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MEASURING AND ANALYZING THE IMPACT OF FDI IN DIVERSIFYING EXPORTS - THE OMANI ECONOMY, A CASE STUDY FOR THE PERIOD 2002-2022

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Abstract
For the years 2002–2022, this study looks at how FDI contributes to export diversification in the Omani economy. In order to diversify exports and lessen the negative effects of economic reliance on a single resource, several rentier economies have implemented certain tactics. One of the most important methods for accomplishing this objective is FDI (FDI), which effectively implements a targeted investment policy by focusing investments on economic sectors that support export diversification. We use advanced econometric analysis to find out how much foreign direct investment (FDI) affects exports of goods in the oil and gas sector and other sectors. We do this by using the Autoregressive Distributed Lag (ARDL) model. The data's most notable finding is that foreign direct investment (FDI) in the oil and gas production sector considerably increases exports in the short run. However, over time, exports are not greatly impacted by foreign direct investment (FDI) in the oil and gas production sector or in other economic sectors.

Keywords: Foreign Direct Investment (FDI), Economic Diversification, Export Diversification, Oil Exports, Non-Oil Exports.

Introduction

FDI serves as a tool for transferring advanced technology, capital, and knowledge across national borders. FDI is classified based on specific criteria; for instance, according to the nature of the investment, it can be categorised into horizontal and vertical FDI. FDI provides multiple benefits to the host country, serving as a stable source of financing, which enables recipient countries to adopt long-term economic growth and development strategies. It can also contribute to economic diversification, leading to export diversification. FDI is the word for investments made to guarantee long-term gains in commerce conducted in an economy different from the investing entity's own. Long-term profitability and effective firm management mobilization motivate these investments (Husain et al., 2021, p. 1). Al-Khamisi & Albasoos (2021, p. 7) define foreign direct investment (FDI) as an investment intended to acquire a long-term ownership in or exercise effective control over a firm that operates outside the investor's economy. By utilizing management experience, financial resources, marketing, and human resources, FDI promotes economic growth and, ultimately, raises employment rates at the macroeconomic level (Al Shubiri, 2016, p.8). Additionally, it has a significant impact on economic growth, especially in situations where domestic savings are inadequate. FDI boosts the host nation's economy and is being used more and more throughout the world to promote economic growth and environmental sustainability. Due to its favorable effects on technical progress inside host country institutions through knowledge transfer, FDI (FDI) has become more and more important for economic advancement in light of the growing rivalry among nations.

The potential of FDI (FDI) to increase domestic investment has been recognized due to its increasing importance as the main source of external funding for host nations. It is thought that FDI (FDI) can boost domestic investment, which is crucial for economic growth and sustainable development (Al Mazroui et al., 2024, p.69).

Economic diversification is a key issue for economies that rely primarily on a single resource. Economic diversification refers to the shift towards a broader range of productive resources, moving away from dependence on a single commodity. Consequently, diversification signifies a structural transformation in the economy, serving as a pathway to economic development.

Rentier economies have implemented specific policies to achieve economic diversification, particularly in terms of export diversification, by attracting FDI to various economic activities. In this case, investment is directed towards economic activities that contribute to diversifying and increasing non-oil exports rather than relying solely on oil and gas exports. Such policies shield the economy from the direct and indirect negative impacts of resource dependency.

Numerous studies have confirmed that FDI inflows act as a driving force for export diversification. Countries that attract FDI have experienced high export growth rates. As a result, developing nations have intensified efforts to attract and retain FDI to diversify and expand exports.

1. Literature Review

1.1 Theoretical Framework of FDI

1.1.1 Definition of FDI

FDI acts as a conduit for cross-border capital transfers and the spread of cutting-edge technologies. Market activities that transfer resources, especially knowledge, to developing nations without a contractual arrangement are the source of FDI's effects (Bruhn et al., 2020, p. 42).

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1.1.2 Types of FDI

FDI varies based on the type of investment. Whether or whether investments are focused on the same activities as those in the investor's native country determines this categorization. FDI can therefore be differentiated in the following ways (Kukaj & Ahmeti, 2016, pp. 295–296):
When an investor (or investing firm) invests outside of their home nation in the same production or service activity as they would in their home country, this is known as horizontal FDI. Therefore,

1. Horizontal FDI entails extending the same operations outside of the nation of origin.

2. Vertical FDI: In this scenario, investors (or investing firms) make investments in ventures unrelated to their primary business ventures outside of their nation of residence. However, neither their core production nor its ancillary or supporting activities are directly related to their main operations or goods.

According to the aforementioned, these spillover effects are referred to as horizontal spillovers when local enterprises' access to foreign firms results in productivity improvements in the same sector. On the other hand, these impacts are categorized as vertical spillovers when foreign companies support the expansion of domestic companies through several sectors. Three processes can lead to horizontal spillovers: competition, labor mobility, and demonstrative effects (Husain et al., 2021, p.2).

1.1.3 FDI's Significance

Recipient nations may confidently adopt long-term perspectives on their economic growth strategies since FDI (FDI) is a dependable source of stable finance. Since local savings could not always cover investment demands, it also helps close financial gaps (Makoni, 2015, p.162).

By supporting capital creation and enhancing domestic investment, FDI is anticipated to have a direct impact on economic growth. However, endogenous growth models suggest that FDI might indirectly boost economic growth by improving the host nation's institutional quality and knowledge base through technical improvements (Rismawana et al., 2021, p.50).

