

The Impact of Foreign Direct Investment (FDI) on Gross Domestic Product (GDP) in Saudi Arabia from 1997 to 2023: Empirical Study

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The study aims to evaluate the impact of foreign direct investment on GDP in Saudi Arabia from 1997 to 2023. Secondary data were taken from World Data. EViews software was used with multiple linear regression and OLS, based on a set of variables and using the standard analytical approach, to analyze the impact of foreign direct investment on GDP in Saudi Arabia. The results of the empirical test show that foreign direct investment contributed significantly and positively to enhancing GDP and reducing dependence on oil exports in Saudi Arabia, and each economic variable has a different effect. Also, the results show that capital formation and consumer spending have positive effects on GDP as they increase economic productivity. Based on this result, the ultimate goal of the Saudi government is to seek to attract more foreign direct investment to increase the economic growth rate to achieve one of the goals of Vision 2030 and the importance of foreign direct investment in achieving economic sustainability in Saudi Arabia, and continue to improve the investment environment and stimulate investment in new sectors.

Keywords: foreign direct investment, gross domestic product, exports of goods and services, final consumption expenditure, gross capital formation

Introduction

Gross Domestic Product (GDP) measures the total monetary value of all final goods and services produced within Saudi Arabia over a specific period. As a key indicator of the Saudi economy's health, GDP reached approximately USD 1,067.58 billion in 2023 (World Bank, 2024). Saudi Arabia is experiencing a transformative phase in trade, ranking first in the international trade index. These developments align with

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global trends and attract both domestic and foreign investment, supporting Vision 2030 goals.

Saudi Arabia has emerged as a leader in international trade, ranking first in the global trade index due to strategic investments and reforms aimed at opening up the economy. These initiatives have successfully attracted both domestic and foreign investment, creating a more vibrant and diversified economic environment aligned with global standards and trends.

Despite these advancements, the General Authority for Statistics reported a 1.8% decline in Saudi Arabia's real GDP in the first quarter of 2024 compared to the same period in 2023. This drop is attributed to a 10.6% decrease in oil activities, despite a 2.8% increase in non-oil activities and a 2% increase in government activities (General Authority for Statistics, 2024).

This study will focus on non-oil activities, including exports, foreign direct investment, savings, capital formation, and consumption, aiming to assess the impact of foreign direct investment on Saudi Arabia's GDP. The study will explore how these factors affect GDP and the specific impact of foreign direct investment on economic growth, also examining the contributions of these factors in addressing the decline in GDP.

Literature Review

The economy of any country is always linked to the world economy through external economic activities such as foreign investment, imports, and exports. The topic has always attracted the attention of many scholars with different approaches. The results of empirical research may not be completely consistent, but the common point is that foreign direct investment affects GDP and is related to national economic growth.

In one of the previous studies, Nguyen (2020) studied the impact of foreign direct investment (FDI) and international trade on Vietnam's economic growth from 2000-2018. The data are sourced from the General Statistics Office of Vietnam and the ordinary least-square method is used to analyze the effects of FDI, export, and import on Vietnam's economic growth. The results show that FDI and international trade are related to Vietnam's economic growth, but each economic variable has a different impact. FDI has a positive and statistically significant influence on Vietnam's economic growth, while exports have a positive and statistically significant impact. Imports have a negative but not statistically significant effect. The study suggests that Vietnam's government should continue applying preferential policies to attract FDI, select foreign investors focusing on quality, efficiency, high technology, and environmental protection, pursue export-oriented policies, enhance the added value of exported goods, control the type of imported goods, and further liberalize trade through international trade commitments. Identifying these impacts helps the government develop appropriate policies to improve the effect of FDI and international trade on Vietnam's economic growth.

In another study, Velaj and Bezhani (2022) studied the impact of imports, exports, and the gross formation of fixed capital on the growth of GDP in Albania from 2000-2020. The data were sourced from INSTAT and the study found that imports are higher than exports in Albania. The study also examined the effect of final consumption of the population, final consumption of the public administration, and gross formation of fixed capital on economic growth. The results showed that the gross formation of fixed capital has a positive and significant impact on economic growth. An increase in one unit of the gross formation of fixed capital leads to a positive economic growth of 0.162 units. The impact of the population's final consumption is also positive, with an increase of one unit bringing a positive economic growth of 0.381 units. The final consumption of the public administration also has a positive impact, with an increase of one unit bringing a positive economic growth of 0.221 units. The impact of exports of goods and services is significant, with an increase of one unit

bringing a positive economic growth of 0.134 units. However, the impact of goods imports is negative and significant, with an increase of one unit causing a negative economic growth of 0.135 units. Service imports have a negative but not significant impact.

Ali and Jameel (2021) studied the impact of Foreign Direct Investment (FDI) on Gross Domestic Product (GDP) in Iraq from 2006 to 2015. Data were collected from the World Bank database and used as an independent variable. The study found that all variables were non-stationary at the level and stationary at first difference, with no long-term relationship between variables. However, in the short term, it was concluded that FDI Granger-Causes GDP and there is a short-run causality running from FDI to GDP. The research recommends Iraq to focus on improving the education and financial sectors, empowering human capital, decreasing lending rates, transportation, and instability in the political and economic environment, as well as improving the liberalized market environment. The study also found that there is no long-term relationship among variables, meaning there is no cointegration among them and they do not move together in the long run. The Granger causality Wald tests revealed that FDI Granger-Causes GDP and found a short-run causality running from FDI to GDP. The results indicated a positive impact of dFDI on dGDP after one year, indicating a one-way Granger Causality running from FDI to GDP.

