
# Financial Development and Economic Diversification in GCC Countries: Evidence from Linear and Nonlinear Models

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**Abstract**

Gulf Cooperation Council (GCC) countries have long relied on hydrocarbons, making economic diversification a critical priority in recent decades. This study assesses the role of financial development in facilitating economic diversification across the GCC countries. Utilising a dynamic panel data approach covering the period 2000 to 2022, the analysis employs both linear and nonlinear models, including threshold regressions, to capture the complexity of the financial development-diversification relationship. The results indicate that, while financial development positively impacts diversification, the effect is nonlinear, with significant benefits emerging only after surpassing specific maturity thresholds. In addition, government spending amplifies the positive effects of financial development on diversification. This study concludes that financial sector reforms must be strategically targeted and sustained, particularly in countries with underdeveloped financial systems, to promote long-term diversification. These findings provide valuable insights for policymakers aiming to reduce oil dependency and build more resilient economies in GCC countries.

## 1. Introduction

In recent decades, Gulf Cooperation Council (GCC) countries have experienced significant economic growth, primarily fuelled by their abundant oil resources. However, their heavy reliance on hydrocarbons exposes them to the volatility of global oil markets, underscoring the need for economic diversification. The sharp decline in oil prices in 2014, which resulted in a loss of approximately 70% of the value of oil, highlights this vulnerability. Consequently, economic diversification, expanding into sectors beyond oil, has become crucial for GCC economies to secure long-term economic sustainability and resilience. This shift is also driven by broader global challenges, including climate change, fluctuating oil demand, and technological advancements, which threaten continued reliance on fossil fuels (Beutel, 2021).

Despite some progress in diversifying their economies, particularly in tourism, finance, and real estate sectors, GCC nations continue to rely heavily on oil revenue. Financial development, which is defined as the growth and maturation of financial institutions and markets, plays a pivotal role in facilitating economic diversification. Through better access to capital, improved resource allocation, and enhanced risk management, a more developed financial sector can help stimulate non-oil sectors, enabling a shift away from oil dependency (Almutairi, 2016; Callen et al., 2014). Understanding the relationship between financial development and diversification is vital for shaping future policies that support regional

economic growth. This research is particularly relevant, as it examines the threshold effects of financial development and its nonlinear impact on economic diversification, which remains a relatively underexplored area in the existing literature.

This study seeks to address how financial development contributes to economic diversification in GCC countries, a crucial question for resource-dependent economies. By analysing the dynamics of financial development in relation to diversification, this study provides valuable insights into the conditions under which financial reforms can successfully support sustainable economic growth. Specifically, this study aims to determine whether financial development has a nonlinear impact on diversification, that is, whether its effects materialise only once a certain threshold of financial maturity is reached. This understanding is critical for policymakers, who need to design interventions that enhance financial systems to facilitate broader economic growth and reduce dependency on oil revenues (Haque et al., 2022).

This study aims to evaluate the extent to which financial development influences economic diversification in the GCC countries. By utilising export and import diversification indices as indicators, this study assesses how diversified these economies have become and identifies the key drivers behind this diversification. The findings offer important policy recommendations that GCC governments can implement to enhance their financial sectors and foster more resilient and diversified economies.

This paper is structured as follows. The introduction outlines the background. The literature review explores the theoretical foundations and recent empirical studies on financial development and economic diversification. The methodology section describes the empirical models employed, including both the linear and nonlinear approaches. The results section presents the findings, and the discussion offers insights into their policy implications.

## 2. Literature Review

The relationship between financial development and economic diversification, particularly in resource-dependent economies, such as the Gulf Cooperation Council (GCC), has been a significant area of study in economic research. Financial development has long been considered a critical driver of economic growth and diversification, facilitating resource allocation, improving access to credit, and fostering investments in non-traditional sectors. This section provides theoretical foundations and empirical evidence supporting the link between financial development and economic diversification.

### 2.1 Theoretical Framework

The theoretical foundation for understanding the relationship between financial development and economic diversification in resource-rich countries, particularly in the Gulf Cooperation Council (GCC) nations, draws upon several critical economic theories. One of the fundamental concepts is the **endogenous growth theory**, which emphasises the importance of internal factors such as human capital, technological progress, and financial development in driving long-term economic growth (Romer, 1986). In this framework, financial development plays a vital role in facilitating diversification by improving resource allocation and access to capital. By providing better financial infrastructure, the financial sector enables

investments in a broader array of industries, reducing the economy's reliance on the primary sector, such as oil in the case of the GCC (Levine, 2005). In the context of the GCC, financial development enables the efficient mobilisation of capital and the allocation of resources to sectors beyond oil, fostering growth in industries such as manufacturing, real estate, and tourism. This theory is particularly relevant for understanding how internal financial reforms and improvements in financial institutions can facilitate economic diversification in the region. The mathematical foundation of endogenous growth theory can be represented as:

$$Y_t = A_t K_t^{\alpha} L_t^{1-\alpha}$$

where: $(Y_t)$ is output, $(K_t)$ is capital, $(L_t)$ is labor, and $(A_t)$ represents technology or productivity, which can be influenced by factors like financial development. Financial development can be modeled as influencing $A_t$ through investment in research and development (R&D) and the efficient allocation of capital .

