Determinants of Foreign Direct Investment in Saudi Arabia: An Empirical Analysis for the Period (1980-2022)

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Abstract

The study aims to analyze the primary determinants of foreign direct investment inflows (FDI) in Saudi Arabia for the period 1980-2022. Utilizing the auto-regressive distributed lag (ARDL) model, it examines both short-run and long-run relationships between FDI and a set of explanatory variables, including per capita income, total foreign exchange reserves, gross capital formation, domestic credit to the private sector, exchange rate, inflation, and trade openness. These variables are presumed to significantly influence FDI inflows into the Saudi economy. The long-run ARDL model reveals a significant positive cointegrating relationship between FDI inflows and both per capita GDP and domestic credit to the private sector. Conversely, the results indicate a significant negative cointegrating relationship with gross capital formation, exchange rate, and trade openness. In contrast, total foreign exchange reserves and inflation demonstrate an insignificant long-run cointegrating relationship with FDI inflows. The short-run error correction model (ECM) identifies a significant positive relationship between FDI inflows and market size as well as the lag of gross capital formation. Conversely, the coefficients for lagged inflation and gross capital formation show a highly significant negative effect on FDI inflows. Meanwhile, trade openness and inflation are statistically insignificant, indicating no short-run impact on FDI inflows. The impulse response functions and variance decomposition analysis revealed that, in the long run FDI in Saudi Arabi is primarily determined by gross capital formation, which accounts for 18.9% of the effect, this is followed by total foreign reserves at 17.7%, per capita GDP at 16.7%, and FDI inflows at 15.1%. The study recommends implementing measures to stimulate GDP growth, increase per capita GDP, and develop the financial sector to enhance foreign direct investment (FDI) inflows.

Keywords: Foreign Direct Investment, Financial Sector, Economic Growth, GDP, ARDL Approach.

1. Introduction

Saudi Arabia is committed to implementing its ambitious Vision 2030 plan to become a major global investment partner, with a key goal of increasing FDI to 5.7% of GDP (Ministry of Investment, 2024). Despite a 12% annual decline in global FDI net inflows in 2022, which UNCTAD estimates at $1,295 billion, Saudi Arabia experienced a 21% annual growth in net FDI inflows, reaching SAR 105 billion in 2022. In terms of net FDI inflows, Saudi Arabia ranks 10th among G20 countries, and 16th in terms of FDI stock. Additionally, Saudi Arabia ranked third among the G20 for FDI stock growth in 2022 and seventh overall.(Ministry of Investment, 2024a)

Economic diversification and new initiatives beyond the oil and gas sector have reversed the trend of declining foreign direct investment (FDI) flows to Saudi Arabia, which had been affected by political considerations and falling oil prices. According to UNCTAD's World Investment Report 2021, FDI inflows to Saudi Arabia increased by 20%, reaching USD 5.5 billion in 2020, up from USD 4.6 billion the previous year, despite the pandemic. Notably, investments rose by USD 1.9 billion in the last quarter of 2020, marking another period of growth. Significant investments in retail, ICT, financial services, and e-commerce highlight the effectiveness of governmental measures aimed at diversifying investment. Consequently, FDI in the country grew to USD 241 billion in 2020. (DEVELOPMENT, 2021)
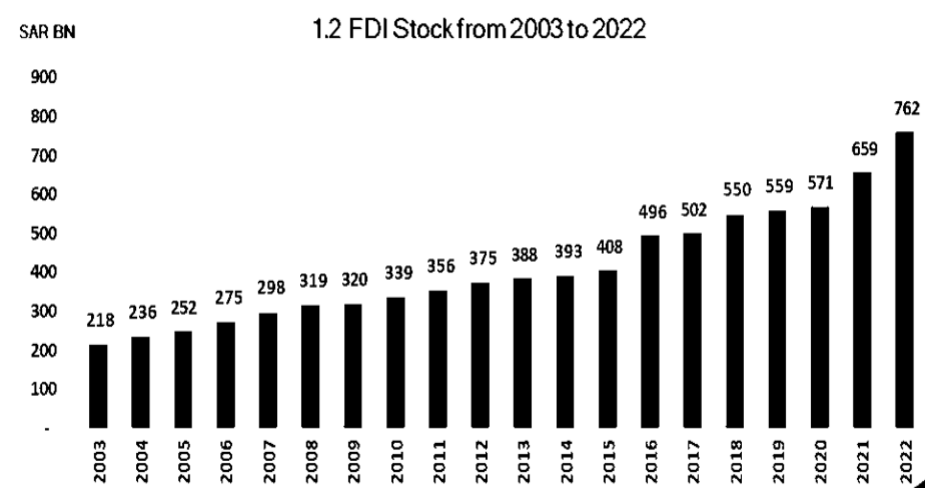
Figure (1): Foreign direct investment inflows (FDI) in Saudi Arabia for the period 2004-2022
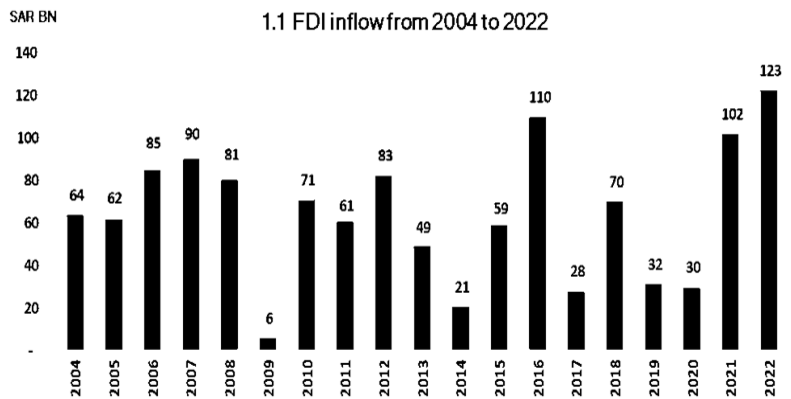
Source: Saudi Arabia Foreign Direct Investment Report, January 2024; Ministry of Investment