Dr. Al-Otaibi (2019), through his study, analyzed and measured the impact of foreign direct investment on domestic investment and economic growth in Saudi Arabia from 2000-2015. It uses analytical descriptive techniques to analyze fundamental economic indicators and measures the impact of foreign direct investment on macroeconomic variables. The research hypothesis is that foreign direct investment will have a positive or negative effect on domestic investment and economic growth in Saudi Arabia. The study consists of four sections: theoretical framework, fundamental economic indicators, measurement impact, and recommendations. The findings show that foreign direct investment positively impacts local investment, exports, and imports in Saudi Arabia but not significantly affect the gross domestic product as an indicator of economic growth. The future of local and foreign investment in Saudi Arabia depends on factors such as political and economic stability, uncertainty, integration, adaptation to globalization, and challenges posed by the World Trade Organization. Saudi Arabia adopts a policy of diversifying income sources, focusing on exports and replacing imports to increase the gross domestic product. This is achieved through bilateral and collective agreements with other countries, providing investment incentives, and increasing and diversifying exports. However, foreign investments are concentrated in limited sectors, particularly oil and industry, due to liberalizing exchange rates, instability of laws, limited supply and demand for investment instruments, a weak stock market, and a lack of sufficient information about investment opportunities. The standard model analysis shows that foreign direct investment has a positive impact on local investment, exports, and GDP while negatively affecting imports and GDP. The study suggests that the future of local and foreign investment in Saudi Arabia depends on factors such as political stability, uncertainty, and the appropriate investment climate.

Also, Agrawal (2015), in his research, tried to study the relationship between foreign direct investment and economic growth in the five BRICS economies: Brazil, Russia, India, China, and South Africa, during the period 1989-2012. Foreign direct investment is an important factor contributing to economic growth and development in developing economies such as India. It contributes to the increased integration of economies and internationalization through financial flows, trade technology, and resources. Traditionally, policies to promote foreign direct investment focused on capital accumulation and employment generation, but globalization has advanced information and communication technology, which allows for more efficient use of

capital, technology, and labor. The impact of foreign direct investment on growth depends on the characteristics of the host country, where host countries with better human capital and openness to trade benefit more from technology transfers induced by foreign direct investment. Multinational companies specializing in high-tech products from developing countries also find investment opportunities in developing countries. Effective government intervention is required to attract foreign direct investment and benefit from its associated benefits to the local economy. In this study, the author applied the cointegration methodology and empirical causality analysis at the group level. The study suggests that FDI and economic growth share a long-run relationship or complement each other in the long run at the group (panel) level, as confirmed by the results of the Pedroni panel cointegration test. Moreover, the Granger causality test at the group level confirmed the existence of a bidirectional causality between FDI and economic growth. Thus, a significant increase in the level of FDI helps stimulate economic growth and development and vice versa. The study clearly indicates a positive relationship between growth and FDI in both directions. Therefore, if economic growth is likely to attract more FDI inflows, different policies to attract FDI inward may become unnecessary. Therefore, efforts should also be made to encourage other potential sources of economic development, which in turn would mimic and enhance FDI.

Jordan has adopted various policies to attract foreign direct investment in light of the country's urgent need to increase economic resources, thus providing many investment opportunities for foreign investors. There is no doubt that foreign direct investment contributes, according to most studies, to increasing economic growth rates. Therefore, Dr. Sabah Nouri Al-Mihyaw (2019), studied the impact of foreign direct investment on economic growth in Jordan for the period from 2000 to 2017. Using the EViews program, relying on a set of macroeconomic variables, and using the standard analytical approach, the study conducted aimed to identify the impact of foreign direct investment on economic growth. The research concluded that there is a positive impact of foreign investment on economic growth. Based on this result, the ultimate goal of the Jordanian government is to seek to attract more foreign direct investment to increase the economic growth rate. Foreign direct investment has become increasingly important in recent years, with discussions about its negative and positive effects. Foreign direct investment can support development, create a better economic environment, and help develop human resources. In the mid-1980s, global foreign direct investment increased significantly, with a 22% increase in foreign direct investment flows to developing countries. By 2010, total FDI inflows amounted to \$1,860 billion, equivalent to 2.73% of global GDP. Developing countries need FDI for capital, technology, management, market access, and job creation. Jordan has sought to encourage foreign investment through regulations and incentives, ensuring greater freedom of movement for Arab and foreign investors. The study uses EViews software to analyze the model variables, revealing that all variables are non-stationary but become stationary at the 5% significance level. The augmented Dickey-Fuller test is used to address the problem of autocorrelation, while the Phillips-Pearson test provides similar results. The residual stability test shows a short-term positive association between FDI and GDP, trade openness, and gross fixed capital formation. The *F*-test is significant, with an *F*-statistic of less than 5%. The residuals are negative, indicating a long-term relationship between the model variables and economic growth. Jordan faces a deficit in its balance of payments due to a lack of natural resources and a persistent investment gap. Governments have encouraged foreign investment, with a focus on the coal, oil, natural gas, renewable energy, and real estate sectors. From 2000 to 2017, Jordan experienced a compound annual growth rate of 12.76% in total FDI inflows. The study found a positive relationship between FDI and GDP, economic growth, and trade openness, and an inverse relationship between gross fixed capital formation and domestic credit to the private sector.