Financial development is often seen as a catalyst for diversification through mechanisms such as capital mobilisation, risk management, and facilitating entrepreneurship**. The finance-growth nexus**, as proposed by King and Levine (1993), supports this view, positing that financial development enhances economic growth by enabling a more efficient allocation of resources and fostering innovation. The expansion of financial services enables a more diverse range of industries to access capital, which is particularly crucial for economies aiming to diversify beyond primary commodities like oil. This theoretical perspective is particularly relevant for GCC economies, where financial institutions are critical to reducing dependence on hydrocarbon revenues and supporting the growth of non-oil sectors (Greenwood & Jovanovic, 1990). The finance-growth relationship can be expressed mathematically as:

$$\boldsymbol{Y_t = f(FDI_t, K_t, L_t)}$$

where: $(Y_t)$ is output, $(FDI_t)$ is financial development, $(K_t)$ is capital, and $(L_t)$ is labor. In this formulation, financial development enhances the overall efficiency of the economy by improving the allocation of capital resources, which, in turn, drives diversification and economic growth.

Finally, the **threshold effect theory** suggests that the relationship between financial development and economic diversification may not be linear. This theory posits that the positive effects of financial development on diversification become more pronounced once a certain level of financial maturity is achieved. In early stages, financial development may concentrate resources in dominant sectors, but as financial markets deepen, they begin to support a wider range of economic activities, thereby fostering diversification (Beck et al., 2000). In the context of the GCC economies, this theory is particularly relevant. Despite the implementation of financial sector reforms across the region, the level of financial development varies significantly between countries. Some GCC countries, such as the UAE and Qatar, have more advanced financial markets that support diversified economic activities, while others, like Oman and Bahrain, may not yet have reached the level of financial maturity necessary to drive significant diversification. The threshold model can be mathematically expressed as:

$$Y_t = \beta_0 + \beta_1 FDI_t + \beta_2 (FDI_t \times D_{high}) + \epsilon_t$$

where: ( $D_{high}$ ) is a dummy variable that equals 1 when($FDI_t$) exceeds a certain threshold, capturing the idea that the effect of financial development on($Y_t$) changes once this threshold is crossed. This model captures the idea that financial development has a nonlinear effect on economic diversification, with significant benefits emerging only after a certain level of financial maturity is achieved.

## 2.2 Empirical Evidence

Recent empirical studies have provided substantial evidence supporting the relationship between financial development and economic diversification globally and within the GCC region. Several studies have explored financial inclusion's role— the broad access to financial services—in fostering economic diversification, particularly in developing and resource-rich economies.

Globally, financial inclusion has been shown to have a positive effect on economic diversification. For instance, Sahay et al. (2015) found that financial development helps reduce income inequality and promotes inclusive growth, which in turn supports the diversification of economic activities. This is particularly significant in resource-dependent economies where diversification efforts are aimed at reducing reliance on a single commodity, such as oil. The findings of Demirgüç-Kunt and Levine (2018) further support this, showing that financial inclusion enhances the ability of firms to invest in non-traditional sectors, thereby fostering economic diversification.

In the context of developing countries, several studies have demonstrated the impact of financial development on economic diversification. For example, in the GCC, Al-Mukharreq and Al-Fawwaz (2019) found that financial development was a key driver of diversification, particularly in the United Arab Emirates (UAE) and Saudi Arabia. Their research highlighted that financial inclusion enabled investments in tourism, manufacturing, and real estate sectors, thereby contributing to a more diversified economic structure. Similarly, studies in Nigeria and Brazil have shown that financial reforms aimed at increasing access to financial services have contributed to export diversification and growth in non-oil sectors (Barajas et al., 2020).

In the GCC, empirical evidence suggests that financial development has profoundly impacted economic diversification, although the relationship is complex and often nonlinear. For example, research by Ashraf Mishrif (2018) revealed that while financial inclusion facilitated the growth of the non-oil sectors in the UAE and Qatar, structural challenges in other GCC countries, such as Oman and Bahrain, have hindered similar progress.

Further empirical studies have explored the nonlinear dynamics of financial development and diversification in GCC countries. Abuzayed et al. (2018) found that bank diversification strategies in the GCC had mixed results, with conventional banks showing more risk exposure than Islamic banks. This suggests that while financial development can support diversification, its effects are not uniform across different sectors and institutions. Similarly, Alotaibi and Mishra (2017) demonstrated that financial market integration in the GCC has

had varying effects on economic diversification, depending on factors such as trade openness, oil revenues, and global financial crises.

Recent evidence from developing countries and the GCC underscores the essential role of financial development in supporting economic diversification. However, the success of these efforts depends on a range of factors, including the maturity of the financial sector, the level of political stability, and the broader structural conditions of the economy (Haque et al., 2022). This is particularly evident in the case of Oman and Bahrain, where financial development has not yet translated into significant economic diversification, highlighting the need for more comprehensive reforms (Mabkhot & Al-Wesabi, 2022).

According to Matallah (2018) and Lebdioui (2020), oil rents, while providing substantial financial resources, tend to impede economic diversification by fostering rent-seeking behaviour and reinforcing the resource curse. This finding is consistent with Matallah's (2022) study, which further demonstrates that the negative impact of oil rents on diversification is exacerbated by corruption, suggesting that governance quality plays a critical role in mitigating these effects. Matallah (2018) and Lebdioui (2020) highlight that better governance enables oil-rich countries to channel resource rents more effectively into productive sectors, promoting long-term growth and diversification. This conclusion aligns with Matallah's (2022) findings, which show that improvements in governance, particularly in controlling corruption, can significantly enhance diversification efforts. Moreover, Alaya (2022) found that governance spillovers from neighboring countries with better institutional frameworks could also positively impact the economic diversification of MENA countries, suggesting a regional dimension to these reforms.