With a compound annual growth rate of 6.8% over the past decade, the FDI stock steadily increased from SAR 218 billion to SAR 762 billion by the end of 2022.

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Figure (2): Foreign direct investment (FDI) Stock in Saudi Arabia for the period 2003 -2022

Source: Saudi Arabia Foreign Direct Investment Report, January 2024; Ministry of Investment

The major foreign investors in Saudi Arabia include the United States, France, Singapore, Japan, Kuwait, and Malaysia. The primary sectors attracting investment are the chemical industry, real estate, fossil fuels, vehicles, tourism, plastics, and machinery. In the first half of 2021, Saudi officials announced a 33% increase in FDI inflows compared to the same period in 2020. By 2030, Saudi Arabia aims to achieve an annual FDI level of USD 100 billion. Additionally, the Saudi Arabian General Investment Authority has been upgraded and renamed the Ministry of Investment.(Ministry of Investment, 2024a)

Since joining the WTO in 2005, the Saudi Arabian government has significantly improved the environment for foreign investment. From an investor's perspective, the nation's advantages include: The largest global oil reserves and significant OPEC membership, a sizable local market with high spending power, supported by a population of over 35 million, an economic diversification strategy under Saudi Vision 2030, a stable banking system, consolidated finances, and robust infrastructure. However, several obstacles may hinder the growth of FDI in Saudi Arabia, such as: a judicial system that some consider inadequate for resolving business disputes, lack of transparency in administering intellectual property laws, government-imposed limits on employing Saudi nationals, a conservative cultural environment including mandated gender segregation in most businesses and social settings, heavy reliance on the hydrocarbons industry and government spending, and a deteriorating regional geopolitical climate.

2. Literature Review:

Through an analysis of 500 articles published over the last five decades, Paul & Feliciano-Cestero (2012) review systematically and examined both theoretical and empirical research on

foreign direct investment (FDI). The review covered theoretical models, approaches, background, and scholarly achievements. In addition to offering suggestions for further research, FDI has emerged as the most important sector of international commerce, they conclude. (Paul & Feliciano-Cestero, 2021)

Canh (2020) examines how net foreign direct investment inflows (FDI) for 21 economies over the period (2003–2013) are affected by world uncertainty (WUI) and local economic policy uncertainty (EPU). This study yields two main conclusions by applying the sequential (two-stage) approach of linear panel data models. First, FDI inflows are negatively impacted by the domestic EPU growth rate. Second, the World Uncertainty (WUI) which incorporates the economic policy uncertainty measure of 143 nations has a favorable effect on FDI inflows into the host country when paired with the local EPU level. The results indicate that while uncertainty over the nation's economic policies hurts foreign direct investment (FDI) inflows, there is a possibility that increased global (world) economic policy uncertainty might boost FDI inflows into the nation. (Canh et al., 2020)

Using yearly panel data from 45 African nations spanning the years (1980–2016), Acquah and Ibrahim (2020) investigated the relationship between foreign direct investment (FDI), economic growth, and the development of the banking sector. The results from two-system generalized method of moments results indicate that while larger FDI is generally associated with better economic growth, the impact of FDI on growth is mixed. Notably, the banking sector appears to diminish the positive effect of FDI on economic growth. (Acquah & Ibrahim, 2020)

With an emphasis on wind energy in developing nations, Keeley & Ikeda (2017) examined the impact of these support policies on foreign direct investment as location factors and compares them to the commonly acknowledged determinants (institutional and macroeconomic determinants). The findings indicate that policies supporting renewable energy have an equal or higher impact than commonly acknowledged factors like GDP growth, price stability, corruption level, and financial accessibility. The study also offers significant policy recommendations, such as strengthening grid infrastructure access regulations for the renewable energy industry to draw in foreign direct investment. (Keeley & Ikeda, 2017)

Making use of actual data from Romania, Hilber & Voicu (2010) studied the factors influencing the placement of foreign direct investment in transition economies, regional studies, and the significant influx of foreign direct investment following the revolution in 1989. External economies from service agglomeration are found to be the primary driver of foreign direct investment location using a conditional logit set-up and choice-specific fixed-effects estimation. A 10.0% increase in the service job density rises the likelihood of a foreign investor visiting the typical Romanian county by 11.9%. Additionally, the placement of foreign direct investment is influenced by labor disputes and industry-specific foreign and domestic agglomeration economies. (Hilber & Voicu, 2010)

Louail (2019), identified the elements that, between 1970 and 2016, brought foreign direct investment to the Arab countries. Prior research has demonstrated that there are factors that draw foreign direct investment to politically divided countries, and these investments are crucial and beneficial for these reasons. As a result, the study looked at and assessed these factors in Arab