Gaps in Existing Knowledge

All studies indicate that FDI can significantly impact economic growth. However, the nature of the impact of FDI varies due to the structure of each economy. Saudi Arabia is looking to FDI to modernize and diversify its oil-centric economy. FDI contributes to stimulating economic growth by injecting foreign capital into the domestic economy. This leads to increased investment in infrastructure, manufacturing, and services, which boosts GDP. According to World Bank reports, FDI inflows are a catalyst for overall economic growth in emerging economies such as Saudi Arabia.

FDI contributes to supporting economic diversification, which is one of the goals of Vision 2030. By attracting investments in non-oil sectors such as technology, renewable energy, and tourism, FDI contributes to reducing the economy's dependence on oil revenues, leading to increased GDP in non-traditional sectors. We believe that while FDI can positively impact Saudi Arabia's GDP, its overall effectiveness depends on sectoral focus. FDI should be carefully targeted to sectors that can drive diversification and innovation, particularly in technology, renewable energy, and tourism, which are aligned with Vision 2030.

This can help ensure that FDI contributes more broadly to economic growth rather than concentrating wealth in traditional sectors such as oil. While previous studies on the impact of FDI, international trade, and imports and exports on economic growth in different countries provide valuable insights, some gaps in the current knowledge can be identified, particularly in the context of Saudi Arabia. These include regional variation, as the impacts of FDI and international trade can vary significantly across regions. Research that focuses only on specific countries may not capture the unique economic, social, and political contexts of Saudi Arabia, which is at different stages of development and resources, especially with its oil-based economy. The effectiveness of FDI also depends on how well the Kingdom builds an innovative and supportive R&D environment, in line with the goals of Vision 2030. Investment in education and skills improvement, particularly in technological and digital fields, will be key to improving competitiveness and attracting foreign investment. Our study aims to fill the gaps by conducting a comprehensive analysis of the impact of FDI on GDP growth in Saudi Arabia. By leveraging the latest available data and examining the effects of recent economic reforms in Saudi Arabia, the study will provide an updated perspective on FDI and international trade (import and export) in the current economic landscape.

The expansion of the economic framework will allow for the incorporation of additional economic variables and the employment of advanced econometric models for a comprehensive analysis, providing a clearer picture of the interconnections between FDI, international trade, and overall economic performance.

Research Design & Methods

Our study aims to analyze the impact of foreign direct investment on GDP in Saudi Arabia, which is an empirical research. We used the OLS time series model over 26 years, from 1997 to 2023. It was analyzed using multiple linear regression analysis. The study discusses the relationship between the dependent variables of GDP and the independent variables of foreign direct investment, capital formation, consumption, saving, and commodity exports. We collected information from data banks and implemented it in EViews program.

$$Y = \beta_1 + \beta_2 (\text{FDI}) + \beta_3 (\text{Saving}) + \beta_4 (\text{Export}) + \beta_5 (\text{Consumption}) + \beta_6 (\text{Capital formation})$$

Multiple Linear Regression

$$Y = \beta_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \varepsilon$$

Y = GDP (current US\$)

X_2 = Foreign direct investment, net inflows (BoP, current US\$)

X_3 = Gross domestic savings (current US\$)

X_4 = Exports of goods and services (current US\$)

X_5 = Final consumption expenditure (current US\$)

X_6 = Gross capital formation (current US\$)

ε = the error term

Descriptive Data Analysis

Table 1

Descriptive Statistics

Model variables	GDP (Y)	Foreign direct investment (X_2)	Savings (X_3)	Exports (X_4)	Consumption expenditure (X_5)	Capital formation (X_6)
Mean	3.43	3.49	1.36	1.46	2.07	9.11
Median	1.75	1.44	6.76	7.77	1.11	3.83
Maximum	1.11	2.81	4.81	4.46	6.76	3.13
Minimum	4.54	-3.73	9.02	2.32	8.78	8.14
Std. dev.	3.04	6.42	1.29	1.26	1.84	8.88
Skewness	0.970340	2.215859	0.931878	0.866979	1.112294	0.953608
Kurtosis	2.587795	8.009720	2.620318	2.370492	2.869142	2.425604
Jarque-Bera	8.200320	93.20296	7.536962	7.089358	10.34567	8.265427
Probability	0.016570	0.000000	0.023087	0.028878	0.005668	0.016039
Sum	1.72	1.74	6.82	7.28	1.03	4.56
Sum sq. dev.	4.54	2.02	8.19	7.81	1.67	3.86

Note. Source: based on calculation using EViews.

In Table 1 shown above, the mean of GDP is around 3.43; this suggests that on average, independent variables X_2 , X_3 , X_4 , X_5 , and X_6 equal 3.43. The skewness shows that all variables are above zero, which indicates a slight positive skewness.

The variables Y , X_3 , X_4 , X_5 , and X_6 show that it is platykurtic (flatted curve) but X_2 shows that it is negative Kurtosis that is peaked curve. The Jarque-Bera test and the probability indicate that all variables are not normal distribution.

Graphs on the Relationship Between the Variables

Figure 1 shows that there is a positive relationship between GDP and foreign direct investment that indicates when foreign direct investment increases the GDP as well will increase.