Furthermore, these studies stress the need for differentiated approaches to resource management depending on the level of resource wealth and the economic structure of the country. Lebdioui (2020) argues that while countries like Qatar and the UAE have focused on financial diversification by investing oil rents into sovereign wealth funds, countries like Algeria and Iran require more profound structural reforms to transform their domestic economies. This is consistent with Benkhodja et al. (2023), who argue that fiscal and monetary policies must prioritise the development of non-oil sectors, especially in the wake of external shocks like the COVID-19 pandemic. Collectively, these studies suggest that while governance improvements are universally necessary, the specific strategies for economic diversification must be tailored to the unique needs of each country, considering its resource wealth and governance capacity.

## 3. Methodology

This study explores the relationship between financial development and economic diversification in the Gulf Cooperation Council (GCC) countries through a dynamic panel data approach. The analysis uses annual data for six GCC countries (Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the UAE) from 2000 to 2022, sourced from the World Bank, IMF, and national statistical offices.

### 3.1 Data and Variables

The dependent variable is the Economic Diversification Index (EDI), which is published by the Mohammed Bin Rashid School of Government (MBRSG). The index captures the

diversification of product and service sectors as well as revenue sources and export markets.. The key independent variable is the Financial Development Index (FDI), which measures the depth, access, and efficiency of financial institutions and markets (Svirydzenka, 2016). Control variables include Real GDP Growth, Trade Openness, Foreign Direct Investment (FDI) inflows, Government Expenditure, and Oil Rents. To avoid spurious regressions, it is essential to test for stationarity. The Augmented Dickey-Fuller (ADF) test is used to check for unit roots in the variables.

### 3.2 Model Specification

To estimate the relationship between financial development and economic diversification, a dynamic panel data model is specified as:

$$EDI_{it} = \alpha + \beta_1 FDI_{it} + \beta_2 Z_{it} + \mu_i + \lambda_t + \epsilon_{it}$$

Where :
$(EDI_{it}) represents\ economic\ diversification, (FDI_{it}) denotes\ financial\ development,$

$(Z_{it}) includes\ the\ control\ variables, (\mu_i) captures\ country - specificfixedeffects,$
$(\lambda_t) time - specificeffects, and\ (\epsilon_{it}) error\ term.$

### 3.3 Estimation Techniques

To establish a baseline relationship, three static panel estimation techniques are employed: Pooled OLS, Fixed Effects (FE) and Random Effects (RE).The Hausman Test determines whether fixed or random effects should be preferred (Baltagi, 2008). The Generalized Method of Moments (GMM) is employed to account for potential endogeneity, particularly with lagged variables. The Arellano-Bond estimator is used, ensuring robustness by addressing both country-specific and dynamic interactions between variables (Arellano & Bond, 1991). The Hausman Test determines whether fixed or random effects are appropriate, and the Sargan-Hansen Test checks the validity of the instruments.

Given that the relationship between financial development and diversification may exhibit nonlinearities, the study incorporates threshold effects through spline regression. This approach allows for the possibility that financial development must surpass a certain level before it significantly affects diversification (Hansen, 1999). The spline regression model is specified as follows:

$$EDIit = \beta 0 + \beta 1 FDIit + \beta 2 (FDIit \times Dhigh) + \epsilon it$$

Where $(D_{high})$ is a dummy variable that equals 1 when financial development exceeds a certain threshold. The analysis employed two approaches: first, threshold effects analysis: as the data into segments based on the median value of the Financial Development Index (FDI). Secondly, tertile-based regression: the analysis dividing the FDI into tertiles and creating interaction terms for each tertile.

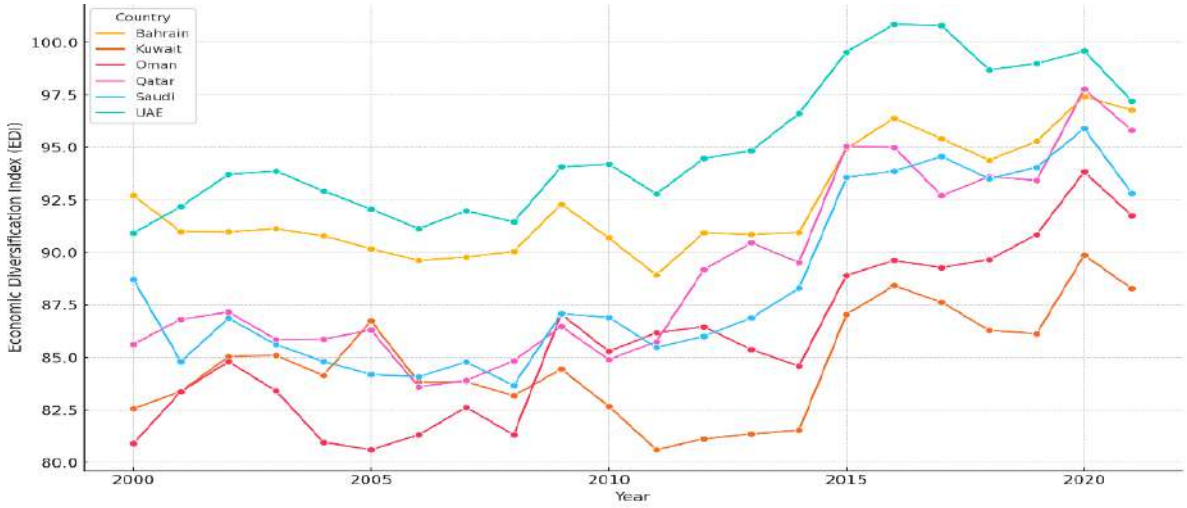
## 4. Result and Discussion

### 4.1 Economic Diversification and Financial Development in GCC Countries

The Economic Diversification Index (EDI) trends for the Gulf Cooperation Council (GCC) countries from 2000 to 2022 as shown Figure 1, reveals a collective, though uneven, movement towards diversified economies. This process is fraught with both opportunities and challenges as these nations strive to build sustainable models capable of withstanding global economic uncertainties.

