Economic Transition in Saudi Arabia: Analyzing the Significance and Drivers of Non-Oil Diversification in Exporting Sector

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Abstract

The present study investigates the effect of export diversification in non-oil products (NOED) on the economic stability in Saudi Arabia and detects the key drivers of NOED. Using the Johansen cointegration technique on time-series data from 1990 to 2024, the findings reveal that NOED, along with foreign direct investment and gross capital formation, positively influence long-run economic growth. However, NOED exhibits no significant correlation with GDP per capita in the short term. The outcomes also indicate that the rule of law and the labour force are positive long-run drivers of NOED, while population has a negative association with it. In the short run, population growth positively affects NOED, whereas the labour force and trade openness negatively affect it. Overall, these results align with Saudi Vision 2030, which emphasises expanding non-oil exports, investing in human capital, and reforming institutions to achieve a diversified, resilient, and stable economy.

Keywords: Export Diversification, Non-Oil Exports, Economic Growth, Saudi Arabia, Time Series Analysis.

Introduction

Saudi Arabia is integral to global energy dynamics as a leading producer and exporter of crude oil. It ranks second in terms of oil reserves as of 2024, with 267 billion barrels of verified reserves. With daily exports of over 6.1-6.5 million barrels of oil, it is the world's highest oil exporter (OPEC, 2025). The oil industry is the mainstay of the Saudi economy, accounting for 22.3% of national GDP (Saudi General Authority for Statistics, 2024). However, its heavy reliance on oil may expose it to a range of risks, including fluctuations in global oil prices, regional conflicts, geopolitical constraints, and the global shift towards renewable energy sources, all of which may strain the country's economic stability.

In recent times, the country has recognised the importance of export diversification as a game-changer for sustainable economic prosperity and reduced vulnerability to oil. The Vision 2030 program, introduced in 2016, is an extensive strategy aimed at transforming the Saudi economy by promoting growth across diverse non-oil industries. Central to this vision is the objective of diversifying exports to include a broader range of goods and services (Rashad, 2016). Saudi Arabia's non-oil exports have now gained attention as the country diversifies its economy under the Vision 2030 initiative. This strategic initiative seeks to diminish reliance on oil earnings by

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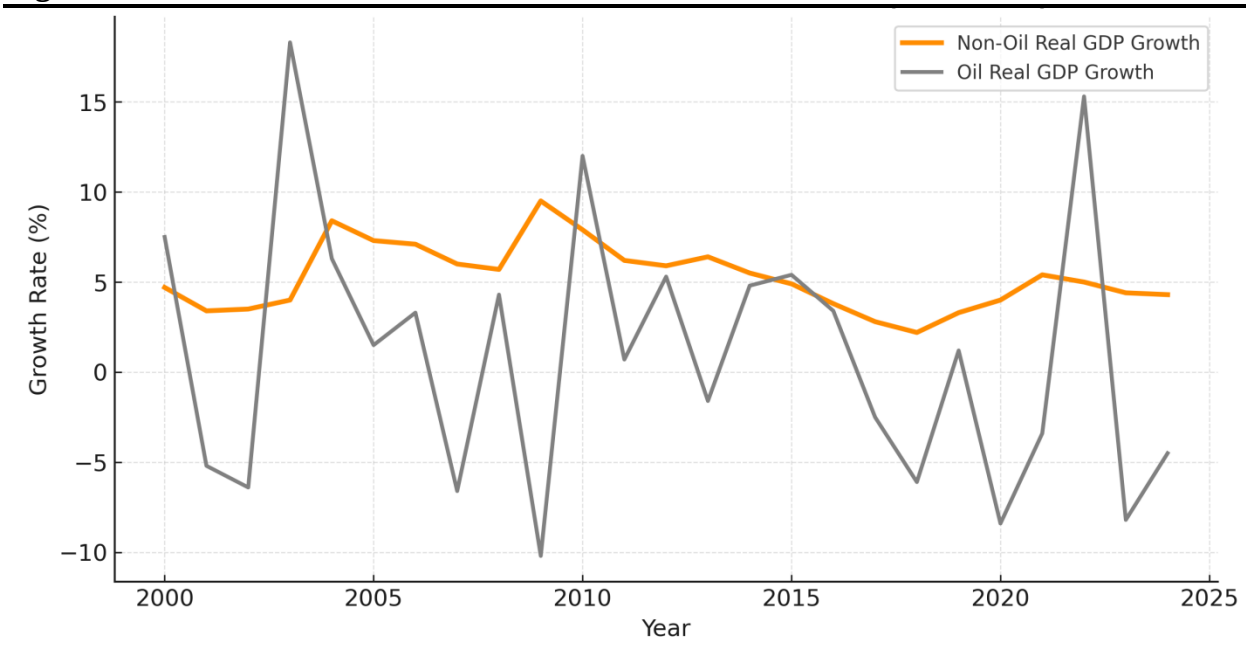
enhancing alternative sectors. Since 2015, the government has expedited the export of products. In this regard, it has increased the developmental budget and implemented structural reforms (Aljebrin, 2017). These efforts by the Saudi government have led to a comparatively stable trajectory of economic growth in the non-oil sector, as shown in Figure 1.