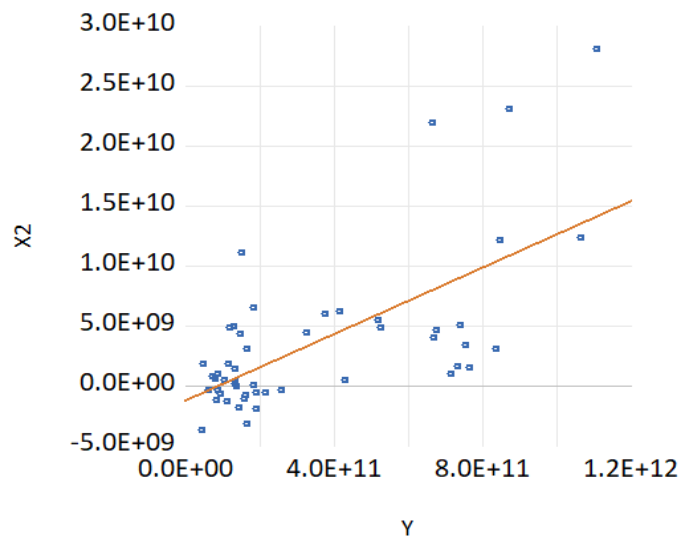


Figure 1. Relationship between Y and X_2 .

Source: based on calculation using EViews.

Figure 2 shows that there is a positive relationship between GDP and gross domestic saving that indicates when gross domestic saving increases the GDP as well will increase.

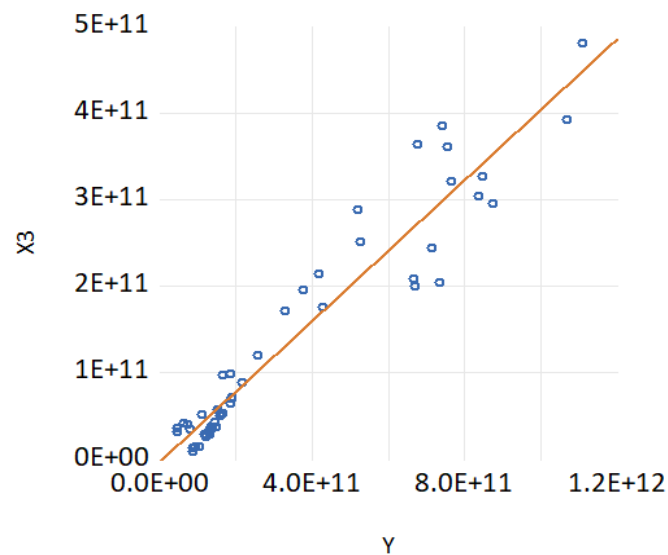


Figure 2. Relationship between Y and X_3 .

Source: based on calculation using EViews.

Figure 3 shows the relationship between the GDP and exports of goods and services that indicates there is a positive relationship between the two variables which means when the exports of goods and services increase the GDP as well increase.

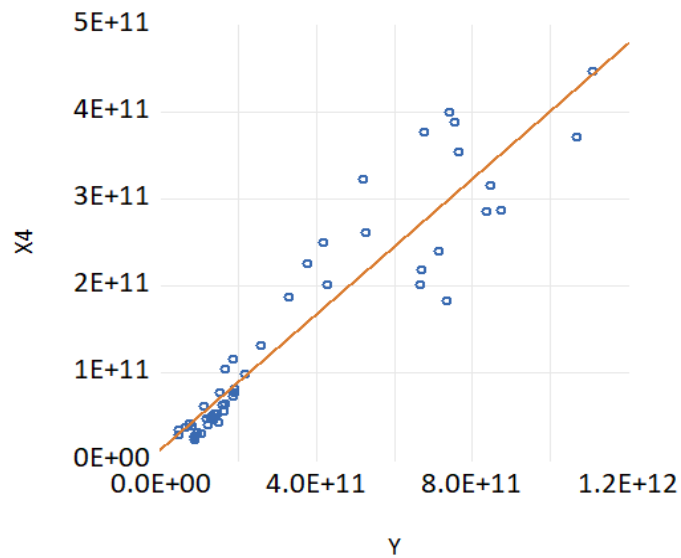


Figure 3. Relationship between Y and X_4 .

Source: based on calculation using EViews.

Figure 4 shows that there is a positive relationship between GDP and final consumption expenditure that indicates when gross final consumption expenditure increases the GDP as well will increase.

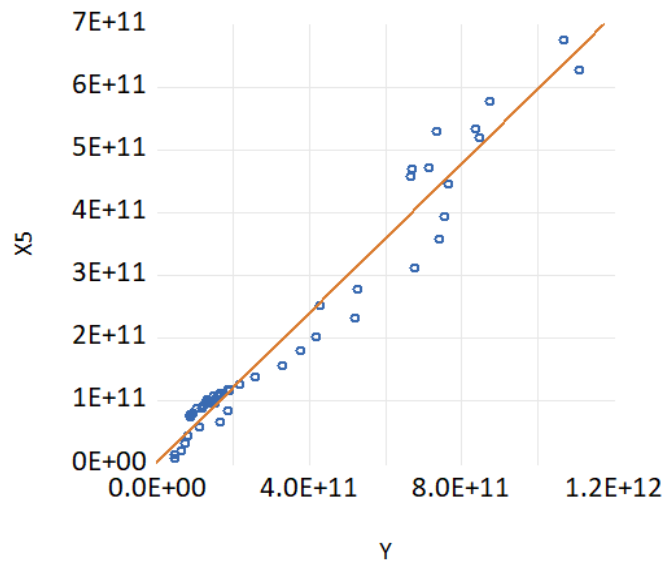


Figure 4. Relationship between Y and X_5 .

Source: based on calculation using EViews.

Figure 5 shows that there is a positive relationship between GDP and gross capital formation that indicates when gross capital formation increases the GDP as well will increase.

