومن أهم نتائج هذه الدراسة: وجود علاقة توازن طويلة الأجل بين المتغيرات الثلاثة. حيث اظهر كل من الاستثمار الاجنبي والانفتاح الاقتصادي تأثير إيجابي على النمو الاقتصادي في الأجل الطويل، وكان تأثير الانفتاح الاقتصادي أكبر مقارنة بالاستثمار الاجنبي. وفي الأجل القصير كان للاستثمار الأجنبي المباشر تأثير سلبي مؤقت قبل أن تبدأ فوائده بالظهور على المدى الطويل، أما الانفتاح الاقتصادي في الأجل القصير كان له تأثير سلبي في الفجوة الزمنية الثانية. كما أظهر معدل تصحيح الخطأ قدرة الاقتصاد على العودة إلى التوازن بمعدل 25.4% سنوياً بعد حدوث أي صدمة اقتصادية. توصي الدراسة بضرورة وضع سياسات اقتصادية متوازنة من أجل تعظيم فوائد الاستثمار الأجنبي المباشر وتقليل الآثار السالبة للانفتاح الاقتصادي.

الكلمات المفتاحية: الاستثمار الأجنبي المباشر، النمو الاقتصادي، الانفتاح الاقتصادي، منهجية ARDL

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1. INTRODUCTION

To reduce its dependence on oil as its primary revenue source and diversify its income sources, the Kingdom of Saudi Arabia is currently undergoing substantial economic transformations. The objective is to preserve its status as one of the largest economies in the region while simultaneously transitioning to a more sustainable economy. FDI is a critical instrument in this economic transformation, as it is a driver for economic growth in many nations. FDI aids in the development of local industries, increases productivity, and fosters innovation by supporting entrepreneurs and providing a conducive environment for research and development, thereby contributing to the transmission of contemporary technology to host countries. It also contributes to the reduction of unemployment rates and the creation of new job opportunities.

To establish a stable investment environment and attract foreign investments, the Kingdom has implemented various policies and incentive laws recently. In addition, it has implemented various advantages for multinational corporations and has worked to address several constraints on FDI. Recent statistics from authorities suggest that indicators associated with FDI have experienced an increase. For example, in 2021, the total FDI inflows amounted to $19.3 billion, a 257% increase from 2020 and roughly equivalent to 2.3% of GDP (UNCTAD, 2022). Given the necessity of getting investments for the Kingdom's economic growth, the National Investment Strategy was published, with the goal of considerably increasing FDI inflows to 5.7% of GDP. Such an increase would position the Saudi economy among the top 10 in the Global Competitiveness Index by the target year 2030 (Saudi Ministry of Economy and Planning, 2023).

With the Kingdom's material and human resources, FDI can actively contribute to the growth of the Saudi economy. The purpose of this investigation is to evaluate the influence of FDI inflows on economic growth in the Kingdom in the past decades, the extent to which these flows have contributed to achieving desired growth rates, and the short- and long-term effects of these flows. The results will assist policymakers in designing and implementing effective policies to attract more foreign investments.

To measure the influence of FDI on economic growth, the study adopted the ARDL methodology; this statistical approach is used in econometric modelling to study causal relationships between variables. It is distinguished by its ability to detect short- and long-term relationships between variables, and it has proven highly efficient in econometric modelling compared to other statistical methods. It is hoped that this study will enhance the understanding of the nexus between FDI and economic growth in KSA and provide practical recommendations for policymakers to achieve sustainable economic growth.

Importance of the Study: The Importance of this research stems from the important role that FDI plays in the economy of many countries. FDI bridges resource and capability gaps that may otherwise remain unaddressed, thereby contributing substantial value-added to host economies. Specifically, it facilitates job creation, transfers advanced technologies, and introduces cutting-edge managerial and marketing expertise from multinational corporations, all of which enhance the competitive capabilities of domestic firms. In the context of increasing global economic integration, most nations actively seek to maximize the benefits of openness by expanding their investment base and attracting foreign capital. The Saudi government has implemented numerous programmes and policies to create an enabling environment for both domestic and foreign investment, aiming to accelerate economic transformation and strengthen the kingdom's competitive position globally. This study empirically examines FDI's role in supporting Saudi Arabia's economic growth. The study also underscores the significance of economic openness as a driver of growth, in addition to foreign investment. The study also demonstrates the performance of the ARDL technique in

constructing the econometric models that will be approved for this type of analysis. The study uses a quantitative analysis to assess the effectiveness of economic policies in reinforcing economic evolution. The results provide policymakers with practical insights for maximizing the benefits of FDI within Saudi Arabia's Vision 2030 development framework.

Research Objectives: The aims of this investigation are as follows:

1. To measure the short and long-term economic effects of foreign direct investment and economic openness on economic growth in the KSA

2- To discover the periods when FDI and economic openness are most effective in promoting economic growth.

3. To quantify the speed of adaptation toward long-term balance among the variables under investigation and to examine the factors that influence this convergence process.

4. To utilize the ARDL methodology in building a robust econometric model that establishes a methodological framework for future research on the Kingdom's economic growth trajectory.

5. To recommend policies that empower decision-makers to develop effective economic strategies for optimizing the growth-enhancing advantages of FDI and economic openness.

Research Problem: There have been numerous obstacles that have had a direct impact on the trajectory of Saudi Arabia's economic growth. Since the discovery of petroleum, the Kingdom has historically relied on oil as its primary source of revenue, turning it susceptible to fluctuations in global oil markets. The global transition to alternative energy sources has further exacerbated this vulnerability, necessitating the government to invest in economic diversification strategies. In recent decades, Saudi Arabia has faced one of the most significant challenges to its economic performance due to its dependence on a single resource. Additionally, the national economies have been subjected to supplementary pressures because of the changing global economic landscape, which is defined by regional and international economic coalitions. Saudi Vision 2030 has prioritized economic transformation as a significant programme to build a prosperous, stable, and diversified economy. Within this framework, FDI has emerged as a critical mechanism for acquiring advanced technologies and expertise to support this transformation. The government has implemented substantial reforms to improve the investment climate, stimulate domestic investment, and increase FDI inflows. While FDI has proven to be a significant contributor to economic growth in numerous countries, its precise impact on Saudi Arabia's economic development requires empirical investigation. Through this study, we would like to determine the impact of FDI and economic openness on economic growth in the Kingdom, by addressing the following questions:

1. What is the impact of FDI on economic growth in Saudi Arabia?
2. What is the impact of economic openness on economic growth?
3. Is there a cointegration relationship in the long-term between foreign direct investment, economic openness, and economic growth?
4. In what periods do FDI and economic openness have a greater impact on economic growth?
5. What is the rate of adjustment toward long-term equilibrium for these variables?

Research Hypotheses: The study suggests the following hypotheses for statistical validation, which are based on empirical literature and theoretical frameworks:

There is a cointegration relationship between foreign direct investment, economic openness, and economic growth in the long run

2. There is a statistically significant positive effect of FDI on economic growth in the long and short terms.

3. There is a statistically significant positive effect of economic openness on economic growth in the long and short terms.

4.There is a statistically significant adjustment rate towards long-run equilibrium between the independent variables (FDI and economic openness) and the dependent variable (economic growth).