1.1.4 Determinants of FDI

Although FDI location choices are influenced by corporate strategies—whether seeking resources, markets, efficiency, or strategic assets—the ultimate investment decision is based on economic geography. This factor is crucial as it considers country-level characteristics. National wealth, including natural resource endowments, the availability of skilled and/or inexpensive labor, the size of the local market, infrastructure, and government regulations pertaining to national resources, all affect how well FDI (FDI) performs in different nations (Makoni, 2015, p.162).

1.2 Theoretical Framework of Economic Diversification

1.2.1 Definition of Economic Diversification

The strong reliance of resource-rich nations on a single source of income is the main focus of research on economic diversification. Because of their profitability, the commercialization of these resources impedes the growth of other economic sectors (Maria, 2022, p. 39). As nations transition from manufacturing "poor-country goods" to "rich-country goods," economic growth is a process of structural change (Hesse, 2009, p.55).

1) The term "economic diversification" describes a move away from reliance on a particular commodity, such as minerals, crude oil, or agricultural products, and toward a wider variety of sources of production, jobs, trading routes, incomes, and expenses. According to economists, structural transformation—which is characterized by increased productivity, sustainable growth, and wider development—is the process most strongly associated with economic diversification (Usman & Landry, 2021, pp.3–4).

2) 1.2.4 Policies Required for Export Diversification

Export diversification can be encouraged by ensuring the quality of institutions that support trade, allowing the market to determine prices—where private firms absorb all costs and benefits—and addressing market failures wherever possible. Building the necessary institutions for successful export activities is a gradual process, yet the key issues are well understood. Efficient access to transport networks and modern communication infrastructure is essential to reducing costs and improving speed and reliability. Well-functioning tax and customs services (including duty drawback schemes and bonded warehouse facilities) are crucial for facilitating transactions and ensuring exporters face global prices for their inputs. Additionally, access to modern communication facilities, measurement and testing services, and conformity assessment mechanisms is necessary to help exporters meet quality standards in foreign markets. Macroeconomic stability, an efficient financial sector, an appropriately valued exchange rate, open trade policies with low tariff and non-tariff barriers, and a regulatory climate that fosters private sector development are all essential factors for successful exports and domestic production (Brenton et al., 2009, p.10).

It is widely acknowledged that high-quality infrastructure is a fundamental component of economic development, as better infrastructure enhances economic efficiency. Numerous studies have already established a positive correlation between infrastructure investment and economic growth. Other research has shown that inadequate infrastructure can hinder export diversification. Improved infrastructure can enhance manufacturing productivity, leading to

better product quality and higher unit values. Additionally, better infrastructure can lower trade costs (Harding, 2009, pp. 237–238).

3) 1.3 Theoretical Foundations of FDI in Trade Diversification (Exports)

Multinational corporations (MNCs) can play a crucial role in enhancing and sustaining the export competitiveness of host countries. This can be achieved by diversifying export baskets, maintaining higher export growth rates over time, improving the technological and skills content of export activities (through value addition and enrichment), and expanding the capacity of local firms to compete on a global scale. Governments should implement coherent and consistent policies and strategies to attract export-oriented multinational firms (Mahembe & Odhiambo, 2014, p.66).

Policymakers in developing nations are concentrating on identifying important diversification drivers and tactics due to the potential advantages of export diversification. Economic growth and FDI (FDI) inflows are important forces for export diversification, according to empirical research. There is documented proof that nations that receive large amounts of FDI have seen faster growth in their exports. In an effort to diversify their production bases, developing countries have redoubled their attempts to draw in and keep FDI (Gamariel et al., 2022, p.75). FDI plays a crucial role in the transfer of technology from foreign to local companies via technological spillover effects. The ideas and practices of foreign companies often make their way to local companies via vertical or horizontal spillovers. These indirect effects might promote economic and export diversification, which could result in the production and export of new products. Additionally, by increasing their ability to access wider customers and learning more about the possibilities in new markets via their contacts with foreign enterprises, local businesses strengthen the export diversification base of the domestic economy. FDI also supports research and development (R&D) and new ideas in local economies. This is because it makes it easier to transfer technology that raises worker productivity. This makes it easier to grow trade-related industries and make new goods efficiently (Gamariel et al., 2022, p. 76).

2. Methodology

The study is important because it shows how foreign direct investment (FDI) affects different parts of the Omani economy, like the oil and gas industry and others. FDI is also a key factor in the growth and diversification of exports. Data from the Ministry of National Economy and the National Centre for Statistics and Information—more especially, the Sultanate of Oman's Annual Statistical Yearbook and the Foreign Investment Statistics Bulletin—were gathered in order to meet the study's goal. The purpose of the research is to clarify how foreign direct investment (FDI) contributes to various economic activities and to the export of commodities within the Omani economy between 2002 and 2022.

The research Siglem is framed as follows: Has FDI in different economic activities contributed to the diversification and expansion of commodity exports? Consequently, the effectiveness of FDI is assessed across different timeframes.

The study is based on the hypothesis that FDI directed towards specific economic sectors will contribute to targeting and expanding those sectors, leading to increased and diversified export sources within the economy.