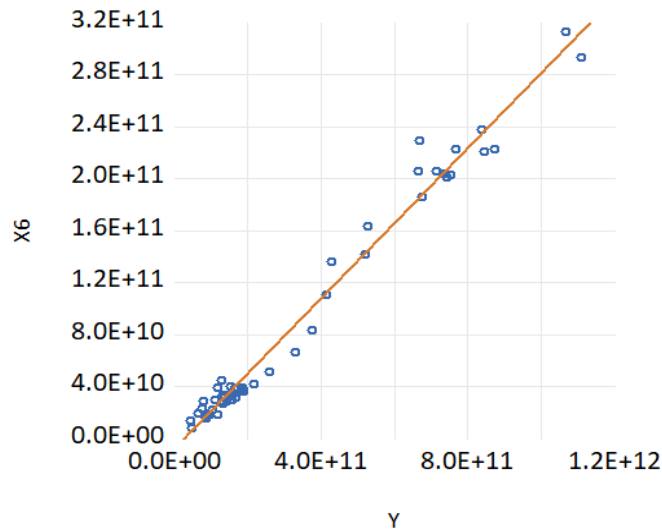


Figure 5. Relationship between Y and X_6 .
Source: based on calculation using EViews.

Implications and Contributions

This research aims to study the impact of foreign direct investment (FDI) on the gross domestic product (GDP) in Saudi Arabia, thus contributing to a better understanding of the relationship between investment and economic growth. Analyzing the impact of FDI on GDP, this study supports the idea that foreign investment can lead to economic growth. The research also explores how FDI interacts with other economic factors, such as exports, capital formation, savings, and consumption.

The research can improve policies to attract foreign direct investment (FDI) by providing scientific evidence and a database on the level of FDI impact on Saudi economic development. The results may also support decision-makers by providing recommendations to enhance foreign investment policies and economic and financial policies to strengthen the economy in Saudi Arabia and attract more investments.

Estimation Output

Table 2

Multiple Linear Regression Results

Variable	Coefficient	Std. error	<i>t</i> -statistic	Prob.
C	-0.0037	0.0013	-2.867	0.0092
Foreign direct investment	-5.34	7.05	-0.756	0.4576
Savings	1.000	3.55	2.81	0.0000
Exports	6.91	3.48	1.98	0.0603
Consumption expenditure	1.000	1.36	7.37	0.0000
Capital formation	-1.46	3.22	-4.523	0.0002
<i>R</i> -squared	1.000	<i>F</i> -statistic	1.18	
Adjusted <i>R</i> -square	1.000	Prob. (<i>F</i> -statistic)	0.0000	

Note. Source: based on calculation using EViews.

Coefficient interpretation.

β_1 : The intercept (Y) will be equal to -0.0037 when X_2 , X_3 , X_4 , X_5 , and X_6 equal to zero.

β_2 : If X_2 (Foreign direct investment, FDI) increases by 1 unit, Y (GDP in current US\$) will decrease by 5.34 units, assuming all other variables remain constant.

β_3 : If X_3 (Gross domestic savings) increases by 1 unit, Y (GDP in current US\$) will increase by 1.000 units, assuming all other variables remain constant.

β_4 : If X_4 (Exports of goods and services) increases by 1 unit, Y (GDP in current US\$) will increase by 6.91 units, assuming all other variables remain constant.

β_5 : If X_5 (Final consumption expenditure) increases by 1 unit, Y (GDP in current US\$) will increase by 1.000 unit, assuming all other variables remain constant.

β_6 : If X_6 (Gross capital formation) increases by 1 unit, Y (GDP in current US\$) will decrease by 1.46 units, assuming all other variables remain constant.

The Estimated Regression Equation

$$\text{GDP} = \beta_1 + \beta_2 (\text{FDI}) + \beta_3 (\text{Saving}) + \beta_4 (\text{Export}) + \beta_5 (\text{Consumption}) + \beta_6 (\text{Capital formation})$$

$$Y = -0.0037 - 5.34X_2 + 1.000X_3 + 6.91X_4 + 1.000X_5 - 1.46X_6$$

Testing the Significance of Regression Coefficients

$H_0 = \beta_2 = 0$	$H_1 = \beta_2 \neq 0$
$H_0 = \beta_3 = 0$	$H_1 = \beta_3 \neq 0$
$H_0 = \beta_4 = 0$	$H_1 = \beta_4 \neq 0$
$H_0 = \beta_5 = 0$	$H_1 = \beta_5 \neq 0$
$H_0 = \beta_6 = 0$	$H_1 = \beta_6 \neq 0$

Test of Statistical Significance

Table 2 shows an R -squared value of 1.000, indicating that the model explains 100% of the GDP variables. It also appears to us that the Prob to FDI, export is greater than 5%, which indicates that they are statistically insignificant and have a direct impact on GDP, and it also appears to us that the least squares regression analysis of the variables savings, consumption expenditure, and capital formation is less than 5%, which indicates statistical significance.

From Table 2, it shows us the calculated F coefficient for the entire model is 0.0000, and this value is less than 0.05, which indicates that the linear relationship of the model is important, through the variables we notice that the p values for the variables: Saving, Consumption, and Capital formation are 0.0000, 0.0000, 0.0002 respectively, and all are less than 0.05, which indicates that the t test was passed, and we notice in the other variables (FDI and export) the p -values are 0.4576 and 0.0603 respectively, and both are greater than 0.05, which indicates that the t test was not passed due to the multicollinearity possibly existing in the model.

Confidence interval test. Using confidence interval test, it is found that all uses of X_3 (Saving), X_5 (Consumption expenditure), and X_6 (Capital formation) are statistically significant in all proportions (90%, 95%, 99%) but X_2 shows us that in all proportions it is statistically insignificant. As for X_4 , it is statistically significant in 90%, but in 95% and 99% it is statistically insignificant (see Table 3).