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countries that desperately need financial assistance. It was discovered that the value of foreign direct investment for the previous year (t-1) and crude domestic output had a positive correlation with foreign direct investment. (Louail, 2019)

The influence of foreign direct investment on growth and its drivers in South Africa are the subjects of an article by Fedderke & Romm(2006). The study revealed that domestic and foreign capital are complementary over the long term, suggesting that there is a beneficial technological spillover from foreign to domestic capital. Although foreign direct investment is crowding out local investment, this effect is only felt in the short run. The net rate of return and the foreign direct investment obligations' risk profile are what determine foreign direct investment in South Africa. Policy recommendations from the empirical findings include lowering corporate tax rates, ensuring property rights, minimizing political risk, and, most importantly, promoting market size growth. The study recommends wage moderation and full integration of the South African economy into the global economy. (Fedderke & Romm, 2006)

Using the CS-ARDL technique, Rehman & Islam (2023), helped to build a comprehensive index of financial infrastructure and assesses its relationship with the total factor productivity (TFP) of the BRICS economies from 1990 to 2019 in terms of outward FDI, trade openness, human capital, innovation, and institutional quality. The results show that financial infrastructure plays a major and advantageous role in TFP over the long and short terms, while in the BRICS nations, trade openness, human capital, and innovation are all at parity. (Rehman & Islam, 2023)

Using the autoregressive distributed lag (ARDL) bounds testing to cointegration technique Belloumi & Alshehry (2018) examined the causal relationships between domestic capital investment, foreign direct investment (FDI), and economic development in Saudi Arabia during the period (1970-2015). Their findings indicate a bidirectional correlation between FDI and domestic capital investment, as well as negative bidirectional causality between non-oil GDP growth and FDI and domestic capital investment in the long run. Short-run FDI negatively impacts domestic capital investment, whereas long-run domestic capital investment negatively impacts FDI. Trade openness, finance development, and non-oil GDP growth are all positively impacted by FDI inflows and local capital investment. (Belloumi & Alshehry, 2018)

Alfalih & Bel Hadj (2020) studied the factors affecting inflows of foreign direct investment. Results from the ARDL approach applied to the Saudi Arabian example from 1984 to 2017 indicate that law and order, market size, and real exchange rate positively affect foreign direct investment (FDI) in the short and long run. Long-run openness and rising oil prices impact Saudi Arabia's foreign direct investment (FDI) inflows, according to the results of short- and long-term VECM models. Short- and long-term FDI is not significantly impacted by oil exports. (Alfalih & Bel Hadj, 2020)

Exploring the main drivers of foreign direct investment in Saudi Arabia, Alalmai and Somaiyah (2024) examines the impacts of market size, economic growth, inflation, income levels, export performance, trade openness, degrees of corruption, and government expenditure, using data from 2005 to 2021 using multiple linear regression (MLR). The research identifies four important factors, GDP per capita (income) hurts FDI inflows, market size, inflation rate, and trade openness have favorable effects. No discernible impacts were found for the other factors

under study. (Alalmai & Finance Department King Abdulaziz University, Jeddah, Saudi Arabia, 2024)

Al-Matari (2022), investigated the variables that affected foreign investment in the Kingdom of Saudi Arabia between 1979 and 2019. This study uses ARDL regression along with many approaches, such as cointegration by unit roots test (ADF, PP, and KPSS), to examine the short- and long-term correlations between the FDI determinants. Long-run foreign direct investment (FDI) is positively correlated with GDP, inflation, and the external balance; FDI is positively correlated with the external balance. It is expected that the outcomes will lead to more foreign investment. (Al-Matari et al., 2022)

Using the Autoregressive Distributed Lags (ARDL) technique Samargandi (2022), investigated the variables that affect Foreign Direct Investment (FDI) into the Saudi Arabian economy, the study shows that Saudi Arabia's economy benefited from a greater FDI during the global financial crisis (GFC) as a result of its economic stability. It has been discovered that trade openness encourages FDI inflows. (Samargandi et al., 2022)

The study by Juma (2021) evaluated Saudi Arabia's attractiveness as a destination for foreign direct investment (FDI) by examining factors such as market size, infrastructure, technology adoption, innovation-friendly environment, taxes, political risk, corruption, and ease of doing business. Covering the period from 2015 to 2019, the study finds that Saudi Arabia is a desirable FDI destination due to its large market, well-developed infrastructure, high technology adoption rate, innovation-friendly environment, well-capitalized and liquid banking system, low corporate taxes, political stability, low corruption levels, low transfer risk, and low expropriation risk. However, the study showed that the country is less appealing to FDI due to its low labor market efficiency and poor ranking in ease of doing business.(Juma et al., 2021)

In addition to the aforementioned studies on the determinants of foreign direct investment (FDI), numerous works have specifically examined this topic with in the context of the Saudi economy, Notable contributions include those by (Haque, 2021), (Khodeir & Al Nuwaiser, 2016), (Althnian, 2016), (M, 2009), (Abdel-Rahman, 2002), and (Al-Salamah & Wilson, 2001). Similarly, many studies have explored the yhis subject in a global scale, such as those by (Ang, 2008), (Boateng et al., 2015), (Rodriguez & Pallas, 2008), (Dua, 2015), (Pradhan & Kelkar, 2014), (Kafait, 2018), (Aydogan, 2017), and (Juma et al., 2021).