The research adopts an inductive analytical approach by examining the Tre.s in FDI and commodity exports over a given time series, followed by an assessment of the economic realities and the evolution of economic phenomena over the study period. The economic implications of these developments are then inferred. To measure the relationship between the economic Var.s used in the study, the Autoregressive Distributed Lag (ARDL) model was employed, as detailed below:

$$EX = c + \lambda \mathbf{EX_{t-1}} + \beta_1 FO_{t-1} + \beta_2 \mathbf{FOT_{t-1}} + \sum_{i=1}^{n} \mathbf{a_1 EX_{t-i}} + \sum_{i=0}^{m} \mathbf{a_2 FO_{t-i}} + \sum_{i=0}^{m} \mathbf{a_3 FOT_{t-i}} + \mu_t$$

4) **2.1 Data Analysis**

The development of FDI in the oil and gas sector and other sectors, along with commodity exports (both oil and non-oil), can be analysed based on Tables (1) and (2) as follows:

a) **2.1.1 Oil and Gas Sector**

Table (1) indicates that FDI in the oil and gas sector grew by **35.12%** in 2003, while Table (2) shows that oil exports increased by **3.46%** in the same year. In 2005, FDI recorded a growth rate of **57.04%**, while oil exports grew by **37.79%**. The highest growth rate for FDI in the oil and gas sector was recorded in **2007** at **58.48%**, while oil exports increased by **3.49%** in the same year. This suggests that the impact of FDI may not be immediately visible within the same timeframe due to a lag between policy implementation and its economic response, meaning that the effects of FDI may only become evident after a longer period.

In **2015**, FDI in the oil and gas sector declined by **27.01%**, coinciding with a **35.00%** decline in oil exports. However, FDI in the oil and gas sector demonstrated consistent growth in the following years, reaching a **16.92%** growth rate in **2022**, while oil exports surged by **54.28%**. This highlights a clear correlation between increased FDI in the oil and gas sector and subsequent growth in oil exports throughout the study period.

Table (1) also reveals that the lowest contribution of FDI in the oil and gas sector occurred in **2006**, at **39.12%**, whereas the highest contribution was recorded in **2022**, at **71.09%**. This indicates a rising share of FDI in the oil and gas sector compared to all other non-oil sectors. Similarly, Table (2) shows that in **2002**, oil exports accounted for the highest share of total commodity exports at **93.92%**, while the lowest share was recorded in **2021**, at **66.11%**. Despite the declining share of oil exports, they continue to constitute the majority of Oman's total exports, reinforcing the persistent rentier nature of the Omani economy.

Table 1: Evolution of FDI in the Omani economy at fixed prices 2012 is 100 for 2002-2022 (OMR 1 million)

% contribution of FDI in other sectors	FDI contribution to the oil and gas sector%	Growth rate%	Total	Growth rate%	FDI in other sectors	Growth rate%	FDI in the oil and gas sector	ears
54.35	45.65		1043.12		566.95		476.17	2002
52.09	47.91	28.73	1342.85	23.37	699.45	35.12	643.39	2003
55.04	44.96	1.05	1356.96	6.79	746.92	-5.18	610.04	2004
57.19	42.81	64.92	2237.89	71.35	1279.86	57.04	958.03	2005
60.88	39.12	33.71	2992.38	42.35	1821.90	22.18	1170.48	2006
58.99	41.01	51.15	4522.88	46.43	2667.87	58.48	1855.01	2007
52.96	47.04	13.61	5138.44	2.01	2721.51	30.29	2416.93	2008
47.43	52.57	8.78	5589.71	-2.58	2651.22	21.58	2938.50	2009
50.14	49.86	5.46	5894.75	11.49	2955.89	0.01	2938.87	2010
53.97	46.03	6.22	6261.42	14.32	3379.22	-1.93	2882.20	2011
52.81	47.19	2.15	6395.80	-0.04	3377.80	4.71	3018.00	2012
48.35	51.65	7.11	6850.84	-1.93	3312.66	17.24	3538.18	2013
45.99	54.01	8.03	7401.27	2.75	3403.92	12.98	3997.36	2014
56.72	43.28	-8.92	6741.10	12.33	3823.58	-27.01	2917.51	2015
50.75	49.25	16.02	7821.01	3.81	3969.31	32.02	3851.69	2016
40.92	59.08	29.96	10164.16	4.79	4159.58	55.89	6004.58	2017
32.72	67.28	17.93	11986.97	-5.70	3922.66	34.30	8064.31	2018
32.85	67.15	5.56	12653.30	5.97	4156.79	5.36	8496.51	2019
36.35	63.65	7.24	13569.08	18.66	4932.54	1.65	8636.54	2020
31.44	68.56	22.69	16647.24	6.12	5234.21	32.15	11413.03	2021
28.91	71.09	12.76	18771.74	3.69	5427.26	16.92	13344.48	2022

5) **2.1.2 Other Sectors**

Table (1) indicates that **FDI in non-oil sectors** grew by **23.37%** in **2003**, while Table (2) shows that **non-oil exports** increased by **16.24%** in the same year. The highest growth rate of FDI in other sectors was recorded in **2005**, at **71.35%**, while non-oil exports grew by **29.72%** in the same year.

However, in **2009**, FDI in non-oil sectors declined by **2.58%**, coinciding with a **8.93%** decrease in non-oil exports. Despite this, FDI in non-oil sectors continued to grow at varying rates over the following years, reaching a **18.66%** growth rate in **2020**, while non-oil exports increased by **27.77%** in the same year.