Table 3

Confidence Interval Test

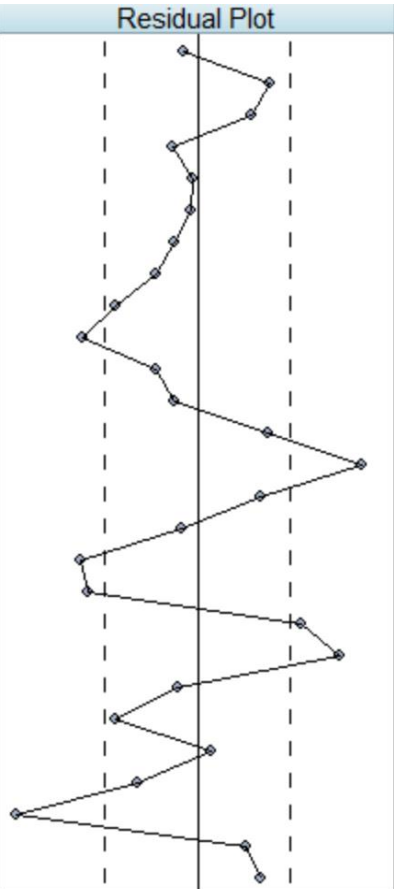
Variable	Coefficient	90% CI		95% CI		99% CI	
		Low	High	Low	High	Low	High
C	-0.0037	-0.006	-0.0015	-0.006	-0.0010	-0.0074	-4.71
Foreign direct investment	-5.34	-1.75	6.80	-2.00	9.33	-2.53	1.46
Savings	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Exports	6.91	9.20	1.29	-3.29	1.41	-2.94	1.68
Consumption expenditure	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Capital formation	-1.46	-2.01	-9.03	-2.13	-7.88	-2.37	-5.45

Note. Source: based on calculation using EViews.

Actual, Fitted Residual as a Table

Table 4

Actual, Fitted Residual as a Table

Actual	Fitted	Residual	Residual Plot
1.7E+11	1.7E+11	-0.00012	
1.5E+11	1.5E+11	0.00060	
1.6E+11	1.6E+11	0.00045	
1.9E+11	1.9E+11	-0.00021	
1.8E+11	1.8E+11	-4.6E-05	
1.9E+11	1.9E+11	-6.1E-05	
2.2E+11	2.2E+11	-0.00020	
2.6E+11	2.6E+11	-0.00035	
3.3E+11	3.3E+11	-0.00069	
3.8E+11	3.8E+11	-0.00096	
4.2E+11	4.2E+11	-0.00035	
5.2E+11	5.2E+11	-0.00020	
4.3E+11	4.3E+11	0.00060	
5.3E+11	5.3E+11	0.00139	
6.8E+11	6.8E+11	0.00053	
7.4E+11	7.4E+11	-0.00014	
7.5E+11	7.5E+11	-0.00099	
7.7E+11	7.7E+11	-0.00093	
6.7E+11	6.7E+11	0.00087	
6.7E+11	6.7E+11	0.00121	
7.1E+11	7.1E+11	-0.00017	
8.5E+11	8.5E+11	-0.00069	
8.4E+11	8.4E+11	0.00011	
7.3E+11	7.3E+11	-0.00050	
8.7E+11	8.7E+11	-0.00154	
1.1E+12	1.1E+12	0.00041	
1.1E+12	1.1E+12	0.00053	

Note. Source: based on calculation using EViews.

Table 4 shows that the values range from positive to negative and are randomly distributed around zero, indicating that the model is not biased and the data are reasonably well explained. It also shows us that there is no major problem with the values.

Heteroscedasticity Test

The probability of F test 0.0189 is less than 0.05, so the null hypothesis H_0 is rejected: Homoskedasticity is rejected (see Table 5).

Table 5

Heteroscedasticity Test Results

F -statistic	3.483998	Prob. F (5, 21)	0.0189
Obs* R -squared	12.24206	Prob. Chi-Square (5)	0.0316
Scaled explained SS	7.093645	Prob. Chi-Square (5)	0.2138

Note. Source: based on calculation using EViews.

Autocorrelation Test

The probability of F test is 0.0000 which is less than 0.05, so we reject the null hypothesis H_0 , and there is an autocorrelation problem between the variables (see Table 6).

Table 6

Autocorrelation Test Results

F -statistic	7490.299	Prob. F (2, 19)	0.0000
Obs* R -squared	26.96580	Prob. Chi-Square (2)	0.0000

Note. Source: based on calculation using EViews.

Multicollinearity Test

All the correlation coefficients are greater than 0.8 (see Table 7).

Table 7

Multicollinearity Test Results

Variable	Coefficient variance	Uncentered VIF	Centered VIF
C	7.28	12.12918	NA
Exports	5.13	560.7886	118.6891
Consumption expenditure	7.79	175.9187	43.44662
Foreign direct investment	2.11	3.083698	1.965898
Capital formation	4.40	212.7759	55.98520
Savings	5.35	562.7800	130.5792

Note. Source: based on calculation using EViews.

Conclusion

In conclusion, the research focuses on the role of foreign direct investment in influencing the GDP and supporting economic growth. This research, by analyzing data from 1997 to 2023, indicated that FDI significantly and positively contributed to the improvement of the gross domestic product and reduction of dependence on oil export.