Figure 1: GDP Growth Rate for oil and non-oil sectors



Source: International Monetary Fund [IMF], 2024.

Researchers and policymakers have widely recognised the significance of diversification in exports for economic advancement. A vast literature has explored its implications, revealing a continuum of results influenced by the distinctive features of each economy. Research by Hodey et al. (2015), Abdullahi (2017), Mania and Rieber (2019), Sarin et al. (2022), and Fambo and Ge (2024) highlights the significance of export diversification for the economic stability of exporting countries, demonstrating its ability to buffer against economic shocks. Several studies, such as those by Alshomaly and Shawaqfeh (2020) and Haque (2020), have also found an important role for export diversification in Saudi Arabia's economy amid volatility in oil prices.

Notwithstanding the acknowledged advantage, the process of export diversification is intricate and influenced by various economic and non-economic factors, necessitating exploration of its determinants. A substantial literature exists on the important determinants of export diversification across countries (Fonchamnyo & Akame, 2017; Ali, 2017; Espoir, 2020; Oliveira et al., 2020). Some studies have also identified the significant drivers behind diversification in Saudi Arabian exports (Alkhathlan et al., 2020). These studies jointly offer an understanding of the broader phenomenon of export diversification.

Reviewing the existing literature, we have examined various studies on the impacts and factors of export diversification across different countries, including Saudi Arabia. However, there is a need for exploration in NOED in the country, given its dominance in oil exports. There is limited literature on the effectiveness and drivers of NOED in Saudi Arabia with limited data and methodology (Alajmi, 2023). Therefore, the present study aims to explore the influence of NOED

on economic growth and the factors behind NOED in Saudi Arabia by applying the Johansen cointegration method. It may offer a framework for Saudi policymakers to formulate and execute initiatives designed to reduce reliance on the oil sector, enhance economic stability, and cultivate diversified, resilient economies. Furthermore, the policy implications of this study may aid in monitoring the advancement of Vision 2030 projects and enhancing these initiatives to achieve the goals of export diversification.

The remainder of the paper is organised as follows: Section II presents trends in Saudi Arabia's non-oil exports. Section III reviews the literature in line with the objectives of the ongoing research. Section IV is the methodology section, which includes the conceptual framework, research questions, model specifications, and data description. Section V covers the results after estimating the models and their analysis. The final section presents the conclusion and policy implications.

Literature Review

Export diversification consists of two basic forms: horizontal and vertical diversification. The former indicates export diversification across industries, whereas the latter refers to export diversification within a single industry. Export diversification is crucial for attaining long-term economic growth and development, as Lewis (1976) emphasises in his export-based theory. By underscoring export diversification, nations can build a more dynamic and resilient economy that withstands external shocks while still promoting long-term success. This theory still holds today since many emerging nations use export diversification techniques to boost their economies' stability and growth. To sustain this diversification, Kuznets (1971) and Chenery (1979) stress the allocation of resources to highly productive sectors, such as manufacturing and other sectors.

The Dutch Disease hypothesis (Corden & Neary, 1982) emphasises the negative impact on the exchange rate and non-oil sectors arising from heavy dependence on oil exports. Hausmann and Hidalgo (2014), in their economic complexity framework, emphasised the need for high technology and up-to-date knowledge to enhance a country's capability to produce diversified export goods.