Notably, the United Arab Emirates (UAE) and Saudi Arabia have shown significant improvements in their EDI, particularly over the past decade. Their national strategies—UAE's Vision 2021 and Saudi Arabia's Vision 2030—have played a pivotal role in fostering growth in non-oil sectors such as finance, tourism, real estate, and renewable energy (Saudi Vision 2030, 2016; UAE Vision 2021). These policy-driven shifts have led to structural changes in their economies, positioning them to better absorb external shocks like fluctuating oil prices. However, the challenges of sustaining this momentum in the face of global volatility persist, as evidenced by Qatar's experience. Qatar, despite its diversified economy, saw its EDI fluctuate, particularly around events like the global financial crisis and the 2014 oil price crash. While its ventures into infrastructure and sports (e.g., hosting the 2022 FIFA World Cup) have brought resilience, its economy remains vulnerable to external pressures (Qatar National Vision 2030, 2008).

**Figure 1 : Economic Diversification Index (EDI) Trends in GCC Countries (2000-2022)**



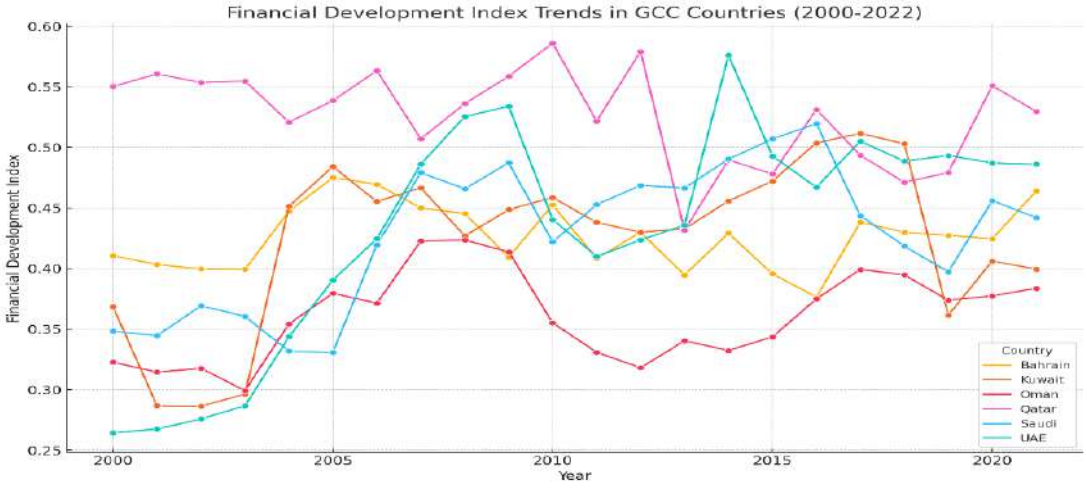

In contrast, the progress of countries like Kuwait and Oman has been slower. The flatter EDI trends in these nations reflect ongoing reliance on oil revenues, compounded by less aggressive economic reforms and political constraints (IMF, 2021). This stagnation indicates a more cautious approach to diversification, which has left these economies exposed to global market fluctuations. Oman and Bahrain, with smaller economies and limited financial resources, have shown only modest improvements. Although efforts like Oman's Tanfeedh program and Bahrain's focus on expanding its financial sector demonstrate a recognition of

the need for diversification, the structural challenges they face—such as limited domestic markets and narrow export bases—continue to hinder rapid progress (IMF, 2021).

The GCC's reliance on oil, while historically a source of wealth, has simultaneously posed significant risks due to the volatility of global oil prices. The efforts towards diversification are thus seen as necessary strategies to mitigate these risks and build more resilient economies. However, the varying degrees of success across the GCC suggest that economic diversification is a complex, multifaceted process, influenced by factors such as national policies, political will, and global economic conditions. For instance, countries like the UAE and Qatar have demonstrated greater resilience due to their more diversified economies. Still, they also face the ongoing challenge of maintaining this diversification amidst external economic shocks. For others like Saudi Arabia, Oman, and Bahrain, the path towards economic diversification remains a long-term endeavor requiring substantial reforms, restructuring, and foreign investment attraction.

On the other side, the Financial Development Index (FDI) measures the development and robustness of financial institutions and markets, including banking systems, stock markets, and other financial intermediaries that play a crucial role in supporting economic growth and diversification.