Over these years, there was a remarkable development in the flow of foreign direct investment to the Kingdom of Saudi Arabia, and there were many sectors that benefited from it. From the data below, it can be seen that in some years, there is more foreign direct investment in a particular year.

From EViews, the result showed a positive relationship between foreign direct investment and gross domestic product, as there observed to be an increase in some years' gross domestic product. In 2018, the

foreign direct investment flows summed to \$121.4 billion, contributing to the gross domestic product growth of \$846.5 billion. We also note that in the year 2022, it reached \$1.108 trillion due to improvements in the foreign investment environment in the Kingdom. Results also showed that capital formation and consumer expenditure positively contributed to gross domestic product because of the increased economic productivity; however, in some years foreign direct investments were not significant statistically in the long run, reflecting the need of development of some foreign investment policies and to make them flexible enough for future changes.

The data also show that foreign direct investment went up and down during some periods due to the external factors and fluctuations in the global markets, for example, variation in oil prices and the pandemic Covid-19 virus. In general, however, there is an increase in interest in the Kingdom, which turned out to be a reliable and strong investment destination, too. In this regard, data analysis of exports, investment, and saving indicates that the foreign direct investment was also a causative factor to the great improvement in the non-oil export, which contributed to diversifying sources of income in the Kingdom, including improving the rate of saving due to creating new opportunities for employment, increasing citizens' income level. This foreign direct investment stimulated local investment, meaning that local firms were in a position to expand and grow, too.

Finally, Saudi Vision 2030 contributed to making the foreign investment environment more stable, and these results show the role of foreign direct investment in achieving economic sustainability in the Kingdom of Saudi Arabia and developing local human resources in order to achieve continuity of this growth and the Saudi economy be more diversified.

Recommendations

- Continuing to improve the investment environment: by enhancing the infrastructure, updating the foreign investment laws in the Kingdom, and providing incentives to attract investors with experience, knowledge, and high competencies, which contribute significantly to the development of the economy.
- Stimulating investment in new sectors: especially towards sectors with a long-term impact, such as renewable energy, technology, artificial intelligence, and tourism, to achieve the goals of economic diversification in the Kingdom and also to support sustainable economic growth.
- Developing training and education: train and educate highly qualified Saudi cadres to meet the needs of the labor market and sustain growth, also create new jobs opportunities, which enhances the impact of foreign investment on the local economy.
- Monitoring the impact of these economic reforms: by periodically evaluating and monitoring the impact of these investments on the economy, we measure the effectiveness of foreign direct investment on GDP and adjust policies in line with economic changes, which helps improve future investment strategies.
- Supporting innovation: encouraging foreign and local companies to adopt innovative practices and advanced technology in their operations within the Kingdom, which contributes to enhancing local capabilities to promote the growth of the Kingdom of Saudi Arabia's economy.

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Appendix

Table 1

Dataset

Series name	GDP (current US\$)	Foreign direct investment, net inflows (BoP, current US\$)	Gross domestic savings (current US\$)	Exports of goods and services (current US\$)	Final consumption expenditure (current US\$)	Gross capital formation (current US\$)
1997	1.65964	30394666	5295353	649890520	1.1301	31163951
1998	1.46775	42834666	3834613	434930666	1.08429	33684000
1999	1.61717	-77893333	5336746	560616000	1.0835	34791200
2000	1.89515	-18810666	7194186	822594666	1.17573	36608533
2001	1.84138	19640000	6505573	729805333	1.19082	36133600
2002	1.89606	-61413333	7015066	776413333	1.19455	37339733
2003	2.15808	-58650666	8927893	989568000	1.26529	42066133
2004	2.58742	-33432000	1.20968	1.3192100	1.37774	51398133
2005	3.28460	43854563	1.71857	1.8738900	1.56602	66266179
2006	3.76900	59758873	1.95741	2.2550700	1.81159	8372897
2007	4.15965	61753211	2.14157	2.4931800	2.01807	1.10118
2008	5.19797	55059839	2.88051	3.2285400	2.31745	1.41883
2009	4.29098	43635128	1.76077	2.0205600	2.53021	1.3609
2010	5.28207	48788943	2.50983	2.6183100	2.77224	1.63355
2011	6.76635	46838558	3.646	3.7622400	3.12035	1.86353
2012	7.41850	50350608	3.84857	3.9942000	3.56993	2.00643
2013	7.53865	33714084	3.60458	3.8764400	3.93407	2.02714
2014	7.66606	15090630	3.21612	3.5454100	4.44994	2.22454
2015	6.69484	39706440	1.99824	2.180100	4.6966	2.29121
2016	6.66000	21954833	2.08528	2.008600	4.57472	2.05778
2017	7.14995	10140625	2.43909	2.399930	4.71086	2.05891
2018	8.46584	12141122	3.26481	3.14917	5.20103	2.21154
2019	8.38565	30792172	3.04196	2.858600	5.34369	2.37277
2020	7.34271	16212641	2.0399	1.82848	5.30276	2.03331
2021	8.74156	23111903	2.95942	2.86502	5.78214	2.22456
2022	1.10857	28055082	4.80635	4.45882	6.27936	2.92967
2023	1.06758	12319037	3.91947	3.70977	6.75636	3.13251