Various studies have also supported the hypothesis that both types of export diversification promote economic growth. In this context, Misztal (2011) found a positive association between export diversification and economic growth in the European Union using the Vector Autoregressive Model (VAR), with per capita income identified as a mediating factor in this relationship. Moreover, Hamed et al. (2014) examined export diversification in 23 emerging nations. They found a positive impact of export diversification and physical capital stock on economic growth, emphasising their role in stabilising economies against international price fluctuations in primary export products.

Hodey et al. (2015) and Abdullahi (2017) also found a positive relationship between export diversification and economic performance in Sub-Saharan Africa, suggesting that greater diversification is associated with higher economic growth. Lotfi and Karim (2017) used VAR and VECM models to examine the association between economic stability and diversification in Morocco's export items, specifically per capita income and international competitiveness. Mania and Rieber (2019) employed a growth model to investigate the effects of export diversification policies on economic growth in a few Asian, African, and Latin American countries. Sain et al. (2022) theoretically validated the predominantly beneficial impact of export diversification on economic development, based on a survey of multiple papers. Fambo and Ge (2024) underscore the need for export diversification to promote sustained growth, especially in emerging nations. Their findings validated the idea that diversified African economies are better at leveraging outflows from Chinese foreign direct investment (FDI) for sustainable development.

Regarding Saudi Arabia, Haque (2020) investigated the prospective impact of export diversification and found that the non-mineral export industry has expanded by only 1% since 1985, contributing minimally to total exports. However, the non-mineral sector is growing faster than the mineral industry, indicating that further export diversification initiatives could yield long-term benefits. Moreover, Alshomaly and Shawaqfeh (2020) empirically demonstrated that export diversification in Saudi Arabia exerts a minor beneficial influence on economic growth; nonetheless, its impact is constrained by the enduring dominance of oil and inadequate structural transformation. Although short-term growth gains from diversification seem weak, long-term advantages depend on industrial policy, FDI, and human capital development, underscoring the need for ongoing change (Spetan & Sagfalhait, 2013).

Overall, these studies emphasise the importance of balanced diversification strategies to maximise long-term economic benefits for exporting countries, including Saudi Arabia. Besides this positive diversification-growth relationship, the literature also acknowledges challenges such as export instability (Sarin et al., 2022) and the need for sustainable growth models (Mania & Rieber, 2019).

Several studies have also examined factors influencing export diversification. Parteka and Tamberi (2008) explored country-specific factors and found that per capita income, capital development, trade restrictions and bureaucratic processes significantly influence export diversification. Agosin et al. (2012) found that human capital and trade liberalisation positively impact diversification in 79 selected countries, while volatile exchange rates, remoteness, and trade shocks hinder it. Fonchamnyo and Akame (2017) studied export diversification in Sub-Saharan Africa. They identified openness to trade, FDI, value addition in agriculture and manufacturing, and GDP per capita as key factors affecting export diversification.

According to Oliveira et al. (2020), export diversification in Brazil is significantly influenced by historical economic performance, patents per capita, education, credits, and state investments. Furthermore, Espoir (2020) observed that FDI, physical capital, human capital, and trade liberalisation were the main factors driving export diversification in Southern Africa. Similarly, Khan et al. (2021) explored the positive relationship between FDI and export diversification and the negative relationship with export concentration.

Some studies focus on export diversification in specific sectors of the economy. In this regard, Ali (2017) found that human capital and FDI were significant factors behind the increase in diversification in export products. In the case of Saudi Arabia, Guendouz and Ouassaf (2020) found a positive link between export diversification and FDI and gross fixed capital formation. However, the non-oil export sector has a significant impact on diversification, which could explain Saudi Arabia's low diversification.