Although FDI requires time before its impact on exports becomes evident, the data suggests that in most years where FDI in non-oil sectors experienced growth, there was a simultaneous increase in non-oil exports. This highlights the role of FDI in **export diversification**, reinforcing its significance in reducing Oman's reliance on oil exports.

Table 2, Commodity exports of the Omani economy at fixed prices 2012 is 100 for 202-2022 (OMR 1 million)

The percentage of contribution of non-oil exports to commodity exports	The percentage of oil exports in commodity exports	Growth rate%	Total merchandise exports	Growth rate%	Total non-oil exports	Growth rate%	Total oil exports	Years
6.08	93.92		6219.65		377.87		5841.78	2002
6.78	93.22	4.24	6483.06	16.24	439.24	3.46	6043.83	2003
8.16	91.84	13.86	7381.64	37.19	602.58	12.16	6779.05	2004
7.72	92.28	37.13	10122.54	29.72	781.69	37.79	9340.85	2005
9.78	90.22	11.56	11292.52	41.33	1104.76	9.07	10187.76	2006
13.60	86.40	8.06	12203.08	50.20	1659.38	3.49	10543.70	2007
13.54	86.46	35.98	16593.82	35.35	2246.00	36.08	14347.83	2008
17.39	82.61	-29.12	11761.06	-8.93	2045.35	-32.28	9715.71	2009
17.40	82.60	28.11	15067.45	28.14	2620.99	28.11	12446.47	2010
16.75	83.25	23.63	18628.60	19.05	3120.37	24.60	15508.23	2011
17.93	82.07	7.61	20047.00	15.18	3594.00	6.09	16453.00	2012
17.55	82.45	7.05	21460.93	4.77	3765.58	7.55	17695.35	2013
20.03	79.97	-6.00	20172.38	7.32	4041.14	-8.84	16131.24	2014
21.90	78.10	-33.45	13424.66	-27.26	2939.33	-35.00	10485.32	2015
22.65	77.35	-23.63	10252.66	-20.99	2322.36	-24.37	7930.30	2016
25.12	74.88	17.57	12054.05	30.39	3028.03	13.82	9026.02	2017
23.23	76.77	25.69	15151.27	16.23	3519.36	28.87	11631.92	2018
21.74	78.26	-7.47	14019.15	-13.40	3047.74	-5.68	10971.42	2019
31.82	68.18	-12.71	12236.82	27.77	3894.10	-23.96	8342.72	2020
33.89	66.11	30.57	15978.07	39.05	5414.90	26.62	10563.17	2021
29.62	70.38	44.92	23155.42	26.66	6858.52	54.28	16296.90	2022

Table (1) shows that the **highest share of FDI in non-oil sectors** was recorded in **2006**, at **60.88%**, while the **lowest share** was observed in **2022**, at **28.91%**. This indicates a decline in the share of non-oil sectors in total FDI inflows.

Similarly, Table (2) reveals that in **2002**, **non-oil exports** accounted for their lowest share of total commodity exports, at **6.08%**. However, this share gradually increased over subsequent years, reaching its highest level in **2021**, at **33.89%**. This **positive Tre.** reflects an increasing contribution of **non-oil exports** to total commodity exports, signalling progress towards **export diversification**.

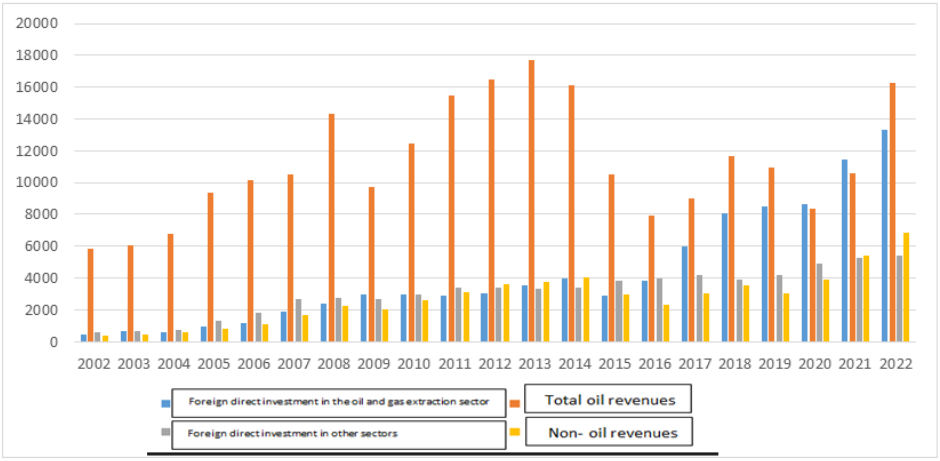

Figure 1, Evolution of FDI and exports in the Omani economy for 2002-2022 (OMR 1 million

Figure (1) illustrates the **Tre. of FDI and exports** in the Omani economy. The graph clearly shows a continuous increase in **FDI in the oil and gas sector** as well as **oil exports** throughout the study period.