Study Methodology: This study employs both descriptive-analytical and statistical methodologies. The study uses the descriptive-analytical methodologies to describe its data, calculate descriptive statistics, and examine all aspects related to foreign investments, relevant literature in this field, and statistics related to the study variables. Additionally, the study employs the statistical-analytical approach to develop econometric models and evaluate the hypotheses through ARDL modeling. The study builds a mathematical model to quantify the short- and long-term effects of FDI and economic openness as independent variables on the dependent variable, economic growth. Furthermore, it implements statistical criteria to guarantee the validity of the model and its ability to forecast economic growth.

Data Sources: The research relied on annual time series data for the period (1990-2023) obtained from the comprehensive World Bank databases. It chooses these datasets for their reliability, adherence to international standards, consistency in measurement methodologies, compatibility with econometric analysis, and superiority over national sources regarding cross-country comparability.

Study Limitations: This investigation is limited to the examination of the influence of economic openness and FDI on economic growth in the Kingdom of Saudi Arabia. Additionally, the study's temporal scope encompasses the years 1990 to 2023. It chooses this timeframe to include the economic landscape of the pre-Vision 2030, economic policies related to economic transformation, fluctuations in global energy markets, developments and reforms in the investment environment and foreign investment attraction, and integration into the global economy.

2. LITERATURE REVIEW

1. Study by Ali (2023): This study examined the success of foreign investments in addressing economic development challenges. It aimed to elucidate the role of FDI in Ethiopia's economic development process. Annual data on the Ethiopian economy from 2000 to 2021 were collected. The study employed regression models and econometric analyses to build an econometric model that evaluated the impact of foreign investment flows on specific economic development indicators in Ethiopia. One of the most significant discoveries was that foreign investments significantly contributed to the Ethiopian national economy by adding value. It was found that there is a positive impact between FDI and the following economic variables: GDP, national income, and trade balance, while an inverse relationship was observed between foreign investment and unemployment rates.

2. Al-Sawai (2017) conducted a study that aimed to obtain empirical evidence of the influence of FDI on specific macroeconomic variables in Jordan. The study data comprised time series for specific macroeconomic variables in Jordan from 1980 to 2013. (VECM) was used to build the study model. A positive long-term relationship between FDI inflows, GDP, imports and exports was one of the main findings.

3. Abdul Hamid (2017) investigated the influence of FDI inflows on economic growth in Egypt. The study examined key economic variables, including unemployment, inflation, economic openness, imports, and exports, from 1990 to 2015. Using econometric methods and time-series data, the study built a model that evaluated the relationship between GDP as dependent variable and FDI, as well as other growth-influencing variables. FDI had significant positive effects on GDP, exports, imports, and exchange rates; however, there was no detectable effect on inflation or unemployment.

4. Fatima & Al-Haroushi (2017) evaluated the performance of FDI in Algeria and its influence on GDP growth, as well as the government's efforts to establish a favourable investment climate. It employed econometric tools and time-series data from 1990 to 2015 to evaluate hypotheses. The findings verified a positive, long-term correlation between GDP and FDI.
5. Atta Allah (2018) conducted an analysis of the structure of Chinese FDI inflows and their interaction with economic growth in China from 1982 to 2017. The study discovered unidirectional causality between FDI and GDP employing econometric models and causality tests, which suggests that FDI has a positive impact on China's economic growth.
6. Al-Mihyawi (2019) investigated the influence of foreign direct investment (FDI) on Jordan's economic growth from 2000 to 2017. The study employed econometric models to analyze macroeconomic data. The results elucidated a favorable correlation between FDI and economic growth.
7. Aljehani & Shaheen (2021) examined the relationship between FDI and economic growth in KSA using survey data from 122 financial and corporate sector units. According to descriptive statistics and percentage analyses, FDI has a positive effect on GDP.
8. Mohamed et al. (2021) conducted a study that used the ARDL model to examine the relationship between economic growth, technological innovation, and FDI in Egypt from 1990 to 2019. The results indicated a positive long- and short-term relationship between FDI and GDP per capita growth, while inflation and innovation had a negative long-term effect.
9. Ehmaidat and Jajuga (2023) examined the relationship between FDI and economic growth in Saudi Arabia (1983–2013), with a particular emphasis on unemployment and GDP. They employed regression analysis, and their results confirmed a positive influence of FDI on the GDP.
10. Jehangir et al. (2020) employed the ARDL model to investigate the influence of FDI on Pakistan's economic growth (1974 –2018). Long-term results showed positive effects from FDI, capital formation, and labour force participation, while short-term results indicated mixed effects.
11. EBGHAEI (2023) evaluated the influence of FDI on economic growth in MENA countries for the period 1980 to 2020. He used a second-generation panel cointegration approach. The results indicated that many countries (such as Egypt and Saudi Arabia) experienced a beneficial outcome, while Jordan and Iran did not experience any effects.
12. Salem Al-Harbi and Shaheen (2021) used the ARDL model to conduct a study that investigated the role of FDI in Saudi Arabia's macroeconomy from 1992 to 2017. Results verified the long-term beneficial impacts of FDI on GDP, as well as on exports and real exchange rates.

The following table gives a comparison between the current study and previous studies regarding a number of basic elements:

Table 1: A comparison between the current study and the previous studies

Element	The previous studies	The current study
The main objective	They studied the impact of FDI on economic growth in different countries such as Saudi Arabia, China, Pakistan, Egypt, Jordan, and others.	It studied the impact of FDI and economic openness on economic growth in the Kingdom of Saudi Arabia.
The time	The range was from 1970 to 2021.	It covered the period from 1990 to 2023.
The statistical methodology	They varied between linear regression models, error correction models (VECM), and ARDL models.	It employed ARDL methodology for analyzing short- and long-term relationships and estimating an ECM model to calculate the speed of adjustment to shocks.
The term analysis	Most of the studies focused on measuring only the long-term impact, without addressing the short-term effects.	It conducted a comprehensive analysis of both the short and long term, identifying time-graded effects.

The variables	Most of them focused only on FDI as an influencing factor, and few have addressed the role of economic openness.	It incorporated economic openness as an influencing variable beside FDI in a single standard model.
The link to the development vision	They rarely linked their findings directly to specific development projects or strategic programs.	Linked to the Kingdom's Vision 2030 and economic diversification and transformation strategies.
The data sources	The studies varied between national and international data, with some relying on questionnaires.	The data source was the World Bank, a reliable and standard source.
The Error Correction Rate (ECM)	Few studies indicated the rate or speed of correction.	It assessed the rate of adjustment towards equilibrium in the occurrence of an economic imbalance.
The main results	Most studies have confirmed the positive impact of FDI on economic growth in the long run, while many did not discuss the temporary effects.	Both FDI and economic openness had a long-term positive effect and a short-term, temporary negative effect.