Methodology

Theoretical framework

The theoretical framework of our study is grounded in the export-led growth theory, which provides a rationale for pursuing export diversification. The export-led growth theory posits that export expansions are important for economic growth by increasing productivity and competition and generating foreign exchange (Krugman, 1979; Grossman & Helpman, 1991; Balassa, 1978). Based on this theory, Nicet-Chenaf and Rougier (2008) and Abdullahi (2017) investigated the impact of export diversification on economic growth in MENA countries. They also used the control variables, namely foreign direct investment and gross capital formation, which are potential determinants of economic growth, as suggested by the endogenous growth theories of Romer (1990) and Lucas (1988). Moreover, Alkhathlan et al. (2020) found that trade openness has adverse

effects on economic growth in oil-dependent countries. Based on the above-mentioned theories, we have explored the effect of NOED on economic growth in the case of Saudi Arabia by using the following model:

$$LGDPC_t = \alpha_0 + \alpha_1 HHI_t + \alpha_2 GCF_t + \alpha_3 FDI_t + \alpha_4 TR_T + \mu_t \quad (1)$$

Where

LGDPC= GDP per capita in logarithms

HHI= HHI

GCF= GCF as a ratio of GDP

FDI= FDI as a ratio of GDP

TR= Sum of exports and imports taken as a ratio of GDP

μ = Error term

The new structural economists stress on the long run role of trade openness for the export diversification, also confirmed by Agosin et al. (2012) in case of underdeveloped countries. Moreover, the population growth may hinder the process of NOED in Saudi Arabia due to its demand side effects on the economy, as indicated by Malthus (1954) and Bloom et al. 2003. However, labor force affects aggregate demand which may lead to more export diversification and economic growth if it is combined with other factors of production (Lucus, 1988; Ali, 2017). Furthermore, the proponents of institutional theory stress on the role of strong institutions for high diversification (Cabral & Veiga (2010); Acemoglu & Robinson (2012). In light of above mentioned studies, we have used the following model for exploring the drivers of export diversification:

$$HHI_t = \beta_0 + \beta_1 TR_t + \beta_2 POP_t + \beta_3 LF_t + \beta_4 ROL_T + \mu_t \quad (2)$$

Where:

POP= Total population in millions

LF= Labor Force in millions

ROL= Rule of Law

μ = Error term

Data sources

The time series data for all the variables is from 1993 to 2024. This is taken from World Development Indicators (WDI) except for rule of law and NOED which is extracted from SAMA (2024). The data for rule of law is taken from Worldwide Governance Indicators which defines it as Percentile rank of perceptions of the people about trust and compliance with the rules of society. It is used as a proxy of institutional quality. The data for NOED is taken from SAMA (2024) which is used in the construction of the HHI index, measured by the following:

$$HHI = \sum_{i=1}^{N} \left(\frac{x_i}{\sum_{i=1}^{N} x}\right)^2 \quad (3)$$

Where

x_i = amount of exports of commodity i

x = total amount of exports

N = total number of commodities

The index HHI ranges from 0 to 1 due to its normalization. No diversification of exports is indicated by the value of 1, and full diversification is indicated by the value of 0. In this study, the export diversification in non-oil products is measured for Saudi Arabia. Therefore, the lower HHI in the non-oil export sector shows the higher diversification of non-oil exports in this sector.

Estimation Techniques

The choice of an analytical approach for time series is contingent upon the outcomes of the unit root test, which determines whether the variable exhibits stationarity (Shrestha and Bhatta, 2018). This study utilised the Augmented Dickey Fuller Test (ADF), established by Dickey and Fuller in 1979, to assess the stationarity of the time series. It operates under the assumption of no shifts in mean within the data (Ain et al. 2024). The data used in this study exhibits a time series nature, which may have experienced structural breaks during the years analyzed. Consequently, we have implemented the Zivot-Andrews (ZT) unit root test by Zivot and Andrews (1992), also used by Asma et al. (2025).

Evaluation of the variables' stationarity revealed that all attained stationarity at the first difference. The Johansen cointegration method was chosen for analysis due to its effectiveness in identifying long-term relationships among time series variables that are integrated of the same order. This technique employs maximum likelihood estimation (MLE) to estimate cointegrated variables.

Johansen's method fundamentally relies on the correlation between a matrix's rank and its eigenvalues, enabling the identification of cointegrating vectors via sequential testing. It extends the Dickey-Fuller test into a multivariate context. This method uses lags of variables which has identified by utilizing the Schwarz Criterion (SC) in this study.