3. Data and methodology:

Based on current literature, the study identifies market size, growth prospects, trade openness, currency valuation, foreign exchange reserve position, and gross capital formation as the key determinants of FDI. This section briefly explores these variables and their anticipated impact on FDI inflows to host countries.

1. Market Size: According to several studies(Lankes & Venables, n.d.-a)(Estrin et al., 2001), (Resmini, 1999) a positive relationship between market size and FDI is anticipated. Among the various factors measuring market size such as GDP, GDP per capita income, and the

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size of the middle-class population, GDP per capita income has been the most consistently utilized.

2.   Foreign Exchange Reserves: The growth of foreign exchange reserves positively impacts FDI inflows. Higher foreign exchange reserves enhance the credibility of a receiving country's government, thereby encouraging greater FDI inflows. Additionally, substantial foreign exchange reserves indicate a nation's strong external payment position, which boots investor confidence internationally. (Kaur & Sharma, 2013)

3.   Gross Capital Formation: A higher Gross Capital Formation signifies a robust investment climate, which significantly influences the volume of FDI inflows. The relationship between FDI and Gross Capital Formation is complex and can be either positive or negative.

4.   Financial sector development: A well-developed financial sector measured by the private credit to GDP ratio, can significantly enhance a country's appeal to foreign investors by providing a broader range of financial services, reducing risks, and fostering economic

5.   Currency Strength: The relationship between foreign direct investment (FDI) and currency strength is complex. While a strong currency can boost the profitability of foreign businesses operating within the country, high exchange rate volatility can deter FDI by introducing uncertainty and risk for foreign investors.

6.   Growth prospects and economic instability: Inflation is considered an indicator of the host nation's economic stability; low inflation may attract international investors. conversely, extremely high inflation rates signal economic instability and negatively impact FDI inflows. However, the effect of effect of inflation on FDI inflows can be either positive or negative.

7.   Trade Openness: Trade openness is a significant determinant of FDI inflows and is generally assumed to have a favorable impact. A nation's ability to attract FDI increases when it opens its domestic market to foreign trade. The ratio of a country's exports and imports to its GDP measures the openness of its economy to trade... However, in developing countries the interaction between trade openness and economic instability can reduce the net effect of trade openness on FDI inflows. (Lankes & Venables, n.d.-b) (Holland & Pain, 1998)

Model Specification:

The study aims to investigate the short- and long-run relationships between foreign direct investment (FDI) inflows into Saudi Arabia and its macroeconomic determinants. These determinants include market size, measured by per capita income (PGDP); total foreign reserves (TFRS); the investment climate, reflected by gross capital formation (GCFR); financial sector development, demonstrated by domestic credit to the private sector (DCPS); the exchange rate (EXRT), indicating purchasing power and currency strength; growth prospects and economic stability, as indicated by inflation (INFL); and trade openness (TOPN).

These macro factors serve as the model's explanatory variables, and foreign direct investment (FDI) inflow serves as the model's dependent variable.

The model is described by the following equation using time-series data for the years (1980–2022):

$$FDI = \alpha 0 + \beta 1\ PGDP + \beta 2 TFRS + \beta 3\ GCFR + \beta 4\ DCPS + \beta 5\ EXRT + \beta 6\ INFL + \beta 7\ TOPN + Ut \tag{1}$$

With:

$$\frac{\partial FDI}{\partial PGDP} > 0, \frac{\partial FDI}{\partial TFRS} > 0, \frac{\partial FDI}{\partial GCFR} < 0, \frac{\partial FDI}{\partial DCPS} > 0, \frac{\partial FDI}{\partial EXRT} < 0, \frac{\partial FDI}{\partial INFL} > 0\ \frac{\partial FDI}{\partial TOPN} > 0$$

Where:

FDI   = inflows of foreign direct investment.

PGDP   = per capita GDP.

TFRS   = total foreign exchange reserves.

GCFR   = gross capital formation.

DCPS   = domestic credit to private sector.

EXRT   = exchange rate.

INFL   = inflation.

TOPN   = trade openness.

α and β = unknown parameters to be estimated.

    Ut = the error term.

The Data:

Data on foreign direct investment (FDI) inflows and their determinants, as proposed in the study, are collected from various sources, including the World Bank, International Monetary Fund, United Nations, and other official national sources such as the Saudi Central Bank (SAMA) and the General Authority of Statistics KSA.

ARDL Bound Test:

To assess the casual correlations between the foreign direct investment (FDI) inflows in Saudi Arabia and their key determinants, both short- and long-run, the study utilized the Autoregressive Distributive Lag (ARDL) developed by Pesaran et al. (Pesaran et al., 2001) This model is suitable for time series data that are either I (1) and/or I (0).

The functional form model of Xt as explanatory and Yt as dependent, in general ARDL (p, q), is represented as follows:

$$\Delta Y_t = \alpha_0 + C_0 t + \sum_{i=1}^{p} \beta_i\ \Delta Y_{t-i} \sum_{j=0}^{q} \gamma_j\ \Delta X_{t-j} + \delta_1 Y_{t-1} + \delta_2 X_{t-1} + \epsilon_t \tag{2}$$

Where:

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ΔY_t and ΔX_t are the differences of Y_t and X_t

p and q are the respective lags: i=1, 2, …, p; q=1, 2, …, q

t indicates the periods t=1, 2, …, T

α_0, C_0 are the drift and trend coefficients respectively

ϵ_t is the error term.