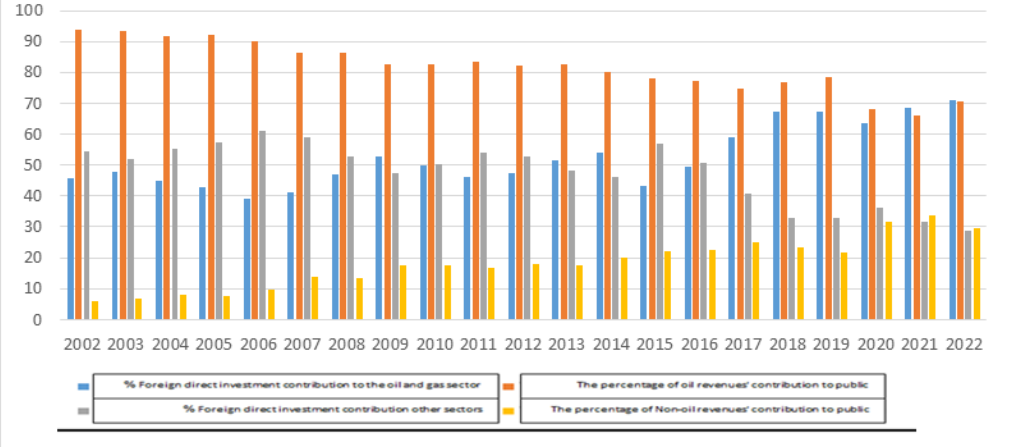

Figure (2): The Development of FDI and Export Contributions in the Omani Economy (2002–2022) (%)

Figure (2) highlights the **relative decline** in the share of **oil exports** from the beginning to the end of the study period, despite the continued increase in the **FDI share in the oil and gas sector**. Additionally, the graph illustrates the **rising share of non-oil exports**, even as the proportion of **FDI in non-oil sectors** declined in comparison to FDI in the **oil and gas sector**.

2.2 Analysis of Econometric Test Results

The econometric aspect of this study is based on a set of **economic Var.s** derived from a **semi-annual time series**, using the **2012 base year (2012=100)**. These Var.s can be represented by the following function:

(Function to be inserted based on the model used in the study)\text{(Function to be inserted based on the model used in the study)}
(Function to be inserted based on the model used in the study)

6) EX=F(FO,FOT) Definition of Var.s

- **EX**: Commodity exports (*Dependent Var.*).

Independent Var.s:

- **FO**: FDI in the **oil and gas extraction sector**.
- **FOT**: FDI in **other sectors**.

2.2.1 Unit Root Test

Table (3) presents the results of the **Augmented Dickey-Fuller (ADF) unit root test**. The findings indicate that **all Var.s are stationary at first difference**.

- The **EX Var.** is stationary **at the 1% significance level** under all conditions (constant only, constant and Tre., and No Constant and Tre.).
- The **FO Var.** is stationary **at the 10% significance level** under all conditions (constant only, constant and Tre., and No Constant and Tre.).

• The **FOT Var.** is stationary **at the 1% significance level** when tested Cons. only and constant and Tre., while it is stationary **at the 5% significance level** when tested No Constant and Tre.

These results confirm that the Var.s are integrated at the first difference, making them suitable for further econometric analysis.

Table 3: Extended Dickie Fuller test for the root of the unit

UR TETS				
	At Level			
		EX	**FO**	**FOT**
Cons.	t	-1.4357	1.3847	-0.7890
	Sig.	***0.5555***	***0.9986***	***0.8116***
		n0	n0	n0
Cons. & Tre.	t	-1.7969	-0.5425	-2.7276
	Sig.	***0.6880***	***0.9770***	***0.2317***
		n0	n0	n0
No Constant & Tre.	t	0.6377	2.2636	2.5797
	Sig.	***0.8500***	***0.9933***	***0.9970***
		n0	n0	n0
	At First Difference			
		d(EX)	**d(FO)**	**d(FOT)**
Cons.	t	-6.3748	-2.6148	-8.2425
	Sig.	***0.0000***	***0.0986***	***0.0000***
		***	*	***
Cons. & Tre.	t	-6.2923	-3.2756	-8.1637
	Sig.	***0.0000***	***0.0854***	***0.0000***
		***	*	***
No Constant & Tre.	t	-6.2450	-1.8966	-2.3529
	Sig.	***0.0000***	***0.0560***	***0.0198***
		***	*	**

2.2.2 Estimating the Export Function Using the Autoregressive Distributed Lag (ARDL) Model

Table (4) presents the results of the **ARDL model** for the export function. The findings indicate the following:

- **R2 = 0.830972**, meaning that the **independent Var.s explain 83.09%** of the variation in the dependent Var. (*exports*). The remaining **16.91%** is attributed to other factors not included in the model, as well as the random error term.
- **Adjusted R2 = 0.812191**, which suggests a strong fit of the model after accounting for the degrees of freedom.
- **F = 44.24570**, which is **significant at the 1% level**, indicating the overall statistical significance of the estimated model.

These results confirm that the **ARDL model** is a reliable approach for analysing the relationship between **FDI in different sectors** and **export performance in the Omani economy**.

Table 4 ARDL model for the export function

Var.	Coef.	STDE	t	Sig.*
EX(-1)	0.941662	0.097245	9.683400	0.0000
FO	1.730846	0.521056	3.321805	0.0021
FO(-1)	-1.556999	0.529023	-2.943161	0.0057
FOT	-0.439479	0.569851	-0.771217	0.4456
C	1356.508	1098.465	1.234913	0.2249
R2	0.830972	Mean dep. Var.		14175.41
Adjusted R2	0.812191	SD of DEP. Var.		4639.508
reg. S.E	2010.619	AIC		18.16412
SS RES.	1.46E+08	Schw.		18.37309
Log Like.	-367.3645	HQ		18.24022
F	44.24570	DW TEST		2.013285
Sig(F)	0.000000			
*Note: p-values and any subsequent tests do not account for model selection.				