Johansen proposes the application of two separate likelihood ratio tests to assess the significance of these identified correlations. The trace and maximum Eigenvalue tests illustrate this as follows:

$$J_{trace} = -T\sum_{i=r+1}^{n} \ln(1-\lambda_i) \quad (4)$$

$$J_{max} = -T \ln(1-\lambda_{r+1}) \quad (5)$$

Where

T= Size of the sample

$\lambda i, \lambda_{r+1}$ = ith largest and next largest eigen values

The trace test assesses the null hypothesis of a maximum of r cointegrating vectors in contrast to the alternative hypothesis of exceeding r cointegrating vectors. The maximum eigenvalue test assesses the null hypothesis of r cointegrating vectors in contrast to the alternative hypothesis of r + 1 cointegrating vectors. When the values of the Trace and Max-Eigen statistics exceed the 5% critical threshold, the null hypothesis is rejected.

After confirming the cointegration, the next step involves applying the error correction model (ECM) to estimate the short-run coefficients. Prior to that, we estimated the long-run coefficients utilizing the theorem established by Engle and Granger (1987), which created a link between cointegration and the error correction model. Subsequently, ECM was employed to estimate the short-run coefficients and the error correction term (ECT), which signifies the pace at which the variables converge to the long-run equilibrium.

Results and Interpretation

Table 5 presents the descriptive statistics of the variables utilized in this study. The series of HHI is symmetric as the data is normalized. However, the actual values of the index are not exactly 0 and 1, as these values of 0 and 1 are theoretical bounds for normalization. Moreover, the values of other variables lie between 1 and 100, except for FDI, which has some negative values. Talking individually, the largest mean is of trade openness, and lowest one is of FDI. Furthermore, the trade openness exhibits the maximum standard deviation whereas, the minimum deviation is for the LGDPC.

Table 1: Descriptive Statistics

Variable	Mean	Max	Min	St. Deviation
LGDPC	4.152	4.483	3.856	0.259
HHI	0.369	1.000	0.000	0.198
GCF	24.774	34.223	18.571	4.520
FDI	1.712	8.496	-1.308	2.496
LF	10.256	15.995	5.636	3.513
POP	27.155	36.409	17.846	6.200
TR	70.461	96.103	49.713	12.467
ROL	55.594	62.019	47.264	3.272

The correlation matrices for the models of economic growth and HHI mentioned in equations 2 and 3 are presented in Table 6. It shows the strong negative correlation of economic growth with HHI. Whereas, all the other explanatory variables like GCF, FDI and trade openness are related to high economic growth. Concerning the determinants of NOED, trade openness is linked to higher HHI. However, all the other factors are favorable for the export diversification in non-oil sectors.

Table 2: Spearman Correlation for models of economic growth and HHI

Dependent variable : economic growth					
	LGDPC	**HHI**	**GCF**	**FDI**	**TR**
LGDPC	1.000				
HHI	-0.452	1.000			
GCF	0.760	-0.531	1.000		
FDI	0.277	0.099	0.429	1.000	
TR	0.105	0.347	0.006	0.614	1.000
Dependent variable: HHI					
	HHI	**TR**	**POP**	**LF**	**ROL**
HHI	1.000				
TR	0.347	1.000			
POP	-0.549	-0.108	1.000		
LF	-0.577	-0.172	0.995	1.000	
ROL	-0.698	-0.021	0.720	0.718	1.000

The stationarity of the variables under investigation is assessed using the ADF and ZA tests, which examine the existence of unit roots at both levels and first differences. The findings of these tests designate a proper method for finding the integration between the variables. These results are presented in Table 3.

Table 3: ADF and ZT tests results

	ADF unit root test		ZT unit root test		Decision
Variable	Level	1st Difference	Level	1st Difference	*I*(1)
LGDPC	-0.172	-4.725*	-3.555 (2005)	-5.309** (2014)	*I*(1)
HHI	-2.761	-3.3226**	-4.202 (1999)	-6.367* (2002)	*I*(1)
GCF	-1.417	-5.109*	-4.421 (2007)	-5.713** (2016)	*I*(1)
FDI	-2.410	-3.798*	-4.498 (2005)	-6.322* (2010)	*I*(1)
LF	-1.933	-4.24*	-4.552 (2010)	-7.138* (2016)	*I*(1)
POP	-0.520	-3.499*	-3.17 (2008)	-5.485** (2005)	*I*(1)
TR	-1.399	-4.154*	-2.987 (2002)	-6.304* (2008)	*I*(1)
ROL	-1.266	-3.666**	-3.157 (2007)	-11.454* (2001)	*I*(1)

Note: 1%, 5%, and 10% are the levels of significance for *, **, and ***. The values in bracket show a year of break for the series.