β_i and γ_j coefficients for all j correspond to the short-run relationship while the δ_j corresponds to the long-run relationship.

Based on the above ARDL general functional model, the study-specific functional form model is defined as follows:

$$\Delta FDI_t = \alpha_0 + \alpha_1 t + \sum_{i=1}^{p} \alpha_{2i} \Delta FDI_{t-i} + \sum_{i=1}^{q1} \alpha_{3i} PGDP_{t-i} + \sum_{i=1}^{q2} \alpha_{4i} \Delta TFRS_{t-i} + \sum_{i=1}^{q3} \alpha_{5i} \Delta GCFR_{t-i} + \sum_{i=1}^{q4} \alpha_{6i} \Delta DCPS_{t-i} + \sum_{i=1}^{q5} \alpha_{7i} \Delta EXRT_{t-i} + \sum_{i=1}^{q6} \alpha_{8i} \Delta INFL_{t-i} + \sum_{i=1}^{q7} \alpha_{9i} \Delta TOPN_{t-i} + \alpha_{10} FDI_{t-1} + \alpha_{11} PGDP_{t-1} + \alpha_{12} TFRS_{t-1} + \alpha_{13} GCFR_{t-1} + \alpha_{14} DCPS_{t-1} + \alpha_{15} EXRT_{t-1} + \alpha_{16} INFL_{t-1} + \alpha_{17} TOPN_{t-1} + \epsilon_t \tag{3}$$

Where:

ΔFDI_t, denotes the dependent variable, $\Delta PGDP_{t-i}$, $\Delta TFRS_{t-i}$, $\Delta GCFR_{t-i}$, $\Delta DCPS_{t-i}$, $\Delta EXRT_{t-i}$, $\Delta INFL_{t-i}$ and, $\Delta TOPN_{t-i}$, denote independent variables respective difference values; α_2, α_3, α_4, α_5, α_6, and α_7 represent the short-run dynamic relationships; α_{10}, α_{11}, α_{12}, α_{13}, α_{14}, α_{15}, α_{16}, and α_{17} represent long-run dynamic relationships; P denotes the lag period of the dependent variable; $q_1, q_2, q_3, q_4, q_5, q_6$ and q_7 specify the lag period of the explanatory variables, respectively; and ϵ_t is the error term.

4. Empirical Analysis:

1. Unit root test: Augmented Dickey-Fuller (ADF)

The Null hypothesis: variable is non- stationary

Table (1): Unit root test (Augmented Dickey-Fuller) (ADF):

Variable	ADF Test statistic	t- statistic	Prob.	Decision
FDI	Level (Trend & Intercept)	-3.623423	0.0400	I(0)
PGDP	1st Difference (Trend & Intercept)	-4.997954	0.0012	I(1)
TFRS	1st Difference (Intercept)	-3.472922	0.0139	I(1)
GCFR	1st Difference (Trend & Intercept)	-3.639691	0.0403	I(1)
DCPS	Level (Trend & Intercept)	-3.650547	0.0393	I(0)
XRT	Level (Trend & Intercept)	-5.347929	0.0005	I(0)
INFL	Level (Trend & Intercept)	-3.698163	0.0335	I(0)
TOPN	1st Difference (None)	-5.004939	0.0001	I(1)

Source: own calculations

Table (1) indicates that FDI, DCPS, EXRT, and INFL are integrated at level I (0) and are stationary, whereas PGDP, TFRS, GCFR and TOPN are integrated at level I (1). Consequently,

the null hypothesis that the research variables are non-stationary is rejected. According to Pesaran, Shin, and Smith, the Autoregressive Distributed Lag (ARDL) is a robust framework for long-run analysis, as it accommodates variables that are a mix of level series and first differences. (Pesaran et al., 2001)

The standard VAR model is then used to calculate the lag order for the model, as seen below:

Table (2): The standard VAR model

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-3171.495	NA	1.11e+69	181.6855	182.0410	181.8082
1	-2905.661	394.9542	1.19e+64	170.1521	173.3516	171.2565
2	-2808.344	100.0976	3.31e+63	168.2482	174.2919	170.3345
3	-2618.718	108.3575*	2.26e+61*	161.0696*	169.9573*	164.1376*

Source: own calculations
* Indicates lag order selected by the criterion

Table (2) presents a summary of the Standard VAR model's outcomes using the Schwarz Information Criterion (SIC). The study model's ideal lag order is 3.

2. ARDL Bound Test

Null Hypothesis: No levels relationship

Table (3): ARDL Bounds Test

Test Statistic	Value	K	Signif.	I(0)	I(1)
F-statistic	10.72108	7	1%	2.88	3.99

Source: own calculations

The F-statistic is 10.72108, which shows 1% Significance based on the ARDL Bounds Test values shown in Table (3) above. This suggests the rejection of the null hypothesis and confirmation of the long-run cointegration. Therefore, both the short-run dynamics of error correction and the long-run relationships may be examined using the study model.