Source: Prepared by the researcher

The research gap: The current study accorded with previous studies on certain points; however, it differed on others. Nevertheless, this investigation distinguished itself by addressing numerous scientific gaps that went unaddressed in prior literature. The following is a concise summary of these aspects:

- Timeframe: This investigation encompasses a more recent and extensive period, specifically from 1990 to 2023. It enables a more precise evaluation of the economic impacts and developments that the Kingdom has observed within the context of Vision 2030, making it more relevant to the current economic situation than previous research.
- Integration of variables: The current study combined FDI and economic openness into a single standard model, providing a comprehensive view of the impact of investment and trade policies on economic growth, a matter overlooked in most previous studies.
- Comprehensive methodology: This study comprehensively employed the ARDL methodology to analyze short- and long-term relationships and to examine in detail the temporary negative effects in the short term, a matter that most previous studies have not adequately addressed.
- Detailed Timeline Analysis: The study provided a detailed timeline analysis of the impact of FDI and economic openness on growth, identifying the short-term negative impact and the long-term positive impact, making economic policy evaluation more accurate.
- Measuring Economic Resilience: This study focused on assessing the speed of adjustment toward equilibrium in the event of an economic imbalance. Therefore, it examines the resilience of the Saudi economy and its ability to return to equilibrium, a topic not sufficiently addressed in previous studies.
- Targeted Recommendations: This study provided strategic recommendations to improve the attractiveness of FDI while mitigating its transitory negative consequences, in accordance with Saudi Vision 2030. It also separately addressed the role of economic openness, offering a more comprehensive analytical perspective on the necessary policies.

3. THEORETICAL BACKGROUND

Foreign Direct Investment (FDI):

According to the World Bank (2024), FDI is a cross-border investment in which a person or organization in one nation exercises control or considerable influence over a corporation in another country. The significance of FDI appears to be in promoting applications of modern technologies, and in this case Ogwuru et al. (2022) underscored that FDI facilitates the transmission of technology

and knowledge, thereby increasing productivity and, consequently, promoting economic growth. According to Bermejo and Werner (2018), international organizations continue to underscore the significance of technology transfer abroad through FDI as a catalyst for economic growth. Additionally, Lu et al. (2024) asserted that China achieved leapfrog development by assimilating and utilizing advanced foreign technology through import-export commerce and foreign direct investment.

The Ministry of Investment (2024) asserts that the Kingdom Vision 2030 aims to diversify its economy to develop it into a worldwide investment powerhouse. The Ministry also aims to increase FDI to 5.7% of GDP. The research predicts that the Kingdom will achieve positive economic growth because of increased FDI.

Economic Growth:

Economic growth results in enhancing the standard of living. It measures by using a variety of indicators, including nominal Gross Domestic Product (GDP), real GDP, and real GDP per capita. However, nominal GDP is sensitive to prices fluctuation and can be affected by inflation. Moreover, real GDP does not take in accounting the population. As a result, the study utilizes real GDP per capita to assess economic growth. It defines GDP per capita as the aggregate value of real products and services produced by the economy within a specific time, divisible by the number of populations.

There are several theories that deal with economic growth; for instance, in the Keynesian theory of growth, government expenditure is the primary factor driving aggregate demand through the multiplier effect, thereby facilitating economic growth and bringing the economy out of recession (Kasun, 2019). The neoclassical theory of economic growth, published in 1956 by Solow, used output as a measure for economic growth that depended on labour, capital, and technology (Ahmed, 2025). The indigenous growth theory, published in 1990 by Romer and in 1988 by Lucas, stated that economic growth is derived by investment in human capital, innovation and knowledge (Paredes-Soria et al., 2025). The study anticipates that FDI will positively influence economic growth in the Kingdom.

Economic Openness:

Gräbner et al. (2020) assert that the general rise in economic openness over the past few decades has been characterized by various concepts, including trade openness, economic integration, trade liberalization, and globalization. As a result, several definitions and measures have developed. For instance, Ahmed and Gabriel (2024) demonstrated that economic openness is the degree of international exchange of products and services that influences both the scale of the national economy and its growth. Darku & Yeboah (2017) measured economic openness by the sum of exports and imports divided by GDP. However, Hassan (2024) asserted that the impex rate, which is calculated by dividing exports minus imports by GDP, is a measurement used to assess economic openness. A higher Impex rate indicates more economic openness.

In fact, economic openness encompasses the export and import of goods and services, which are essential for any economy. Economies cannot consume all their production, requiring the export of surplus items to foreign countries. Conversely, economies cannot meet all their requirements due to variations in natural resources, labour skills, and technology across countries, which leads to differences in the comparative advantages of their commodities. Consequently, there is a need for significant improvements. According to the Saudi General Authority for Foreign Trade (2024), the

Kingdom's objective was to liberalize trade in products and services by eliminating or decreasing customs duties and limiting the implementation of non-customs measures. In developing nations, economic openness fosters a more stable macroeconomic environment and increases real per capita GDP (Darku and Yeboah, 2017). Moreover, Huchet-Bourdon et al. (2018) emphasize that countries that are more open to trade experience significant economic growth. In addition, Chen (2021) stated that Japan started with the commercial approach to achieve industrial development and export growth. Therefore, the study anticipates that economic openness will positively influence economic growth in the Kingdom.

Mercantilists' school believe that a nation attains strength, which means economic growth via the accumulation of wealth, namely gold and silver (Onyernama et al. 2023). The primary method for such accumulation is via overseas commerce. During the sixteenth and seventeenth centuries, the mercantilism school adopted a policy to achieve an export surplus and get bullion of gold and silver, Consequently, they encouraged exports and restricted imports to generate a trade balance surplus and acquire the precious metals (Conti, 2018; Mansouri, 2022). This case illustrates the importance of international trade for the mercantile school as a means of achieving economic development.

In the classical theory, Adam Smith advocated free trade. He believes that the wealth and power of a nation are not achieved by the accumulation of gold and silver alone, but rather by the sum of goods and services that are available to their citizens, including gold and silver (Osagie & Ukwuoma, 2022). International trade benefits all countries involved in trade relations. The benefits of international trade include market expansion, increased exports, specialization, and the division of labour, all of which contribute to economic growth (Lam, 2015). According to Gräbne (2021), for a country to increase its wealth, trade must be liberalized between the countries, and the country must specialize in producing and exporting goods that have an absolute advantage or lower absolute production costs in terms of labour and importing those that it produces with higher absolute production costs. Additionally, David Ricardo advocated for trade liberalization. However, he asserted that mutually beneficial trade could occur if a nation specialized in the production and export of goods for which its labour force produces with comparative advantage, while importing goods for which it did not (Mansouri, 2022). So, this means that trade liberalization, or economic openness, enhances economic growth.

Based on the Heckscher-Ohlin international trade theory, a nation should specialize in the exportation of goods for which production factors are available and the importation of goods for which they are scarcer. The reason for trade is that the economic resources of various countries are different, resulting in scarcity in certain regions (Lam, 2015). As a result, variations in prices, interest rates, rents, and wages arise. Additionally, there are variations in the techniques used to produce goods.

Specification and Construction of the Econometric Model

Model Specification

The study proposed an ARDL model to examine the relationship between FDI and economic growth, with economic openness as an additional variable. The proposed model includes the following variables:

1. FDI Inflows as the First Independent Variable: The magnitude and impact of FDI are measured using key indicators; most notable is net FDI inflows, which are calculated as the difference between incoming and outgoing FDI over a specific period. Positive net inflows indicate an increase in foreign investments in the country, while negative net flows suggest a decline. Higher FDI inflows are expected to contribute to new economic projects, thereby enhancing economic growth.