Table 6 displays that all the variables are free from unit root at first difference which means they exhibit stationarity. In this scenario, the Johansen cointegration approach is the appropriate co-integrating technique to determine the long run relationship among variables. The results of this test are displayed in Table 3, confirming the existence of cointegration between the variables in both models.

Table 4: Results of Johansen test for models of GDPC and HHI

Dependent Variable	Hypothesis	Trace statistics	Critical value at 5% significance level	Max-Eigen statistics	Critical value at 5% of significance level
LGDPC	$r = 0$	71.840*	69.819	39.404*	27.584
	$r \leq 1$	19.346	47.856	10.63	21.132
HHI	$r = 0$	76.010*	69.819	37.552*	33.877
	$r \leq 1$	42.366	47.856	18.142	27.584

Note: * shows significance level at 5%.

The LR response of dependent variables to the change in the explanatory variables are shown in Table 8. It demonstrates that NOED, significantly affects the economic pace of Saudi Arabia, also confirmed by Siddiqui (2018) in the case of overall export diversification. These results are in accordance with Portfolio theory (Markowitz, 1952) and Siddiqui (2018), who stresses on the significance of diversification for sustainable growth. Moreover, the FDI also significantly and positively affects the economic growth of the country, as also confirmed by Aljehani and Shaheen, 2021. In addition, GCF also positively affects the GDP per capita in Saudi Arabia. While, the trade openness is detrimental for economic growth, also posited by Dutch disease theory (Corden & Neary, 1982). This theory explains that the less competitiveness of non-oil exports is attributed to appreciation of exchange rate because of oil revenues.

Table 5: LR estimates for models of GDPC and HHI

Dependent variable: LGDPC			Dependent variable: HHI		
Explanatory variable	**Coefficient**	**Stand. error**	**Variable**	**Coefficient**	**Stand. error**
HHIt	-0.042***	0.229	**ROL**	-0.024**	(0.010)
FDI_t	0.036***	0.019	**LF**	-0.438*	(0.098)
GCF_t	0.053*	0.011	**POP**	0.238*	(0.054)
TR	-0.008**	0.004	**TR**	-0.003	(0.002)

Note: 1%, 5%, and 10% are the levels of significance for *, **, and ***.

Table 5 also shows results for the LR determinants of NOTD in case of Saudi Arabia. It depicts that the governance (rule of law), labor force and population significantly affect dependent variable in the second LR model. Here, the signs of rule of law and labor force are negative and significant, while the long run coefficient of the total population is positively significant, showing the reverse relationship between NOTD and its determinants. It implies that the rule of law positively and significantly affects HHI in the country, as found by Cabral and Veiga (2010)

Moreover, the positive association between the labor force and diversification in non-oil exports in Saudi Arabia shows, also indicated by Cabral and Veiga, 2010 and Lei and Luo (2022).. However, they highlight the importance of literacy of labor force in export diversification. Similarly, negative effect of population on NOTD of Saudi Arabia shows that higher demand from the increasing population exerts pressure on the Saudi government to increased demand for domestic consumption, potentially reducing investments in non-oil exports sectors (Bloom et al., 2003).This relationship is also observed by Malthus (1954) in resource-dependent countries.

In Table 9, the SR estimated impact of HHI with other explanatory variables on GDPC are displayed. We have found no significant effect of HHI in the present year, which infers that export diversification in non-oil products has no SR effect on economic growth. Nonetheless, the one-lagged GDP per capita, trade openness, and GCF appear to positively influence the GDP per capita in the short term, as supported by the findings of Bokhari (2017) and Islam et al. (2022) regarding the situation in Saudi Arabia. The absolute magnitude of the ECT at one lag illustrates the rate at which the variables return to equilibrium. The negative connotation of this term indicates the convergence within the SR model. The computed value of this term in this model is 0.074, which is negative and statistically significant. This indicates that in the presence of any short-term discrepancies, there will be an adjustment speed of approximately 7.4 percent towards long-run equilibrium.