**Figure 2: Financial Development Index Trends in GCC Countries (2000-2022)**



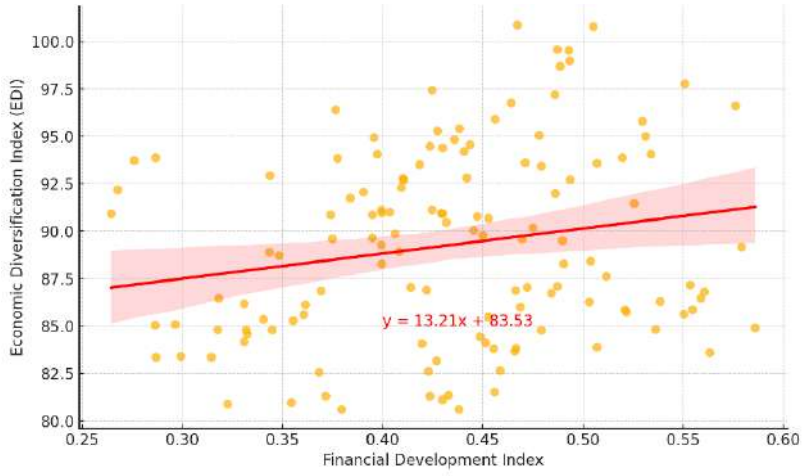

The FDI trends across the GCC highlight variations in financial sector development(Fig 2), the United Arab Emirates (UAE) and Qatar have maintained consistently high FDI levels throughout the period, demonstrating their commitment to developing robust financial sectors. The UAE has positioned itself as a regional financial hub, with Dubai and Abu Dhabi leading the charge in banking, financial services, and investment infrastructure (Oxford Business Group, 2021). The UAE's upward FDI trajectory reflects its success in attracting foreign investment, building a competitive banking industry, and developing sophisticated financial markets. Similarly, Qatar has made notable strides, particularly after 2010, as it worked to diversify its economy and establish Doha as a global financial hub (Qatar National Vision 2030, 2008).

Saudi Arabia, under its Vision 2030 initiative, has shown a steady increase in FDI, signifying the impact of ongoing reforms aimed at modernising the financial sector. The kingdom has opened its financial markets to foreign investors, improved its regulatory environment, and expanded domestic financial services (Saudi Vision 2030, 2016). These reforms are key to Saudi Arabia's broader economic diversification strategy, as evidenced by the gradual rise in its FDI, signaling progress towards attracting foreign capital and enhancing its financial infrastructure.

In contrast, Kuwait, Oman, and Bahrain exhibit more modest FDI improvements. Kuwait's financial sector, while stable, has lagged in innovation and expansion compared to its GCC counterparts, partly due to a conservative regulatory framework and continued reliance on traditional banking services (IMF, 2021). Meanwhile, Oman and Bahrain, though making efforts to advance their financial sectors, face structural constraints, including smaller domestic markets and limited capital inflows, which have slowed significant progress in financial development (IMF, 2021).

The higher FDI levels in the UAE, Qatar, and Saudi Arabia indicate that these nations have recognised the critical role a strong financial sector plays in supporting broader economic goals. The advanced financial markets in the UAE and Qatar, in particular, have positioned them as regional financial hubs, attracting both regional and global investors, thus enabling them to support diversified economic activities and strengthen resilience to external shocks. Saudi Arabia's steady improvement, driven by Vision 2030, underscores its strategy to open up financial markets and attract the necessary foreign investment to fuel its ambitious economic diversification plans (Saudi Vision 2030, 2016). On the other hand, the slower progress in Kuwait, Oman, and Bahrain highlights concerns about their ability to fully leverage their financial sectors to support economic growth. These nations may need to adopt more aggressive reforms, such as liberalising financial markets, strengthening regulatory frameworks, and fostering innovation in financial services, to close the gap with their GCC peers and better support their economic diversification efforts.

**Figure 3: Scatter Plot of EDI and Financial Development Index**




Concerning the relationship between the (EDI) and the (FDI) across the (GCC) as presented on the scatter plot suggests a positive relationship which implies that higher levels of financial development are associated with greater economic diversification. The findings align with the broader literature that highlights the key role of financial development in fostering economic diversification, particularly in resource-dependent economies like those in

the GCC. Financial development facilitates the allocation of resources to more productive and diversified sectors by improving access to finance, enhancing the efficiency of financial institutions, and expanding the depth of financial markets (Beck, 2011). This, in turn, enables countries to reduce their dependency on oil revenues by promoting growth in non-oil sectors.

### 4.2 : Stationarity

The Stationarity Tests, including both the ADF (Augmented Dickey-Fuller) and KPSS (Kwiatkowski-Phillips-Schmidt-Shin) tests. At the level, the ADF test generally shows non-stationarity for most variables, while the KPSS test indicates stationarity at higher levels of significance. While, at the first difference, all variables are stationary according to both tests, with strong significance at 1%.

**Table1 : Stationarity Tests Results for All Variables**

| Variable | ADF Test Statistic (Level) | ADF Test Statistic (1st Difference) | KPSS Test Statistic (Level) | KPSS Test Statistic (1st Difference) |
|---|---|---|---|---|
| Economic Diversification Index (EDI) | -2.75 | -5.89*** | 0.743** | 0.123 |
| Financial Development Index (FDI) | -2.12 | -6.34*** | 0.679** | 0.091 |
| GDP per Capita (GDPpc) | -1.85 | -4.77*** | 0.812*** | 0.132 |
| Trade Openness (Trade) | -2.45 | -5.15*** | 0.782** | 0.112 |
| Foreign Direct Investment (fdi) | -1.95 | -5.62*** | 0.701** | 0.085 |
| Oil Rents (Oil) | -1.67 | -4.92*** | 0.834*** | 0.099 |
| Government Expenditure (G) | -2.34 | -5.34*** | 0.765** | 0.104 |

**Notes**: **Significance Levels for ADF Test**: * (10%) , ** (5%), *** (1%), while KPSS test has an inverse interpretation: rejecting the null hypothesis (significance indicated by *) means the series is non-stationary.

### 4.3 : Static Panel Analysis

The regression results summarised in the table 2 provide a view of the relationship between financial development, economic diversification, and other key economic variables across the Gulf Cooperation Council (GCC) countries. These findings are based on Ordinary Least Squares (OLS), Fixed Effects (FE), and Random Effects (RE) models, allowing for a robust analysis that accounts for both within-country and between-country variations.