Table of researchers preparing based on E-views12.

Based on **Akaike's Information Criterion (AIC)**, **Figure (3)** indicates that the **optimal lag structure** for the model is **(1,1,0)**, as it yields the lowest AIC value.

This suggests that:

- The dependent Var. (**exports, EX**) is best modelled with **one lag**.
- The independent Var. **FO (FDI in oil and gas)** is also best modelled with **one lag**.
- The independent Var. **FOT (FDI in other sectors)** does **not require a lag**.

This optimal lag selection ensures the best model fit while minimising information loss.

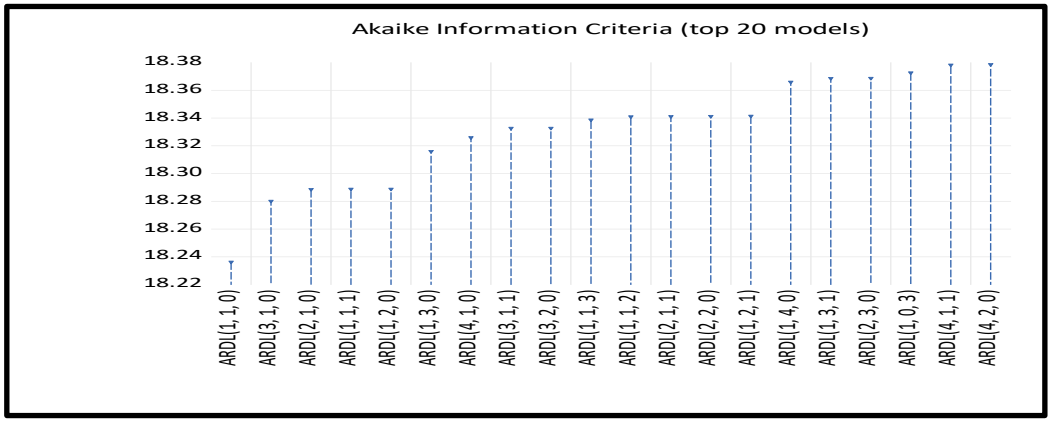

Figure 3. Optimal slowdown periods

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7) 2.2.3 Bounds Test

Table (5) shows that the **F = 0.589261**, which is **lower than the lower bound value (3.1) at the 5% significance level**.

This result indicates that **there is no long-run equilibrium relationship between the Var.s**, meaning that the independent Var.s (FDI in the oil and gas sector and other sectors) do not have a stable long-term impact on commodity exports.

Table 5 Bounds Test

F-Bounds Test		**Null Hypothesis: No levels relationship**		
Test Statistic	**Value**	**Signif.**	**I(0)**	**I(1)**
F	0.589261	10%	2.63	3.35
k	2	5%	3.1	3.87
		2.5%	3.55	4.38
		1%	4.13	5

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8) **2.2.4 Diagnostic Tests**

a) **2.2.4.1 Serial Correlation LM Test**

Table (6) shows that the **p-values for both the F and Chi-Square** are **not significant at the 5% level**.

This leads to the acceptance of the **null hypothesis**, which posits that there is **no serial correlation** in the residuals. Therefore, the model does not face issues of serial correlation, ensuring that the regression results are reliable.

Table 6 results of the serial link test

Breusch-Godfrey Serial Correlation LM Test:			
F	0.637001	Sig. F(2,34)	0.5351
Obs*R2	1.480809	Sig. Chi-Square(2)	0.4769

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9) 2.2.4.2 Heteroskedasticity Test

Table (7) shows that the **p-values for both the F and Chi-Square** are **not significant at the 5% level**.

This leads to the acceptance of the **null hypothesis**, which states that the estimated model **does not suffer from heteroskedasticity**. Therefore, the model is not affected by issues of non-constant variance in the residuals.

Table 7: Inequality test

Heteroskedasticity Test: Breusch-Pagan-Godfrey			
F	0.796110	Sig. F(4,36)	0.5356
Obs*R2	3.331987	Sig. Chi-Square(4)	0.5039
Scaled explained SS	4.401298	Sig. Chi-Square(4)	0.3544

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10) 2.2.5 Random Error Distribution Test (Histogram-Normality Test)

Figure (4) shows that the **p-value for the Jarque-Bera statistic** is **not significant at the 5% level**.

This indicates that the **estimated model follows a normal distribution** for the random errors, suggesting that the residuals do not deviate significantly from normality.