Consequently, it is anticipated that there will be a positive correlation between FDI inflows and economic growth.

2. Economic Openness as the Second Independent Variable: The degree of economic openness is measured by a country's trade integration with the global economy. Greater economic openness implies deeper integration with global markets, though it may also expose the economy to external shocks affecting trade flows. Additionally, the openness of capital flows (inward and outward) significantly influences economic growth. Therefore, the study anticipates a positive relationship between economic openness and economic growth.

3. GDP per capita as a dependent variable: real GDP is one of the most critical economic indicators for assessing economic activity and growth trends. An increase in real GDP is indicative of increased economic activity. As a result, the research anticipates that the dependent variable of economic growth (GDP per capita) would have a positive relationship with economic openness and FDI.

Model Construction

Econometric Model:

Based on previous theoretical and empirical studies, the following econometric model is adopted:

$$GDP = \beta_0 + \beta_1 FDI + \beta_2 OPE + u$$

Where:
GDP: GDP per capita (dependent variable).
FDI: Foreign Direct Investment inflows (independent variable).
OPE: Economic Openness (independent variable).
$\beta_0, \beta_1, \beta_2$: Model parameters.
u: Random error term.

A Priori Expectations of Parameters

This step states the theoretical expectations for the signs and magnitudes of the model's parameters in accordance with economic theory and prior empirical findings. These expectations are essential for post-estimation analysis, which involves assessment of the estimated coefficients for their economic significance. The expected signs and magnitudes of the coefficients are as follows:

- The intercept (β_0) indicates the baseline GDP growth that is uncorrelated with the independent variables. The expected sign is positive ($\beta_0 > 0$).
- The FDI Coefficient (β_1) represents the marginal impact of a one-unit increase in FDI on GDP. The anticipated sign is positive ($\beta_1 > 0$), which is indicative of the growth-enhancing role of FDI.
- The Economic Openness Coefficient (β_2) quantifies the effect of a one-unit increase in trade openness on GDP. Economic growth is stimulated by increased openness; therefore, the anticipated sign is positive ($\beta_2 > 0$).

4. RESULTS AND DISCUSSION

Several descriptive statistics were computed in this section to characterize and analyze the study's data, and the ARDL methodology was employed to construct and estimate the proposed model. This investigation implemented the subsequent procedures in a systematic manner:

• Descriptive Statistics: The statistical properties of the research variables are summarized through the calculation and presentation of key descriptive measures.

• Building and Estimation of the ARDL Model: The study developed the econometric model using the ARDL approach, in accordance with the following steps (Tang, 2016):

1. Unit Root Testing: To verify the stability of the time series variables and prevent any spurious regression problems, the study employed the Augmented Dickey-Fuller (ADF) test.
2. Bounds Cointegration Test: The study employed ARDL bounds testing methods to determine the existence of a stable relationship and a long-term connection between the variables.
3. Model Estimation and Diagnostic Checks: The study investigated the residual (for autocorrelation, heteroskedasticity, and normality) to assess the model's accuracy after estimating it.
4. Interpretation of Estimated Coefficients: The final step encompassed the analysis of the estimated parameters to derive significant economic inferences.

To guarantee precision and efficiency, the study implemented all analytical procedures with EViews 12. The following is a comprehensive representation and discussion of the findings.

1) Descriptive Statistics of the Study Variables:

Table 2: Descriptive Statistics of Variables

Variables	Mean	Maximum	Minimum	Std. Dev.	Skewness	Kurtosis	Jarque-Bera	Probability
GDP	18704.89	21478.82	15671.73	1414.387	-0.031	2.190	0.934	0.627
FDI	1.16E+08	1.15E+10	-1.27E+10	4.25E+09	-0.209	5.075	6.347	0.042
OPE	0.7289	0.9610	0.4971	0.1171	0.206	2.114	1.352	0.509

Source: Researcher's computations using EViews software

Table 2 presents the descriptive analysis of the study's data. The sample included 33 observations for each of the three study variables, covering the period from 1990 to 2023. The table displays the mean, standard deviation, minimum, and maximum values, as well as skewness, kurtosis, and the Jarque-Bera test to determine the data distribution pattern. The table leads to the following conclusions:

GDP Data: The minimum and maximum values suggest that the data demonstrates relatively minor variations. The probability value from the Jarque-Bera test (70.626) exceeds the 0.05 significance level, indicating a normal distribution, while the standard deviation suggests moderate dispersion in the time series. These findings imply sustained economic growth without significant fluctuations in the time series data.

FDI Data: The data exhibits substantial disparities between the minimum and maximum values. The increased kurtosis value states the presence of outliers, while the high standard deviation indicates significant variability in the time series. The Jarque-Bera test yields a probability value of 90.041, which is less than the 0.05 significance level, indicating a non-normal distribution. This analysis suggests that FDI flows are subject to high volatility and sharp fluctuations over time, which is likely indicative of abrupt changes in investment trends, including periods of massive inflows and sudden capital flight. These patterns may be the result of an unstable investment climate, shifts in investment policies, or economic shocks.

Economic Openness Data: The degree of economic openness is moderately variable, with a range of 50% to 96% between the minimum and maximum values. The probability value from the Jarque-Bera test (10.5) exceeds the 0.05 significance level, confirming a normal distribution, and the standard deviation indicates relatively moderate dispersion in the time series. The result indicates that economic openness has remained relatively stable, devoid of extreme fluctuations, which is indicative of a balanced trade policy that is not subject to significant changes.

This structured analysis emphasizes the unique attributes of each variable, thereby establishing a basis for additional econometric modeling.

2) Time-series stationarity analysis of model variables:

The first stage of the statistical analysis in this study encompasses the assessment of the stationarity of the time series variables in the proposed model to test their stability and order of integration. This step examines whether the time series variables are stationary at their levels or after first differencing. Among various stationarity tests, the Augmented Dickey-Fuller Test (ADF) is one of the most important. The following table presents the test results.

Table 3: Augmented Dickey-Fuller test statistic

Variables	ADF test	Stationary in the level			Stationary in the first difference		
		Intercept	Trend and intercept	None	Intercept	Trend and intercept	None
GDP	T_Statistic	-1.1375	-2.7161	0.63999	-4.9840	-5.3930	-5.6974
	Prob.	0.6889	0.2372	0.8495	0.0003	0.0007	0.0000
FDI	T_Statistic	-4.1457	-4.3723	-4.2079	-	-	-
	Prob.	0.0028	0.0077	0.0001	-	-	-
OPE	T_Statistic	-1.4667	-1.5812	-0.6405	-4.7317	-4.6407	-4.7456
	Prob.	0.5377	0.7788	0.4321	0.0006	0.0041	0.0000

Source: Researcher's computations using EViews software

Table 3 presents the results of the unit root test for the study variables; the null hypothesis that "the variables contain a unit root" (i.e., are non-stationary) was tested. The conclusions derived from the ADF test include:

- Stationarity at level I(0): The FDI time series was the only one that was determined to be stationary at its level, as evidenced by its statistically significant p-value (below the 1% significance level).
- Stationarity at first difference I(1): The GDP and OPE variables became stationary only after first difference, as their p-values fell below the 1% significance level.
- Integration Order: The study incorporated the variables of order I(0) and I(1), signifying that they are either stationary at the level or at the first difference. This mix of different integration types lets the study use the long-term relationships between the variables with the ARDL cointegration method (Pesaran et al., 2001).