The findings of SR estimates for the model of HHI are also presented in Table 4. These estimates demonstrate that the effect of a lagged labor force and trade openness is significant and positive in short run. It means that labor force and trade openness is deleterious for NOED in the SR. The negative relationship of labor force with NOED may be attributed to reduced productivity in non-oil segments when there is a combination of increased low-skilled labor and inadequate capital or expertise. Moreover, increased openness may create immediate competition from imports which disrupts emerging non-oil sectors before they attain competitiveness (Rodrik, 2016). While the size of the economy is harmful for NOED in the SR like in the LR. The value of the lagged ECT is both significant and negative, suggesting that approximately 103.9% of the instability is corrected in the following period, indicating a relatively rapid adjustment process.

Table 6: SR estimates for the models of economic growth and HHI

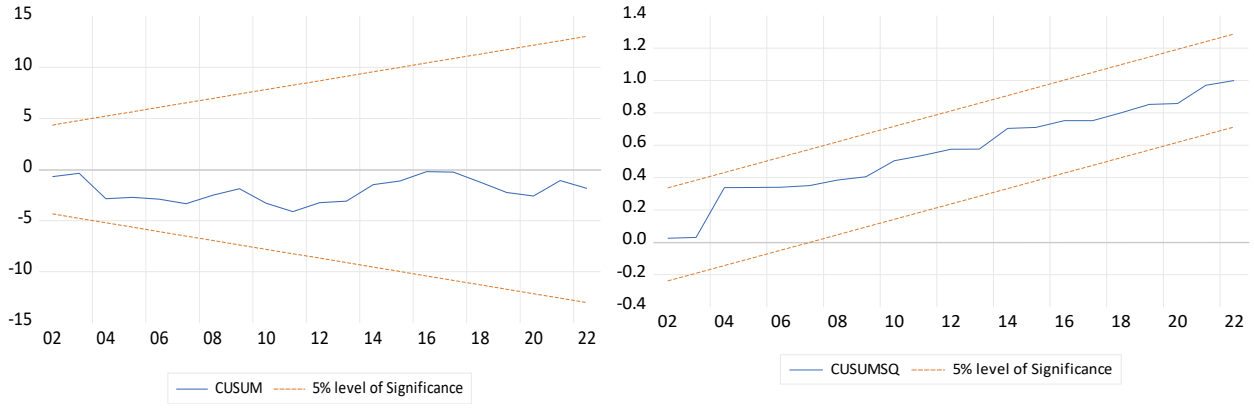
Dependent variable: LGDPC			Dependent variable: HHI		
Explanatory variables	**calculated coefficient**	**Standard Error**	**Explanatory variables**	**calculated coefficient**	**Standard Error**
D(LGDPC(-1))	0.345**	0.161	**D(HHI(-1))**	0.275	0.010
D(HHI(-1))	0.015	0.6564	**D(ROL(-1))**	0.009	-2.315
D(FDI(-1))	-0.004	0.004	**D(LF(-1))**	0.254***	0.138
D(GCF(-1))	0.006**	0.003	**D(POP(-1))**	-0.303**	0.141
D(TR(-1))	0.008*	0.001	**D(TR(-1))**	0.016*	0.004
Constant	0.016**	0.006	**Constant**	0.094	0.080
ECM(-1)	-0.074**	0.033	**ECM(-1)**	-1.039*	0.230
χ^2_{SC}	0.950	[0.404]	χ^2_{SC}	0.344	[0.713]
χ^2_{HS}	1.659	[0.172]	χ^2_{HS}	0.513	[0.858]
χ^2_{NT}	0.239	[0.887]	χ^2_{NT}	1.562	[0.458]

Note: 1%, 5%, and 10% are the levels of significance for *, **, and ***.Values in [] are p-values.