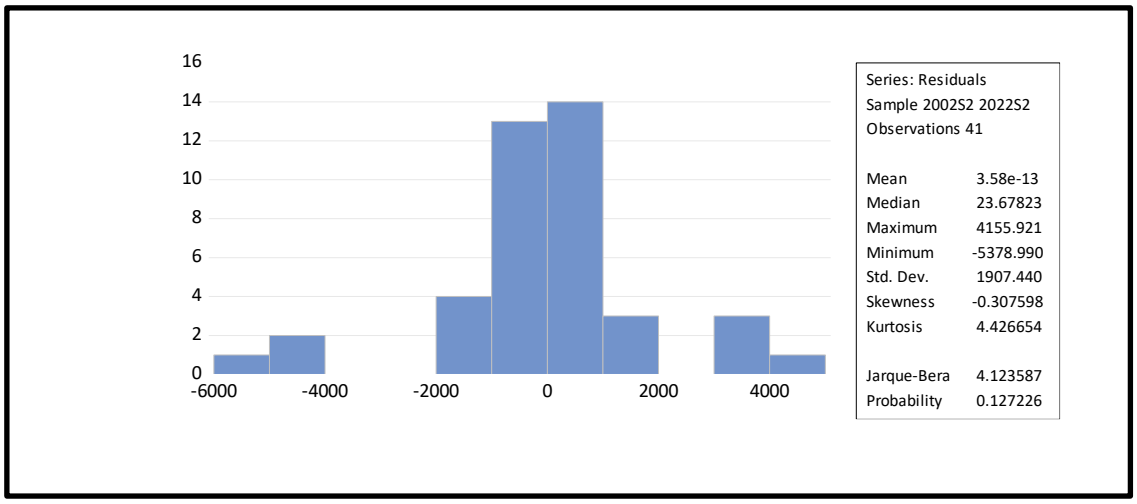

Figure 4. Natural distribution of random mistakes

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2.2.6 Predictive Performance Test for the Error Correction Model

According to **Figure (5)**, the following results are observed:

- **Theil Coef. = 0.145**, indicating a relatively low prediction error.
- **Bias Proportion (BP) = 0.0143**, which is very close to zero, suggesting minimal bias in the model's predictions.
- **Variance Proportion (VP) = 0.0165**, also very close to zero, indicating low variance in the errors.
- **Covariance Proportion (CP) = 0.969**, which is very close to 1, suggesting a high level of reliability in the model's predictive performance.

These results indicate that the **estimated model** is reliable for **predictive purposes** and for **formulating future economic policies**.

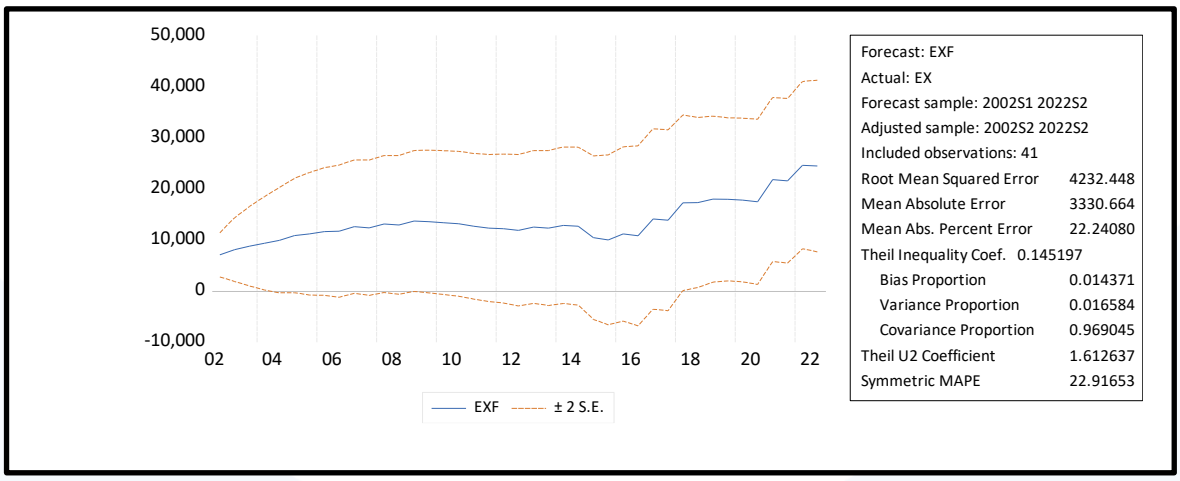

Figure 5. Predictive performance of the error correction model
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11) **2.2.7 Stability Diagnostics**

According to **Figure (6-A)**, based on the **CUSUM test**, the cumulative sum of residuals lies within the critical value bounds. This indicates that the **estimated parameters are stable** at the **5% significance level**.

Additionally, as shown in **Figure (6-B)**, based on the **CUSUM of Squares test**, the cumulative sum of squared residuals also falls within the critical value bounds, which means that the **Var.s included in the model are stable** at the **5% significance level**.

A **B**

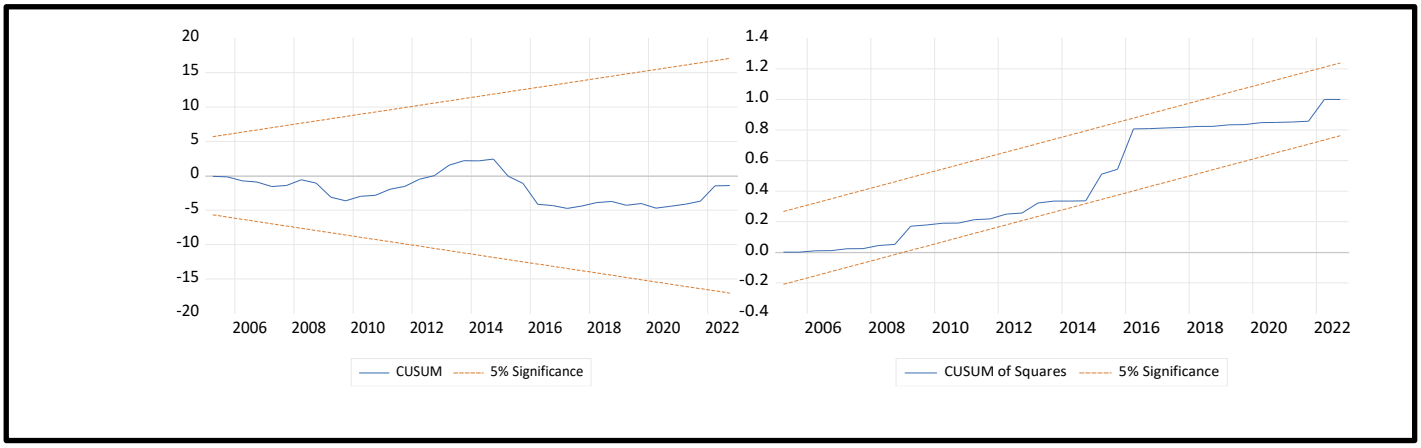

Figure 6. Structural stability test for model parameters
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2.2.8 Long-Run Error Correction Term and Short-Run Parameter Estimation