Table 2

Result of OLS Regression

Dependent Variable: GDP				
Method: Least Squares				
Date: 10/30/24 Time: 16:55				
Sample: 1 27				
Included observations: 27				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.003759	0.001311	-2.867300	0.0092
X2	-5.34E-14	7.05E-14	-0.756723	0.4576
X3	1.000000	3.55E-14	2.81E+13	0.0000
X4	6.91E-14	3.48E-14	1.985199	0.0603
X5	1.000000	1.36E-14	7.37E+13	0.0000
X6	-1.46E-13	3.22E-14	-4.523680	0.0002
R-squared	1.000000	Mean dependent var	5.40E+11	
Adjusted R-squared	1.000000	S.D. dependent var	2.94E+11	
S.E. of regression	0.001956	Akaike info criterion	-9.442827	
Sum squared resid	8.03E-05	Schwarz criterion	-9.154864	
Log likelihood	133.4782	Hannan-Quinn criter.	-9.357201	
F-statistic	1.18E+29	Durbin-Watson stat	1.141984	
Prob(F-statistic)	0.000000			

Table 3

Confidence Interval Test

Coefficient Confidence Intervals

Date: 10/30/24 Time: 17:14

Sample: 1 27

Included observations: 27

Variable	Coefficient	90% CI		95% CI		99% CI	
		Low	High	Low	High	Low	High
C	-0.003759	-0.006015	-0.001503	-0.006485	-0.001033	-0.007470	-4.71E-05
X2	-5.34E-14	-1.75E-13	6.80E-14	-2.00E-13	9.33E-14	-2.53E-13	1.46E-13
X3	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000
X4	6.91E-14	9.20E-15	1.29E-13	-3.29E-15	1.41E-13	-2.94E-14	1.68E-13
X5	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000
X6	-1.46E-13	-2.01E-13	-9.03E-14	-2.13E-13	-7.88E-14	-2.37E-13	-5.45E-14

Table 4

Heteroscedasticity Test

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

F-statistic	3.483998	Prob. F(5,21)	0.0189
Obs*R-squared	12.24206	Prob. Chi-Square(5)	0.0316
Scaled explained SS	7.093645	Prob. Chi-Square(5)	0.2138

Test Equation:

Dependent Variable: RESID^2

Method: Least Squares

Date: 10/16/24 Time: 17:01

Sample: 1997 2023

Included observations: 27

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.03E-05	9.80E-06	1.051886	0.3048
EXPORTS_OF_GOODS_AND_SERVICES...	2.93E-16	2.60E-16	1.126034	0.2729
FINAL_CONSUMPTION_EXPENDITURE_...	-9.14E-17	1.01E-16	-0.901291	0.3777
FOREIGN_DIRECT_INVESTMENT__NET_...	1.52E-15	5.27E-16	2.889083	0.0088
GROSS_CAPITAL_FORMATION__CURR...	4.39E-16	2.41E-16	1.822238	0.0827
GROSS_DOMESTIC_SAVINGS__CURR...	-4.90E-16	2.66E-16	-1.845149	0.0792
R-squared	0.453410	Mean dependent var	1.26E-05	
Adjusted R-squared	0.323269	S.D. dependent var	1.78E-05	
S.E. of regression	1.46E-05	Akaike info criterion	-19.23469	
Sum squared resid	4.49E-09	Schwarz criterion	-18.94673	
Log likelihood	265.6683	Hannan-Quinn criter.	-19.14906	
F-statistic	3.483998	Durbin-Watson stat	1.704121	
Prob(F-statistic)	0.018946			

Table 5

Multicollinearity Test

Variance Inflation Factors

Date: 10/16/24 Time: 16:58

Sample: 1997 2023

Included observations: 27

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
C	7.28E-06	12.12918	NA
EXPORTS_OF_GOO...	5.13E-27	560.7886	118.6891
FINAL_CONSUMPTI...	7.79E-28	175.9187	43.44662
FOREIGN_DIRECT_...	2.11E-26	3.083698	1.965898
GROSS_CAPITAL_F...	4.40E-27	212.7759	55.98520
GROSS_DOMESTIC...	5.35E-27	562.7800	130.5792

Table 6

Autocorrelation Test

Breusch-Godfrey Serial Correlation LM Test:

Null hypothesis: No serial correlation at up to 2 lags

F-statistic	7490.299	Prob. F(2,19)	0.0000
Obs*R-squared	26.96580	Prob. Chi-Square(2)	0.0000

Test Equation:

Dependent Variable: RESID

Method: Least Squares

Date: 10/16/24 Time: 17:15

Sample: 1997 2023

Included observations: 27

Presample missing value lagged residuals set to zero.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.007290	0.000115	-63.22715	0.0000
EXPORTS_OF_GOODS_AND_SERVICES...	1.20E-13	2.85E-15	42.03811	0.0000
FINAL_CONSUMPTION_EXPENDITURE_...	1.19E-13	1.29E-15	92.15084	0.0000
FOREIGN_DIRECT_INVESTMENT__NET_...	-1.68E-13	5.70E-15	-29.48750	0.0000
GROSS_CAPITAL_FORMATION__CURR...	-3.00E-13	3.18E-15	-94.31104	0.0000
GROSS_DOMESTIC_SAVINGS__CURR...	-5.95E-14	2.80E-15	-21.25123	0.0000
RESID(-1)	0.006887	0.012011	0.573375	0.5731
RESID(-2)	-0.008419	0.011110	-0.757757	0.4579
R-squared	0.998733	Mean dependent var	-4.41E-05	
Adjusted R-squared	0.998266	S.D. dependent var	0.003618	
S.E. of regression	0.000151	Akaike info criterion	-14.52240	
Sum squared resid	4.31E-07	Schwarz criterion	-14.13845	
Log likelihood	204.0524	Hannan-Quinn criter.	-14.40823	
F-statistic	2139.755	Durbin-Watson stat	2.822381	
Prob(F-statistic)	0.000000			