3) Testing for cointegration among study variables:

The unit root test confirmed that the variables are stationary in the short run, with integration orders of I(0) and I(1). We now proceed to examine the existence of long-term cointegration among the time series variables, that is, whether a stable equilibrium relationship exists between them in the long run. To evaluate this, the study implements the ARDL bounds testing methodology (F-bounds test). The null hypothesis asserts that "There is no long-run equilibrium relationship between FDI, GDP, and OPE." The bounds test compares the calculated F-statistic to critical values. If the F-statistic is higher than the upper critical value, the study rejects the null hypothesis, which means it confirms that cointegration exists (Pesaran et al., 2001). The following table presents the bounds test results.

Table 4: Cointegration test results of study variables

ARDL Bounds Test				
F-Bounds Test		Null Hypothesis: No levels relationship		
Test Statistic	Value	Signif.	I(0)	I(1)
			Asymptotic: n=1000	
F-statistic	6.633076	10%	2.63	3.35
K	2	5%	3.1	3.87
		2.5%	3.55	4.38
		1%	4.13	5
Actual Sample Size	30		Finite Sample: n=30	
		10%	2.915	3.695
		5%	3.538	4.428
		1%	5.155	6.265

Source: Researcher's computations using EViews software

Table 4 reveals that the calculated F-statistic (6.633) exceeds the upper critical bound I(1) at all significance levels (1%, 2.5%, 5%, and 10%). According to the decision rule, the study rejects the null hypothesis and accepts the alternative hypothesis, confirming cointegration exists, and a long-term equilibrium relationship binds the independent variables (FDI and economic openness) with the dependent variable (economic growth).

4) Model Estimation

The findings from the stationarity and cointegration tests confirm that the variables are stable in the short run, and a long-run equilibrium relationship exists among them. The study will now proceed to estimate the parameters of the proposed model using the ARDL methodology, examining both short-term and long-term effects.

Model Selection Process (Pokhrel & Khadka, 2019):

- The study utilized the Akaike Information Criterion (AIC) to determine the appropriate lag structure.
- Automatically, the model with the lowest AIC value is determined to be the most suitable. The optimal representation of the study variables was determined to be the ARDL(1, 4, 3) specification. The study variables are represented with 1 lag for GDP, 4 lags for FDI, and 3 lags for OPE. The following table presents the estimation results of the selected ARDL model.

Table 5: ARDL estimation results

Selected Model: ARDL(1, 4, 3)				
Variable	Coefficient	Std. Error	t-Statistic	Prob.*
GDP_PERCAPITA(-1)	0.745585	0.083881	8.888563	0.0000
FDI	1.24E-08	2.32E-08	0.533076	0.6002
FDI(-1)	7.40E-08	2.27E-08	3.256935	0.0041
FDI(-2)	8.76E-08	2.25E-08	3.885367	0.0010
FDI(-3)	5.16E-08	2.47E-08	2.088306	0.0505
FDI(-4)	1.12E-07	2.88E-08	3.902299	0.0010
OPE	902.0485	1853.240	0.486741	0.6320
OPE(-1)	4936.138	2625.215	1.880280	0.0755
OPE(-2)	-7359.756	2287.562	-3.217293	0.0045
OPE(-3)	7836.865	1520.266	5.154931	0.0001
C	151.8193	1512.115	0.100402	0.9211
R-squared	0.948395	F-statistic		34.91829
Adjusted R-squared	0.921235	Prob(F-statistic)		0.000000

Source: Researcher's computations using EViews software

Table 5 presents the estimation results of the proposed ARDL (1, 4, 3) model. The preliminary results indicate the model's good fit, as evidenced by the coefficient of determination R^2 reaching

0.95, along with the p-value associated with the F-test being below the statistical significance level of 0.01. The study will proceed to estimate the short-term and long-term relationships based on the selected model.

5) Estimation of Long-Term and Short-Term Relationships

Firstly: Estimation of Long-Term Relationships

The study selected the ARDL(1, 4, 3) model to estimate the long-term equilibrium relationship based on the AIC criterion. The results of the model estimation are presented in the following table.

Table 6: Long-run ARDL estimation results

ARDL Long Run Form and Bounds Test				
Levels Equation				
Case 2: Restricted Constant and No Trend				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
FDI	1.33E-06	3.36E-07	3.951509	0.0009
OPE	24822.81	7987.377	3.107755	0.0058
C	596.7388	5785.269	0.103148	0.9189
EC = GDP_PERCAPITA - (0.0000*FDI + 24822.8082*OPE +596.7388)				

Source: Researcher's computations using EViews software

Table 6 displays the results of the long-term model estimation. The study observed that the coefficients of FDI and OPE are statistically significant at the 1% significance level, suggesting that both FDI and OPE have a positive long-term impact on economic growth. Nevertheless, the intercept is statistically insignificant in the long term.

It is imperative to confirm that the model meets several statistical criteria to evaluate its reliability and validity before proceeding with the interpretation of its results. The assumption that the error terms are homoscedastic, free of autocorrelation, and normally distributed is one of the most critical of these criteria. Additionally, the stability of the model's parameters must be tested (Pokhrel & Khadka, 2019). These aspects will be addressed in the diagnostic tests section.

Secondly: Estimating Short-Term Relationships (Error Correction Model - ECM):

Nkoro and Uko (2016) utilize the ECM to reconcile the short-term dynamics with the long-term equilibrium behavior of economic relationships that tend toward equilibrium over the long term. It specifically determines the speed of return to equilibrium following a short-term shock. A prerequisite for applying this model is that the time series are stationary and exhibit cointegration properties, which have been previously verified. Below are the estimation results for the ECM.

Table 7: Short-run dynamics and ECM results

ARDL Error Correction Regression				
ECM Regression				
Case 2: Restricted Constant and No Trend				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(FDI)	1.24E-08	2.04E-08	0.608229	0.5502
D(FDI(-1))	-2.52E-07	4.32E-08	-5.821874	0.0000
D(FDI(-2))	-1.64E-07	3.44E-08	-4.765397	0.0001
D(FDI(-3))	-1.12E-07	2.47E-08	-4.546094	0.0002
D(OPE)	902.0485	1445.517	0.624032	0.5400
D(OPE(-1))	-477.1091	1353.770	-0.352430	0.7284
D(OPE(-2))	-7836.865	1349.003	-5.809374	0.0000
CointEq(-1)*	-0.254415	0.045901	-5.542708	0.0000
R-squared	0.764650	Akaike info criterion		14.96245
Adjusted R-squared	0.689765			

Source: Researcher's computations using EViews software

Table 7 presents the estimation results of the ECM. The error correction coefficient, which indicates the speed of adjustment from the short run to the long run, is observed to be -0.254 with a p-value of

0.0000. This value is statistically significant at the 1% level; moreover, it is negative, which are necessary conditions for the existence of a long-term equilibrium relationship (Nkoro & Uko, 2016). From this, we conclude that the model's error correction rate can align short-term outcomes with long-term equilibrium results at a speed of 0.254 per period. In other words, deviations from the long-term equilibrium relationship are corrected annually at a rate of 25.4%, ensuring convergence to equilibrium.