2.2.8.1 Calculating the Error Correction Term and Short-Run Parameters

At the 1% level, Table (8) demonstrates that the FO Var. (FDI in the oil and gas extraction sector) significantly boosts commodity exports in the near term. In particular, a one-unit increase in foreign direct investment (FDI) in the oil and gas industry leads to a 1.73-unit rise in commodity exports in the near term.

Despite the declining role and significance of non-oil exports, this demonstrates the beneficial effect of foreign direct investment (FDI) in the oil and gas industry on increasing commodity exports, particularly oil exports.

Table 8: Error correction model and short-term parameters

ECM Regression **Case 2: Restricted Constant and No Tre.**				
Var.	**Coef.**	**STDE**	**t**	**Sig.**
D(FO)	1.730846	0.395358	4.377923	0.0001
CointEq(-1)*	-0.058338	0.036508	-1.597956	0.1188
R2	0.319659	Mean dep. Var.		413.0676
Adjusted R2	0.302215	SD of DEP. Var.		2312.532
reg. S.E	1931.740	AIC		18.01778
SS RES.	1.46E+08	Schw.		18.10137
Log Like.	-367.3645	HQ		18.04822
DW TEST	2.013285			

It is clear that short-term imbalances are not addressed in order to reach long-term equilibrium since the Error Correction Term (CointEq(-1)) is negligible.

2.2.8.2 Long-Term Conditions

The FO Var. (FDI in the oil and gas extraction industry) has no discernible long-term impact on exports, as Table (9) demonstrates. This implies that long-term changes in the price of oil may have a big impact on the value of oil exports.

Additionally, the FOT Var. (FDI in other sectors) has no discernible impact on exports, suggesting that, over time, this kind of investment does not support export diversification given the dominance of oil exports.

Table 9. Long-term parameters

Levels Equation **Case 2: Restricted Constant and No Tre.**				
Var.	**Coef.**	**STDE**	**t**	**Sig.**
FO	2.979974	6.585675	0.452493	0.6536
FOT	-7.533263	19.83194	-0.379855	0.7063
C	23252.40	33303.56	0.698196	0.4895
EC = EX - (2.9800*FO -7.5333*FOT + 23252.4048)				

12) **Discussion of Results**

Understanding the many economic sectors of the Omani economy has been greatly aided by research on foreign direct investment. To the best of our knowledge, the research currently available on the Omani economy has not sufficiently examined studies that particularly address the function of FDI, which are divided into two primary categories: the oil and gas extraction sector and other economic sectors. In their analysis of the factors influencing foreign direct investment (FDI) in Oman, for example, Al-Khamisi & Albasoos (2021, p.6) point out a number of advantages, pointing out that Oman has a number of chances that the government might take use of to increase FDI inflows. The analysis does, however, also point out shortcomings that the government must fix.

Our research's unique addition is the measurement and analysis of FDI's impact on export diversification in the oil and gas extraction industry as well as other industries. It was discovered that foreign direct investment (FDI) in the oil and gas extraction industry significantly boosts commodities exports in the near term. On the other hand, FDI in this industry has no discernible impact on commodity exports over the long term. Further evidence that FDI does not support export diversification comes from the fact that it has no discernible impact on commodity exports in non-oil industries.

This suggests that in order to maximize its potential to support export diversification, foreign direct investment (FDI) in non-oil industries has to be reassessed and restructured in accordance with short-, medium-, and long-term economic strategies.

Conclusions

According to economic activity, FDI is essential for concentrating on certain industries, which promotes export diversification and raises export quantities. Numerous studies have shown that FDI is a major factor in export growth and diversification. As a result, developing nations have been working hard to draw in FDI in an attempt to diversify and increase exports.

It is evident from the analysis of the time series that the oil and gas industry has a disproportionate amount of foreign direct investment (FDI), but the share of other economic sectors has decreased. This demonstrates how well the oil industry draws in international investment. Additionally, throughout the research period, the percentage of oil exports in overall commodity exports gradually decreased while the percentage of non-oil commodity exports increased. This is a good sign that the economy is becoming less rentier.

The FO Var. (FDI in the oil and gas extraction sector) significantly boosts commodity exports, according to the findings of econometric studies based on short-run characteristics. This demonstrates how FDI in the oil and gas industry helps increase commodities exports. The FO Var. has little discernible impact on commodity exports over the long term, nevertheless. Long-term changes in the price of oil might have a big impact on the value of oil exports. Furthermore, there is no discernible impact of the FOT Var. (FDI in other sectors) on the growth of commodity exports, suggesting that FDI in non-oil industries does not support commodity export diversification and growth.

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