**Table 2: OLS, Fixed Effects (FE), and Random Effects (RE) Regression Results**

| Variable | OLS | Fixed Effects (FE) | Random Effects (RE) |
|---|---|---|---|
| FDI | 1.7116 (0.9313) * | 1.6744 (0.9906) | 1.7116 (0.9313) * |
| Lagged FDI | 2.0816 (0.9404) ** | | |
| GDP per Capita (GDPpc) | 0.0000522 (0.0631) | 0.000054 (0.0655) | 0.000052 (0.0631) |
| Trade | 0.0018102 | 0.000860 (0.0161) | 0.001810 (0.0157) |

| | | | |
|---|---|---|---|
| | (0.0157) | | |
| Foreign Direct Investment (fdi) | -0.0561 (0.0539) | -0.05770(0.0551) | -0.0561(0.0539) |
| Oil | -0.1503 (0.0354) *** | -0.1486 (0.0362) *** | -0.1503 (0.0354) *** |
| Government Spending (G) | 0.2227 (0.0856) ** | 0.22534 (0.0875) ** | 0.2227 (0.0856) ** |
| Constant | 0.219219 (0.1271) | 0.2217396 (0.1294) | 0.219219 (0.1271) |
| Observations | 122 | 122 | 122 |
| R-squared (Overall) | 0.4727 | 0.4727 | 0.4727 |
| Hausman Test | | Chi2 = 0.14, Prob > 0.99 | |
| Breusch-Pagan Lagrangian Multiplier Test | | | Chi2 = 0.00, Prob > 1.00 |

**Notes: Statistical significance levels**:* $p < 0.10$ , ** $p < 0.05$ , *** $p < 0.01$

Based on the analysis the Financial Development Index (FDI) shows a positive and statistically significant impact on economic diversification across both the OLS and Random Effects models, with the coefficient being significant at the 10% level. This suggests that as financial development increases, there is a corresponding positive effect on economic diversification in the GCC countries. The inclusion of lagged FDI in the OLS model further emphasises this relationship, showing a stronger and more significant coefficient at the 5% level. This finding aligns with existing literature that underscores the importance of a well-developed financial sector in facilitating economic diversification, particularly in economies that are traditionally reliant on a narrow set of industries, such as oil and gas (Beck & Levine, 2004; Svirydzenka, 2016; Rajan & Zingales, 1998).

The positive relationship between financial development and economic diversification can be explained by the role of financial institutions in providing the necessary capital, credit, and risk management tools that enable investments in non-oil sectors. As financial markets deepen, they can better support entrepreneurship, innovation, and the growth of small and medium-sized enterprises (SMEs), which are crucial for diversification (Alshubiri et al., 2019; King & Levine, 1993). Additionally, financial development can reduce the cost of capital and improve access to financial services, which is critical for fostering innovation and allowing new industries to emerge (Demirgüç-Kunt & Levine, 2018).

The significant positive impact of lagged FDI on economic diversification, suggests that the benefits of financial development on diversification may not be immediate but rather manifest over time. This is consistent with the understanding that financial sector reforms and developments typically have a delayed effect as it takes time for new financial instruments, institutions, and policies to be fully implemented and adopted (Levine, 2005; Rajan & Zingales, 1998).

The coefficients for GDP per capita, trade openness, and Foreign direct investment are consistently positive but not statistically significant across all models. This lack of significance suggests that these variables, while generally associated with economic growth and openness, do not directly drive economic diversification in the GCC context (Auty, 2001;

Lederman & Maloney, 2007). Additionally, while trade openness can theoretically lead to diversification by exposing domestic industries to international competition and innovation, in the GCC, trade is heavily skewed towards oil exports, limiting its impact on broader economic diversification (Haddad et al., 2013).

The coefficient for oil is negative and highly significant across all models, indicating that higher oil revenues are associated with lower levels of economic diversification. This result is consistent with the well-documented "resource curse" or "Dutch disease," where reliance on abundant natural resources, such as oil, tends to crowd out other economic activities, thereby hindering diversification (Sachs & Warner, 1999; Gylfason, 2001). The negative impact of oil dependence underscores the challenges faced by the GCC countries in diversifying their economies, as high oil revenues often reduce the incentive to develop other sectors and can lead to economic imbalances (Ross, 2001). Lastly, Government spending shows a positive and significant relationship with economic diversification across all models. This suggests that increased public expenditure, likely directed towards infrastructure development, education, and industrial policy, can support diversification efforts (Bleaney, Gemmell, & Kneller, 2001; Barro, 1990).

The results of the Hausman test, indicate that there is no significant difference between the Fixed Effects and Random Effects models, suggesting that the RE model is appropriate for this analysis. However, the Breusch-Pagan Lagrangian Multiplier Test, implies that there is no significant variance across entities, which may imply that a simple OLS model could be as effective as the more complex FE or RE models.

### 4.4 : Dynamic Analysis with Generalised Method of Moments (GMM)

Although the static analysis provides valuable insights, it may fall short in addressing certain econometric issues such as endogeneity, omitted variable bias, and the dynamic nature of the relationship between FDI and EDI. The Generalized Method of Moments (GMM) offers a robust approach to overcoming these limitations by accounting for potential endogeneity and allowing for the inclusion of lagged dependent variables.