3. Estimated Long-run Effects:

The ARDL (1, 1, 0, 2, 0, 0, 2, 1) bound test is used to evaluate the long-run cointegration relationship between the FDI and the explanatory variables (PGDP, TRRS, GCFR, DCPS, EXRT, INFL AND TOPN):

Table (4): ARDL Long Run Form and Bounds Test:

Variable	Coefficient	Std. Error	t-Statistic	Prob.
PGDP	0.001200	0.000285	4.206224	0.0004
TFRS	1.176783	7.18E-12	1.638558	0.1155
GCFR	-8.07143	3.24E-11	-2.490935	0.0208
DCPS	0.106619	0.046723	2.281935	0.0325
EXRT	-1.79355	0.450738	-3.979152	0.0006
INFL	0.162254	0.103106	1.573668	0.1298
TOPN	-5.02759	1.41E-11	-3.569614	0.0017

Source: own calculations

EC = FDI - (0.0012* PGDP + 1.1767* TFRS -8.0714* GCFR + 0.1066* DCPS -1.7936* EXRT + 0.1623* INFL -5.02759* TOPN)

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The ARDL (1, 1, 0, 2, 0, 0, 2, 1) long-run bound test results indicated a significant positive cointegrating relationship between FDI inflows and per capita GDP (PGDP) Domestic credit to private sector (DCPS) at 1% and 5% levels of significance, respectively. The positive (0.001200) and (0.106619) coefficients of PGDP and DCPS suggest that an increase in PGDP and DCPS are associated with higher (FDI) inflows. Conversely, the results revealed significant negative cointegrating relationship between FDI inflows and gross capital formation (GCFR), exchange rate (EXRT), and trade openness (TOPN) at 5%, 1% and 5% levels of significance respectively, the negative coefficients (-8.07143), (-1.79355) and (-5.02759) of (GCFR), (EXRT) and (TOPN), indicate that increase in (GCFR), (EXRT) and (TOPN) are associated with lower (FDI) inflows.

In contrast, the results showed an insignificant long-run cointegrating relationship between FDI inflows and gross total foreign reserves (TFRS) and inflation (INFL).

4. The Error Correction Model (ECM):

The dynamic model's equilibrium restoration rate is measured by the error correction term (ECT), which is dependent on the ECM coefficient satisfying two requirements: it must be statistically significant and have a negative sign. Bannerjee et al (Oke et al., 2017)

The model's ECT turns out to be negative and statistically significant at 1%, which implies that in the next periods, the rate at which the long-run deviations of FDI inflows are being corrected will be around 1.13 percent each period.

Table (5): Short-run Error Correction Model (ECM)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(PGDP)	0.000374	0.000217	1.722121	0.0991
D(GCFR)	-3.542096	1.61E-11	-2.203587	0.0383
D(GCFR (-1))	7.282639	1.49E-11	4.876409	0.0001
D(INFL)	-0.015360	0.068697	-0.223590	0.8251
D(INFL (-1))	-0.290613	0.068434	-4.246627	0.0003
D(TOPN)	-1.048904	8.32E-12	-1.260254	0.2208
CointEq(-1)*	-1.134330	0.106681	-10.63291	0.0000

Source: own calculations

Based on the short-run findings represented the table (5). The coefficient of D(PGDP) is (0.000374), indicating that, at the 10% level of significance, an increase in PGDP is associated with a marginal rise in FDI inflows. Additionally, a highly significant positive correlation (1%) between D (GCFR (-1)) and FDI inflows is indicated by the coefficient (7.2826), suggesting that past changes in gross capital formation (GCFR) through investments in physical assets and infrastructure have positively impacted FDI inflows.

The coefficients of D(GCFR) (-3.5420) and D (INFL (-1)) (-0.2906) indicate a considerable significant negative effect on the DFI inflows at the 5% and 1% significance levels, respectively. Conversely, trade openness D(TOPN) and inflation D(INFL) are statistically insignificant (p-value > 0.05), suggesting they have minimal short-run impact on FDI inflows.

5. Diagnostic Tests:

The subsequent diagnostic tests to check for serial correlation, heteroscedasticity, and stability:

Breusch-Godfrey Serial Correlation LM Test:

The Null Hypothesis: No serial correlations exist.

Table (6): Serial Correlation LM Test:

F-statistic	1.949761	Prob. F (2,20)	0.1684
Obs*R-squared	5.873874	Prob. Chi-Square (2)	0.0530

The F-statistic of (1.949761), is linked to a p-value of (0.1684), exceeding the standard significance level of 5%, suggesting no serial relationship.

Breusch-Pagan-Godfrey Heteroskedasticity Test:

The Null Hypothesis: No autocorrelations exist.

Table (7): Heteroskedasticity Test:

F-statistic	0.355733	Prob. F (14,21)	0.9744
Obs*R-squared	6.900989	Prob. Chi-Square (14)	0.9385
Scaled explained SS	3.421199	Prob. Chi-Square (14)	0.9981

As shown in the table above of Breusch-Godfrey LM Heteroskedasticity Test, the p-value (Prob. F (14,21)) is 0.9744, which is higher than the critical significance level of 5%, the F-statistic is (0.355733), therefore, the residuals are heteroskedastic.