6) Diagnostic Tests for the Model

a. Residual Autocorrelation Test

The study evaluates the null hypothesis, "No serial correlation at up to 2 lags," to confirm the independence of residuals and the absence of serial correlation among them. The Breusch-Godfrey Serial Correlation LM Test is employed to conduct this. The following table presents the test results.

Table 8: Breusch-Godfrey Serial Correlation LM Test

Null hypothesis: No serial correlation at up to 2 lags			
F-statistic	1.092282	Prob. F(2,17)	0.3579
Obs*R-squared	3.416126	Prob. Chi-Square(2)	0.1812

Source: Researcher's computations using EViews software

As is evident from Table 8, the p-value associated with the test statistic is 0.3579, which exceeds the 5% statistical significance level. This value indicates failure to reject the null hypothesis of no serial correlation in the residuals.

b. Heteroskedasticity Test

To examine whether the residuals exhibit constant variance (homoskedasticity), the study tests the null hypothesis, “homoskedasticity,” using the Breusch-Pagan-Godfrey test. The following table presents the test results.

Table 9: Breusch-Pagan-Godfrey Test

Heteroskedasticity Test: Breusch-Pagan-Godfrey			
Null hypothesis: Homoskedasticity			
F-statistic	0.796064	Prob. F(10,19)	0.6341
Obs*R-squared	8.858065	Prob. Chi-Square(10)	0.5456
Scaled explained SS	3.710246	Prob. Chi-Square(10)	0.9595

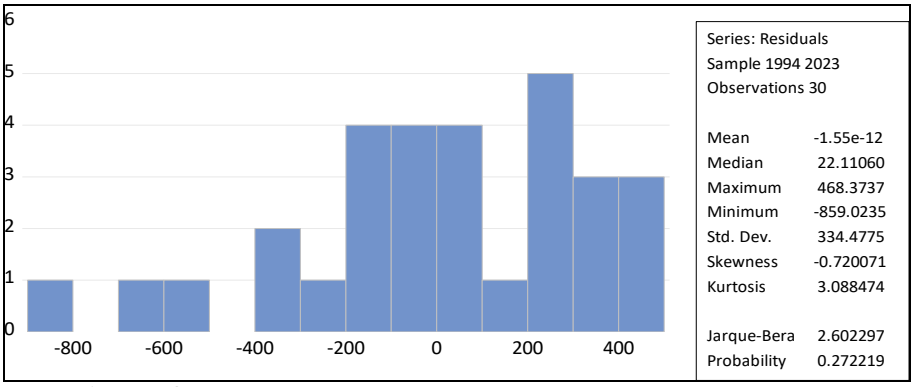
Source: Researcher's computations using EViews software

As shown in Table 9, the p-value associated with the test statistic is 0.6341, which exceeds the 5% significance level. This outcome signifies that the investigation does not reject the null hypothesis of homoskedasticity (constant variance of residuals).

C. Normality Test of Error Terms:

To determine whether the residuals follow a normal distribution, the study implements the Jarque-Bera test. Accompanying the test results are pertinent descriptive statistics and a corresponding figure and table.

Figure 1: Residual normality diagnostic



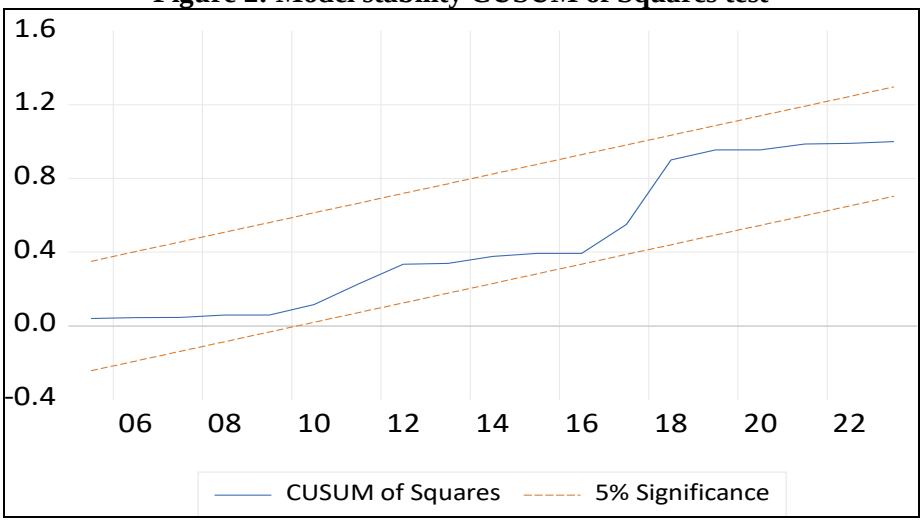
Source: EViews 12 Output

The test statistic value is 2.602, as demonstrated in Figure 1 and the accompanying table, with a p-value of 0.2722, which exceeds the 5% significance level. The result supports the null hypothesis that the residuals follow a normal distribution at the 0.05 significance level.

D. Model Parameters Stability Test

To examine the consistency of the model's long-term coefficients, we employ the Cumulative Sum of Squares (CUSUM) test. The following graphical representation illustrates the results of this stability test.

Figure 2: Model stability CUSUM of Squares test



Source: EViews 12 Output

Figure (2) presents the results of the CUSUM of squares test for the stability of the estimated model parameters. The plot shows that the cumulative sum of the squares line remains within the upper and lower critical bounds at the 0.05 significance level throughout the study period. This evidence indicates that the model coefficients exhibit structural stability during the entire analysis period.

7) Interpretation of ARDL (1,4,3) Model Results

After verifying the model's validity through all diagnostic tests and confirming its freedom from standard econometric issues, we now interpret the model's parameters and their statistical significance from both economic and statistical perspectives. Below, we examine the long-run and short-run relationships.

Firstly: Long-Run Results

a. Economic Interpretation of Model Parameters

Referring to Table 6, which presents the long-run model results, the study observes the following:

- FDI coefficient value is 1.33E-06 (positive sign, consistent with economic theory). The findings indicate a positive relationship between FDI and economic growth. The economic impact is that a 1% increase in FDI leads to a .000001% increase in economic growth in the long run.
- OPE coefficient value is 24,822.81 (positive sign, aligns with economic theory). This value indicates a positive relationship between openness and economic growth. The economic impact is that a 1% increase in OPE leads to a 24,822.81% increase in economic growth in the long run.
- The constant term value is 596.74, which represents the baseline economic growth rate when all independent variables equal zero.

b. Statistical Interpretation of Estimated Parameters:

Based on Table 6 showing long-run results, the study constructs the following table, which summarizes the statistical significance and interpretation of each parameter:

Table 10: statistical significance of long-run model coefficients

Variable	Coefficient	Prob.	Statistical Significance	Interpretation
FDI	1.33E-06	0.0009	$p < 0.01$	Highly significant positive impact
OPE	24822.81	0.0058	$p < 0.01$	Highly significant positive impact
C	596.7388	0.9189	$p > 0.05$	Statistically insignificant

Source: *Researcher's calculations derived from Table 6 outputs*

It is evident from Table 10 that both estimated parameters (FDI and OPE) are statistically significant at the 1% level and have a positive impact on long-term economic growth. Nevertheless, the constant term in the model is statistically insignificant, as its p-value exceeds the 5% significance level. The study derives the following important observations from these results: All coefficients that are economically significant demonstrate the anticipated signs and a high level of statistical significance. The exceptionally large OPE coefficient magnitude requires further investigation of potential scaling problems. The constant term's statistical insignificance suggests proper model specification. Results confirm theoretical expectations about openness and investment effects on growth.