**Table 3: GMM Estimation Results**

| Variable | **Arellano-Bond GMM model** | **System GMM model with robust standard errors** | **System GMM model with (GxFDI)** |
|---|---|---|---|
| L.EDI | -0.1036 (0.0330) *** | -0.0958 (0.0389) ** | -0.1033 (0.0475) ** |
| L.FDI | 0.1272 (0.0310) * | 0.7547 (0.0702) ** | 0.5936 (0.0484) ** |
| GDP per Capita (GDPpc) | 0.0000574 (0.0000528) | 0.0000393 (0.0000685) | 0.0000405 (0.000067) |
| Trade | -0.0080 (0.0117) | -0.0077 (0.0129) | -0.0018 (0.0151) |
| Foreign Direct Investment (fdi) | -0.0351 (0.0227) | -0.0348 (0.0292) | -0.0349 (0.0315) |
| Oil | -0.1566 (0.0364) *** | -0.1401 (0.0403) *** | -0.1578 (0.0499) *** |

| | | | |
|---|---|---|---|
| Government Spending (G) | 0.2367 (0.0752) *** | 0.2866 (0.0860) *** | 0.2125 (0.1225) * |
| GxFDI | | | 2.1954 (1.3028) * |
| Constant | 0.3154 (0.0507) *** | 0.3165 (0.0632) *** | 0.2934 (0.0392) *** |
| Wald Chi-Square (Prob > Chi2) | 12.51 (0.0285) | 14.43 (0.044) | 4.21 (0.838) |
| Arellano-Bond Test for AR(1) (p-value) | -3.14 (0.002) | -2.09 (0.036) | -2.08 (0.037) |
| Arellano-Bond Test for AR(2) (p-value) | -0.69 (0.492) | -0.72 (0.471) | -0.88 (0.379) |
| Sargan Test (Prob > Chi2) | 27.80 (0.888) | 27.80 (0.888) | 44.76 (0.860) |
| Hansen Test (Prob > Chi2) | | 0.00 (1.000) | 0.00 (1.000) |
| Difference-in-Hansen (p-value) | | 1.000 | 1.000 |

**Notes: Statistical significance levels**:* $p < 0.10$ , ** $p < 0.05$ , *** $p < 0.01$

**Based on GMM Estimation Results in table 3 ,** Across all models, the lagged EDI variable is negative and statistically significant, confirming the persistence of economic diversification over time. Specifically, in the Arellano-Bond model, the coefficient for L.EDI is -0.1036, significant at the 1% level. This finding is consistent with the notion that past levels of diversification negatively influence current diversification, possibly due to the inertia in economic structures and the challenges associated with shifting away from established, resource-dependent industries (Arellano & Bond, 1991; Blundell & Bond, 1998).

Importantly**,** The FDI variable exhibits a positive and significant impact on economic diversification across all GMM models. These align with the theoretical expectation that a more developed financial sector facilitates diversification by providing better access to credit, reducing transaction costs, and enabling investment in non-oil sectors (Beck et al., 2000; Levine, 2005). The System GMM model's inclusion of an interaction term (GxFDI) further underscores the importance of financial development in combination with government spending, suggesting that their combined effect is greater than the sum of their individual impacts.

Also Consistent with the static models, the coefficient for oil remains negative and highly significant across all GMM models, reinforcing the resource curse hypothesis (Sachs & Warner, 1999; Ross, 2001). Government spending continues to play a crucial role in promoting economic diversification, with positive and significant coefficients in all models. The inclusion of the interaction term (GxFDI) in the third GMM model suggests that government spending, when combined with a developed financial sector, can significantly enhance diversification efforts, underscoring the need for coordinated policy measures (Rodrik, 2008). This result suggests that financial development alone may not be sufficient to drive diversification; rather, it requires complementary policies, particularly in terms of public investment, to realise its full potential (Beck et al., 2000; Demirgüç-Kunt & Levine, 2008).

Regrading, the diagnostic tests provide robust support for the GMM models used in this analysis. The Arellano-Bond test for AR(1) is significant across all models, indicating the presence of first-order autocorrelation, which is expected in dynamic panel data models. However, the Arellano-Bond test for AR(2) is not significant, suggesting that there is no second-order autocorrelation, validating the use of the lagged variables as instruments (Arellano & Bond, 1991). The Sargan and Hansen tests for overidentifying restrictions provide additional support for the validity of the instruments used in the models. The non-significant p-values in these tests suggest that the instruments are appropriate and do not correlate with the error term, ensuring that the GMM estimations are reliable (Hansen, 1982; Roodman, 2009).

### 4.5 : Testing Nonlinear Relationships

Given the limitations of the static models and the challenges with GMM due to the relatively small number of observations and the large number of instruments. This made GMM can lead to overfitting and unreliable results when the instrument count is high relative to the sample size. Furthermore, the assumption of linearity often simplifies complex relationships, potentially overlooking critical nuances. This is particularly true in the context of financial development and economic diversification, where the impact of financial development may not be straightforward or uniform across different levels of financial development. Recent studies suggest that these relationships may exhibit nonlinear characteristics, meaning that the effect of financial development on economic diversification might depend on the level of financial development itself (Arcand, Berkes, & Panizza, 2015; Cecchetti & Kharroubi, 2012). Therefore, it became essential to explore the possibility of a nonlinear relationship.