6. CUSUM Recursive Estimates Test for stability:

At a significance level of 5%, the graphs of the two tests' plots, displayed below, demonstrate that the data are moving inside the critical bounds. Therefore, the stability of the predicted coefficients parameter of the ARDL model is confirmed by the support evidence from the CUSUM and CUSUM Square tests.
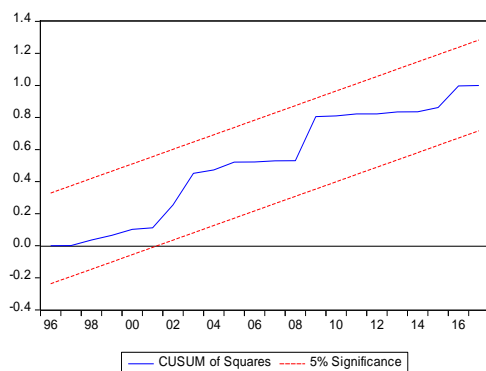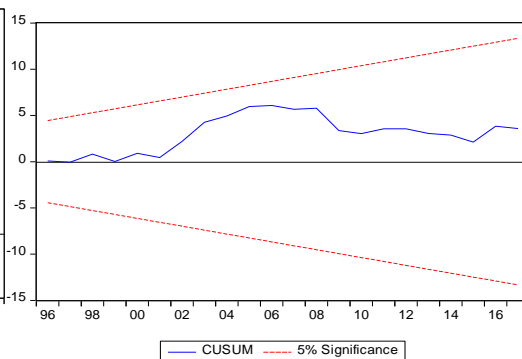

Figure (3): CUSUM Test   Figure (4): CUSUM of Squares Test

7. Variance Decomposition (VD):

Variance Decomposition describes the extent to which each of the shocks defines the predicated error variance for FDI inflows in Saudi Arabia over a ten-year forecast horizon caused by the proposed determinants.

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Table (8): Variance Decomposition

Period	S.E.	FDI	PGDP	TFRS	GCFR	DCPS	EXRT	INFL	TOPN
1	0.564428	100.0000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
2	0.808859	53.80207	0.119175	4.117131	8.242758	10.15625	15.44351	4.133737	3.985369
3	1.126908	41.09767	21.27333	2.165265	4.678534	9.066232	12.12365	7.541781	2.053538
4	1.287725	32.98079	16.59460	4.598413	4.049476	7.210805	16.51123	16.48117	1.573511
5	1.588377	24.07718	15.89887	12.19697	12.23728	12.85482	10.85383	10.84225	1.038804
6	1.819949	19.99953	12.81942	12.70477	9.927614	11.61201	13.86827	17.88471	1.183666
7	2.025562	17.24282	15.94129	13.42058	16.59962	9.377193	11.60198	14.83014	0.986375
8	2.093709	18.05878	17.07755	13.59954	15.92746	9.160315	11.24158	13.94629	0.988471
9	2.310609	15.28770	15.90976	18.06833	19.33894	8.524676	9.547727	12.26776	1.055100
10	2.333640	15.12409	16.72011	17.75521	18.97539	8.973659	9.375923	12.03963	1.035991

Source: own calculations

Over the long - run (in period 10) foreign direct investment (FDI) inflows are primarily influenced by gross capital formation (GCFR), which has an effect of 18.9%. Total foreign reserves (TFRS), per capita GDP (PGDP), and FDI inflows follow at 17.7%, 16.7%, and 15.1%, respectively. The focus error variation in FDI inflows is influenced by inflation (INFL), exchange rate fluctuation (EXRT), and domestic credit to the private sector (DCPS); these factors account for 12.0%, 9.3%, and 8.9% of the variance, respectively. The study demonstrates that trade openness has a 1% influence, which is insignificant.

In the short run (in period 2), shocks to the foreign direct investment (FDI) inflow (own shocks) account for 53.8% of the variation in FDI inflows. The variance in FDI inflows is attributed to 15.4% of the shock to the exchange rate (EXRT). at the same time, the error variation is affected by domestic credit to the private sector (DCPS) and gross capital formation (GCFR), respectively, by 8.2% and 10.1%. The combined contribution of other explanatory factors to the variance is just 13%, suggesting little influence on the variation in FDI inflows.

8. Impulse Response Analysis:

The impulse response functions demonstrate the impact of one standard deviation shock in the determinants of FDI inflows on Saudi Arabia's foreign direct investment. This analysis helps to understand how changes in key variables, such as market size, exchange rate, and trade openness, affect FDI inflows over time.

As illustrated by the curves below in Figure (5), the FDI inflows clearly respond to a single standard deviation shock caused by these determinants in the short run, these fluctuations continue to affect FDI inflows positively at certain times and negatively at others. Over the long term, however, all factors demonstrate a stable condition with little to no impact on FDI flows, indicating no notable variations in FDI inflows.