Secondly: Short-Run Results

a. Economic Interpretation of the ECM Results:

Table 7 presents the results of the ECM, which estimates short-term dynamics and the speed of adjustment toward long-run equilibrium. The coefficients and their signs show mixed alignment with economic theory, as follows:

- FDI Effects: Current-year FDI coefficient 1.24E-08 (positive, consistent with theory). This statistic indicates a positive short-run relationship between FDI and GDP in the current period. Lagged FDI coefficients (1-3 years): -2.52E-07, -1.64E-07, -1.12E-07 (all negative). Suggest a short-term negative impact of past FDI on economic growth. Possible explanations: Possible explanations include the volatility of short-run capital flows. Unproductive FDI in initial years (e.g., speculative investments). Adjustment costs (e.g., technology absorption delays).
- OPE Effects: Current year OPE coefficient 902.0485 (positive, aligns with theory). This supports a positive short-run link between economic openness and growth. Lagged OPE coefficients: -477.109 (1-year lag), -7836.865 (2-year lag). Indicate short-term adverse effects of past openness, possibly due to imports competition shocks and trade balance fluctuations. The structural adjustment costs could also be a contributing factor.

b. Statistical Interpretation of ECM Coefficients

Based on Table 7, the study summarizes the statistical significance and interpretation of each coefficient in the following table:

Table 11: statistical significance of Short-term model coefficients

Variable	Coefficient	Prob.	Statistical Significance	Interpretation
D(FDI)	1.24E-08	0.5502	p >0.05	Statistically insignificant
D(FDI(-1))	-2.52E-07	0.0000	p < 0.01	Significant negative lagged effect
D(FDI(-2))	-1.64E-07	0.0001	p < 0.01	Significant negative lagged effect
D(FDI(-3))	-1.12E-07	0.0002	p < 0.01	Significant negative lagged effect
D(OPENNESS)	902.0485	0.5400	p >0.05	Statistically insignificant
D(OPENNESS(-1))	-477.1091	0.7284	p >0.05	Statistically insignificant
D(OPENNESS(-2))	-7836.865	0.0000	p < 0.01	Highly significant negative 2-year lag
CointEq(-1)*	-0.254415	0.0000	p < 0.01	Significant error correction (25.4% annual adjustment)

Source: *Researcher's calculations derived from Table 7 outputs*

From Table 11, which presents the statistical significance of the estimated coefficients, we observe the following:

- Significant Coefficients (1% level): most parameters are statistically significant at the 1% level, confirming their strong influence on the model. All significant coefficients exhibit a negative short-run impact, suggesting short-term adjustment costs, possible reverse causality in early periods, and temporary disequilibrium effects.
- Insignificant Coefficients: current-year FDI has not statistically detectable short-run effect. Current and 1-year-lagged OPE immediate openness effects are statistically weak.

The study derives the following important observations from these results: The dominance of negative short-term effects suggests that there will be initial economic disruptions because of FDI/trade before long-term benefits commence to manifest. Delayed economic responses are indicated by current-year variables that are not statistically significant.

Evaluation of the ECM Based on Statistical Criteria:

The study evaluates the model as follows, with reference to Table 6, which contains the short-run ECM estimation results:

• Model Fit Quality: The coefficient of determination (R^2) indicates that economic openness and FDI account for 76.46% of the variation in economic growth (dependent variable). The remaining 23.54% is the result of external factors or omitted variables. This statistic indicates that the model has a strong ability to explain short-term dynamics.

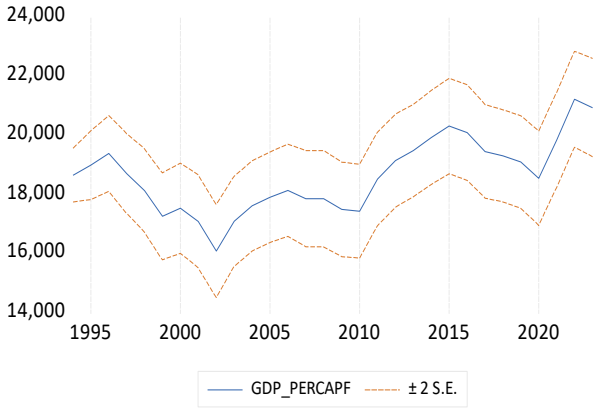
• Significance of the Error Correction Term (CointEq(-1)): At the 1% level, the coefficient value of -0.2544 is statistically significant. This result confirms a long-run equilibrium relationship between FDI, economic growth, and economic openness. Adjustment speed: 25.44% of disequilibrium is corrected annually, implying relatively fast convergence to long-run equilibrium aftershocks. Policy relevance: The economy self-corrects efficiently, reducing the need for aggressive intervention.

Model Forecasting Ability Test

There are many statistical criteria used to evaluate a model's predictive accuracy, and one of the most used is Theil's Inequality Coefficient (TIC). If the value of TIC equals zero or is near to it, this indicates a strong predictive ability of the model. However, if the coefficient equals exactly one, it means the dependent variable will remain constant over time. If the coefficient is greater than one, it

indicates the weak forecasting ability of the model (Hyndman & Athanasopoulos, 2018). The following chart and accompanying table present the test results.

Figure 3: Model Prediction Test - Theil's Inequality Coefficients



Forecast: GDP_PERCAPF	
Actual: GDP_PERCAPITA	
Forecast sample: 1990 2023	
Adjusted sample: 1994 2023	
Included observations: 30	
Root Mean Squared Error	554.4325
Mean Absolute Error	432.5552
Mean Abs. Percent Error	2.348772
Theil Inequality Coef.	0.014822
Bias Proportion	0.000072
Variance Proportion	0.192618
Covariance Proportion	0.807310
Theil U2 Coefficient	0.786208
Symmetric MAPE	2.336535

Source: EViews 12 Output

Figure (3) and the accompanying table of test results demonstrate that Theil's coefficient achieved 0.0148, which is close to zero. This value represents the estimated model's predictability, which is supported by the prediction curve falling within statistically acceptable bounds. Therefore, the estimated model can be used to predict economic growth.

5. CONCLUSION

Results:

The results of this study are as follows:

1.The cointegration analysis results indicated a long-term equilibrium relationship between FDI, economic openness, and economic growth.