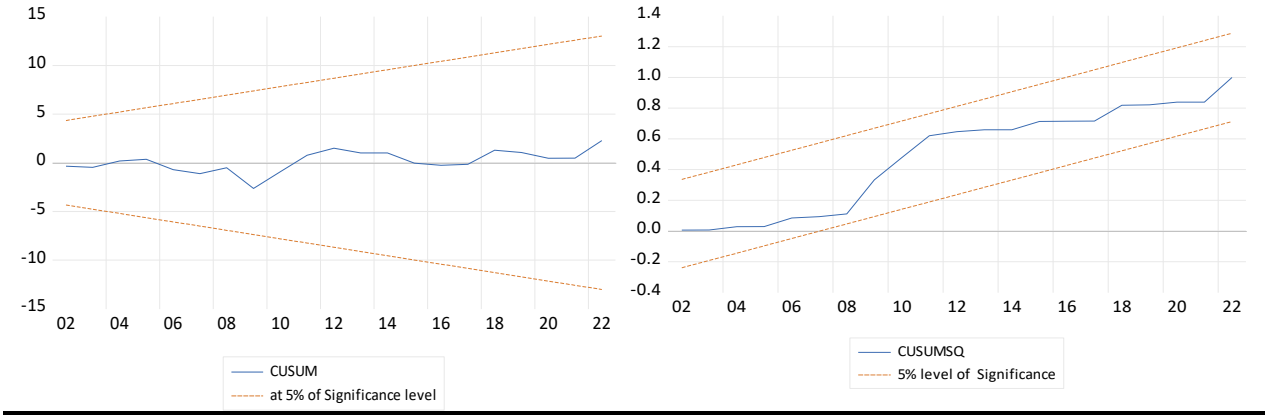
The diagnostic tests conducted indicate that there is no presence of serial correlation or heteroscedasticity in both models. Furthermore, the residuals of these models exhibit a normal distribution. The Cumulative Sum (CUSUM) and CUSUM squared tests (CUSUMSQ) are also applied to check the stability of the models as shown in Figure 2. These figures show that both models remain stable because the plots of the residuals in these models are in between upper and lower bound values at 5% level of significance.

Figure 2: Plots of CUSUM and CUSUMSQ tests.

Model for Economic Growth



Model for HHI



Conclusion

This study examines the influence of NOED on economic growth using time-series cointegration methods, focusing on the period from 1993 to 2024. Additionally, the factors influencing NOED are examined in the context of Saudi Arabia. An index for export diversification in non-oil exports is developed using the HHI. The application of ADF and ZT tests to all variables indicates that they are stationary at first differences. As a result, the appropriate Johansen cointegration method and the ECM are utilized to explore LR and SR relationships. The findings indicate that export diversification is likely to enhance Saudi Arabia's long-term economic growth, supported by the positive correlation observed between export diversification and economic growth in our estimated long-run model. Nonetheless, it does not affect short-term economic growth because the oil sector is a larger contributor to Saudi Arabia's GDP growth than non-oil industries (IMF, 2022).

These findings highlight that enhancing NOED is important for long-term, sustained economic prosperity and resilience in Saudi Arabia. It needs industrial targeting of high-potential products. Moreover, the country needs to strengthen its financial and institutional infrastructure, including national self-branding, a simplified regulatory framework, an enhanced business climate, and improved exchange rate management, to promote the non-oil productive sectors.

We have examined the key factors affecting diversification in non-oil exports in LR and SR. We have also investigated the key factors influencing export diversification in the long and short terms. Our findings indicate that the quality of institutions and the labor force are fundamental factors in enhancing long-term export diversification. Moreover, the population's negative impact on the long-term diversification of Saudi Arabia's exports is significant. However, in the SR, the labor force and trade openness appear to hinder the diversification of non-oil exports. At the same time, a growing population is expected to enhance the diversification of non-oil export products.

The results highlight the importance of diversifying exports as a key driver of economic growth in Saudi Arabia. Moreover, the quality of institutions, trade openness, the labor force, and the total population are crucial factors that affect export diversification within the country. These findings indicate that the Saudi administration should implement proactive strategies to enhance and support non-oil sectors. For this, it should emphasize enhancing institutions and establishing a flexible labor market to expand the labor force, potentially benefiting export diversification strategies in the long term. In the short term, the government can expedite the NOED process by expanding the economy.

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