Figure (5): Impulse Response Analysis

Response to Cholesky One S.D. Innovations ± 2 S.E.
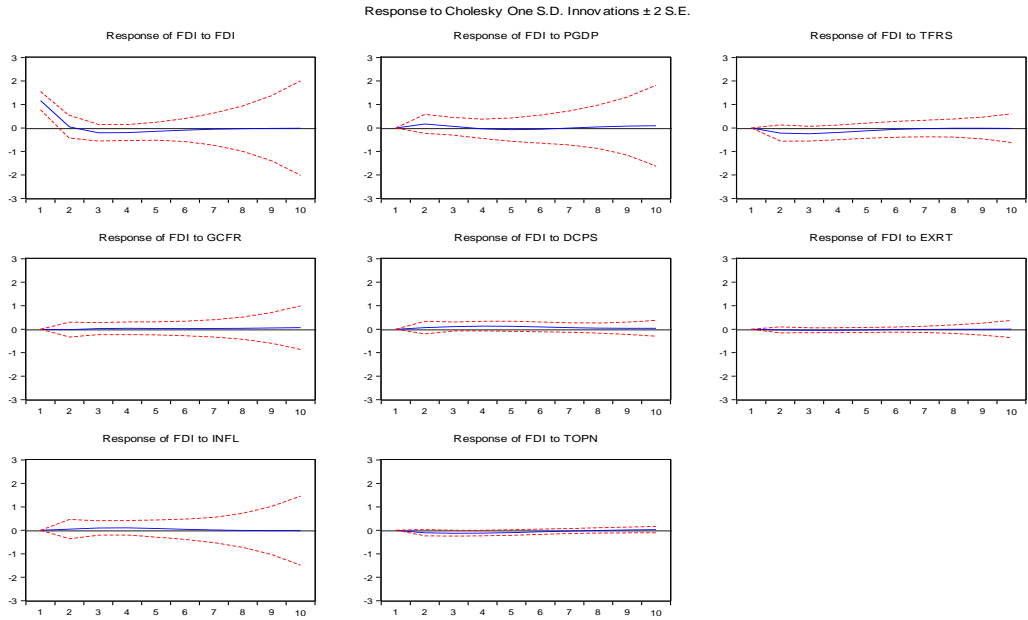
5. Results and Recommendation:

The study's main objective is to examine both short- and long-run relationships between foreign direct investment (FDI) inflows into Saudi Arabia and a set of explanatory factors that significantly influence these inflows. These factors include per capita GDP (PGDP), total foreign exchange reserves (TFRS), gross capital formation (GCFR), domestic credit to the private sector (DCPS), exchange rate (EXRT), inflation (INFL), and trade openness (TOPN). The auto-regressive distributed lag (ARDL) model was employed using a data covering the period (1980 to 2022) collected from various sources including the World Bank and the IMF and other official national sources such as the Saudi Central Bank (SAMA), the General Authority of Statistics KSA.

Based on the results obtained from the Short-run Error Correction Model (ECM), market size, as measured by per capita income D(PGDP), is positively correlated with an increase in PGDP at a 10% level of significance. Additionally, FDI inflows are positively correlated with the lag of gross capital formation (GCFR-1) representing investment in physical assets and infrastructure D (GCFR (-1)), indicating a positive correlation with FDI inflows at a 1% level of significance. Conversely, the lag inflation (D (INFL (-1)) and gross capital formation (D(GCFR)) coefficients prove a significant negative impact on the DFI inflows at a 1% and 5% significance levels, respectively. Trade openness D(TOPN) and inflation D(INFL) are statistically insignificant, indicating no short-run effect on FDI inflows.

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The long-run cointegration relationship between the FDI inflows and the explanatory variables is assessed using the long-run (1, 1, 0, 2, 0, 0, 2, 1) ARDL bound test. The results reveal a significant positive cointegrating relationship between FDI inflows and both market size (PGDP) and the development of the financial sector, represented by domestic credit to the private sector (DCPS), at the 1% and 5% levels of significance, respectively. This implies that, over time, larger (FDI) inflows are associated with increases in PGDP and DCPS.

The results also revealed a significant negative cointegrating link between gross capital formation (GCFR), exchange rate (EXRT), and trade openness (TOPN). In the context of the Saudi economy, these findings can be explained in terms of the higher trade openness which lead to increased imports, causing domestic markets to become oversaturated with foreign goods, which can negatively impact FDI inflows; underdeveloped financial systems and domestic economic inefficiencies can result in the misallocation of foreign capital; and a stronger exchange rate, such as the Saudi Riyal, could discourage foreign direct investment (FDI) by increasing costs for foreign investors and reducing their returns;

Finally, the volatility of oil prices has a detrimental impact on investor confidence, as Saudi Arabia is primarily dependent on oil exports. Companies looking for diversity would hesitate to invest in economies that depend heavily on a single product. On the other hand, the results showed minor long-run cointegrating relationship between total foreign exchange reserves (TFRS), inflation (INFL), and FDI inflows.

In light of our findings and in alignment with Saudi Arabia's Vision 2030, which aims to increase FDI to 5.7% of GDP and position the Kingdom among the world's top 15 economies (Ministry of Investment, 2024b). The study recommends adopting international standards and administrative best practices to enhance governance and transparency.

The study supports all measures that promote GDP growth and per capita GDP growth rates, as these will increase market size and, in turn, positively and significantly impact FDI inflows. Additionally, encouraging and strengthening the development of the financial sector is crucial for promoting FDI inflows, this can be achieved through the implementation of legal, economic, and social reforms as well as tax incentives, other policy-oriented legislation should include diversifying the economy away from oil-dependent sectors and promoting non-oil industries.

The Saudi economy has made significant efforts to promote non-oil industries, diversify the economy, and amend policy-oriented regulations. It has introduced zero-levy tax incentives for foreign enterprises and implemented legal, economic, and social reforms in addition to tax benefits. Focusing on sectors like manufacturing, renewable energy, technology, and infrastructure—including transportation, logistics, and communication networks—may prove beneficial. By implementing these measures, as the long-term findings suggest, the negative effects of trade openness (TOPN), exchange rate (EXRT), and gross capital formation (GCFR) on FDI inflows are likely to be mitigated.

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