2. Economic openness and FDI both had a beneficial effect on economic growth over the long term.

3. Over the long term, economic openness significantly influenced economic growth more than FDI.

4. FDI had a temporary negative impact on economic growth in the short term, with lags ranging from -1 to -3, but not in the current period. This result implies that increased FDI may generate a temporary decrease in economic growth before its benefits materialize in the long term.

5. The current period and the first lag did not experience any immediate effects from economic openness in the short term. However, the second lag demonstrated a negative impact, suggesting that there are potential short-term economic risks associated with openness.

6. The error correction rate was 25.4%, which indicates a reasonable rate of adjustment to attain long-term equilibrium.

Recommendations:

Based on these results, the following recommendations are suggested:

1. Considering the positive long-term influence of FDI on economic growth, it is necessary to establish policies that encourage the inflow of FDI while also acknowledging that its advantages arise over the long term.

2. Temporary impacts should be managed through supportive policies, such as stimulating domestic demand or providing subsidies to sectors that have been adversely affected due to the short-term negative effects of FDI.

3. Given the positive long-term impact of economic openness, policies should be enhanced to maximize its benefits, such as trade liberalization and export promotion.

4. The effects of economic openness should be closely monitored due to its varying impact over time.
5. Imbalances in long-term equilibrium should be monitored, and corrective policies should be swiftly implemented to ensure stable economic growth.

6. Bibliography List:

1. Abdul Hamid, K. (2017). Measuring the Impact of Foreign Direct Investment on Economic Growth - an Analytical Study Applied to the Egyptian Case, Scientific Journal of Economics and Trade, 953–995.
2. Ahmed, E. (2025). The Impact of the Blue Economy, Investment, and Net Exports on Economic Growth in the K.S.A. During 1970–2022. Scientific journal of the Faculty of Economic Studies and Political Science, 10(19), 385-410. doi: 10.21608/esalexu.2025.403039
3. Ali, O. (2023). The impact of foreign investments on economic development in Ethiopia In the period from 2000-2021. Journal of North African Economics, 19(31), 73–96.
4. Aljehani, M. A., & Shaheen, R. (2021). IMPACT OF FOREIGN DIRECT INVESTMENT (FDI) ON SAUDI ARABIA'S ECONOMY. PalArch's Journal of Archaeology of Egypt / Egyptology, 18(13), 1182–1189.
5. Al-Mihyawi, Dr. S. N. (2019). Impact of Foreign Direct Investment on Economic Growth in Jordan. Journal of Administration and Economics, 2019(119), 77–94.
6. Al-Sawai', K. M. (2017). Effects of Foreign Direct Investment on Macroeconomic Variables in Jordan. Global Journal of Economic and Business, 3(1), 62–95. www.refaad.comAvailableonlineathttp://
7. Atta Allah, A. (2018). Analysis of the Foreign Direct Investment impact on Economic Growth in China: An Econometric Study for the period 1982 - 2017. Al-Baheth Magazine, 18(1), 167–177.
8. Bermejo Carbonell, J., & Werner, R. A. (2018). Does foreign direct investment generate economic growth? A new empirical approach applied to Spain. Economic geography, 94(4), 425-456.
9. Chen, Muyang. (2021). China–Japan development finance competition and the revival of mercantilism. Development Policy Review, [s. l.], v. 39, n. 5, p. 811–828, 2021. DOI 10.1111/dpr.12526
10. EBGHAEI, F. (2023). The Impact of Foreign Direct Investment on Economic Growth in the MENA Region. İzmir İktisat Dergisi, 38(2), 321–335. https://doi.org/10.24988/ije.1130692
11. Ehmaidat, A., & Jajuga, K. (2023). FOREIGN DIRECT INVESTMENT IN SAUDI ARABIA. Journal of Contemporary Issues in Business and Government, 29(03), 605–622.
12. Fatima, N., & Khattab Al-Haroushi. (2017). The Impact of Foreign Direct Investment on Economic Growth: An Econometric Study - The Case of Algeria. Business and Trade Economics, 4, 129–149.
13. Gräbner, C., Heimberger, P., Kapeller, J., & Springholz, F. (2021). Understanding economic openness: a review of existing measures. Review of World Economics, 157(1), 87–120. https://doi.org/10.1007/s10290-020-00391-1
14. Hyndman, R. J., & Athanasopoulos, G. (2018). Forecasting Principles and Practice (2nd ed). OTexts.com/fpp2
15. Jehangir, M., Lee, S., & Park, S. W. (2020). Effect of foreign direct investment on economic growth of Pakistan: The ardl approach. Global Business and Finance Review, 25(2), 19–36.
16. Kasun, D. (2019). Critical Introduction of Solow Growth Theory. Journal of Research in Humanities and Social Science, 7(1), 43–56.
17. Lu, H., Feng, Z., & Wang, S. (2024). The Impact of Economic Openness and Institutional Environment on Technological Innovation: Evidence from China's Provincial Patent Application Data. Sage Open, 14(2).
18. Mansouri, S. A. (2022). A Brief Review of the Evolution of International Trade Theories. International Journal of Business & Development Studies, 14(2), 93–108. https://doi-org.sdl.idm.oclc.org/10.22111/ijbds.2022.7518
19. Ministry of Economy and Planning. (2023). Accelerating economic transformation in Kingdom of Saudi Arabia.
20. Ministry of Investment. (2024). Saudi Arabia Foreign Direct Investment Report. In Saudi Arabia Foreign Direct Investment Report. https://misa.gov.sa/app/uploads/2024/03/saudi-arabia-foreign-direct-investment-report-january-2024.pdf

21. Mohamed, M. M. A., Liu, P., & Nie, G. (2021). Are technological innovation and foreign direct investment a way to boost economic growth? An egyptian case study using the autoregressive distributed lag (ardl) model. Sustainability (Switzerland), 13(6). https://doi.org/10.3390/su13063265

22. Ogwuru, H. O. R., Okolie, D. O., & Okolie, J. I. (2022). Economic openness, institutional quality and per capita income: Evidence from the Economic Community of West African States (ECOWAS). Research Papers in Economics and Finance, 6(2), 50-67.

23. Onyernama, J. C., Egwu, C., Chukwuma, A. S., & Bamidele, J. (2023). Nigeria Ghana trade relations and its implications on Nigeria economy. Central Asia & the Caucasus, (14046091), 24(1), 44–64.

24. Paredes-Soria, A., Paredes-Egúsquiza, A. S., Villagómez-Chinchay, J. A., De Velazco Borda, J. L., & Chávez-Díaz, J. M. (2025). Adapting the Extended Solow Model: The Impact of Output Determinants on Economic Growth in Peru from 2000 to 2022. Journal of Risk and Financial Management, 18(3), 112. https://doi.org/10.3390/jrfm18030112

25. 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.

26. Salem Al-Harbi, W., & Shaheen, R. (2021). THE IMPACT OF FDI ON ECONOMIC GROWTH IN SAUDI ARABIA. PJAEE, 18(13), 950–960.

27. The official website of the Saudi General Authority of Foreign Trade (2024). (GCC Free Trade Agreement with EFTA countries), visited on November 23, 2024.

28. Unctad. (2022). World Investment Report 2022: International tax reforms and sustainable investment.

29. World Bank Open Data. (2024). https://data.worldbank.org/indicator/BX.KLT.DINV.CD.WD