**Table 4: Threshold Regression and Tertile-Based Regression**

| Variable | Threshold Regression Median-Based | Threshold Regression Tertile-Based |
|---|---|---|
| Low FDI (Below Median) | -0.1019 (0.2326) | |
| High FDI (Above Median) | 0.4336 (0.1989) * | |
| Low Tertile (FDI_tertile1) | | -2.6473 (5.1185) |
| Middle Tertile (FDI_tertile2) | | 6.9148 (2.0076) *** |
| High Tertile (FDI_tertile3) | | 0.7226 (0.9857) * |
| GDP per Capita (GDPpc) | 0.0000541 (0.0658) | 0.0000480 (0.0645) |
| Trade | 0.0007016 (0.0162) | -0.0032 (0.0160) |
| Foreign Direct Investment (fdi) | -0.0569 (0.0553) | -0.0579 (0.0542) |
| Oil | -0.1490 (0.0364) *** | -0.1403 (0.0359) *** |
| Government Spending (G) | 0.2249 (0.0878) ** | 0.2230 (0.0861) ** |
| Constant | 0.1682 (0.1831) | 0.0498 (0.1794) |
| Observations | 122 | 122 |

**Notes: Statistical significance levels**:* $p < 0.10$ , ** $p < 0.05$ , *** $p < 0.01$

Based on Threshold Effects Analysis by dividing the (FDI) into segments based on the median value. The analysis showed that financial development begins to have a significant

positive impact on economic diversification only when it exceeds the median level (denoted as $high\_FDI$). This indicates the presence of a threshold effect, where financial development must reach a certain level before it can effectively contribute to economic diversification. Below this threshold, the impact appears negligible or non-significant. This finding aligns with the theoretical notion that certain foundational levels of financial infrastructure are required before a country can fully benefit from financial sector development in terms of diversification (Greenwood & Jovanovic, 1990).

To further investigate the nonlinear relationship, we divided the FDI into tertiles and created interaction terms for each tertile. This approach allowed to assess the impact of financial development at different levels more precisely: Financial development within the middle tertile exhibited a significant positive effect on economic diversification. This suggests that countries with moderate levels of financial development are particularly well-positioned to benefit from increased diversification. Similarly, in the high tertile also showed a significant positive effect, reinforcing the conclusion that higher levels of financial development are associated with greater economic diversification.

The results from both the Threshold Effects Analysis and the Tertile-Based Regression are consistent and mutually supportive. Together, these analyses suggest a nonlinear relationship where the benefits of financial development for economic diversification are not immediate but rather emerge more significantly as financial development increases. This consistency across different analytical approaches strengthens the robustness of the findings. The threshold analysis provides a broad understanding of when financial development begins to matter for diversification, while the tertile analysis offers more detailed insights into how different levels of financial development contribute to this process. Both analyses underscore the importance of achieving and maintaining high levels of financial development to maximise its benefits for economic diversification.

## 5. Conclusion and Policy recommendations

This study investigates the role of financial development in facilitating economic diversification in the GCC countries. The empirical analysis confirms the theoretical predictions and aligns with recent empirical evidence, particularly studies by Matallah (2018) and Lebdioui (2020), which underscore the role of financial development and governance in overcoming the resource curse and promoting diversification. The consistency across static, dynamic, and nonlinear analyses provides a comprehensive understanding of the financial development-economic diversification nexus in the GCC countries. The static models laid the groundwork by identifying a positive but sometimes marginally significant relationship. The dynamic GMM models further clarified the temporal and endogenous aspects, showing that financial development's impact is gradual and cumulative over time. The nonlinear analyses, through both threshold and tertile approaches, highlighted that the relationship between financial development and economic diversification is not linear but rather dependent on the level of financial development. These nonlinear findings indicate that the benefits of financial development for diversification become more pronounced only after surpassing certain thresholds, reinforcing the importance of sustained financial development. Together, these

analyses form a coherent narrative that aligns with and extends previous empirical research. They suggest that while financial development is essential for economic diversification, its impact is conditional on reaching certain levels of development. This integrated understanding offers valuable insights for policymakers aiming to foster sustainable economic diversification in the GCC region.

**Policy Implications**

The results of this study offer profound insights into how GCC policymakers can better harness financial development to drive economic diversification. One of the most important takeaways is the realization that financial development alone is insufficient unless it reaches a certain level of maturity. This implies that countries like Oman, Bahrain, and Kuwait, where financial markets are still relatively underdeveloped, must prioritize deepening their financial sectors. Regulatory reforms are essential to foster transparency, reduce corruption, and build investor confidence. Additionally, expanding access to financial services, especially for small and medium-sized enterprises (SMEs), is crucial because these businesses are key drivers of diversification into non-oil sectors. Financial innovation is another critical aspect, and governments should encourage the development of new financial products such as Islamic finance instruments, green bonds, and digital financial services, which can meet the demands of a diversifying economy.

These financial sector reforms need to be carefully phased and sustained over time. Initially, reforms should focus on creating a stable, accessible banking system, expanding credit availability, and addressing regulatory bottlenecks that inhibit growth. As these foundations are established, policymakers should encourage the development of capital markets and promote financial innovation. Ultimately, once the financial sector matures, greater efforts should be made to integrate with global financial markets. This phased approach ensures that financial reforms contribute to long-term diversification rather than causing short-term disruptions or instability.

The role of government spending in amplifying the benefits of financial development is also critical. Public investments, especially in infrastructure, education, and technology, can create the enabling environment needed for financial markets to support economic diversification. For instance, large-scale infrastructure projects not only provide the physical backbone needed for industrial growth but also attract private investment by reducing operational risks. Similarly, investments in human capital are essential. Educating the workforce and providing the necessary skills for high-tech and knowledge-based industries will ensure that new sectors can thrive. Technology and innovation should also be at the forefront of public policy, with governments investing in research and development (R&D) to foster innovation in industries such as renewable energy, healthcare, and digital services.

The experiences of the UAE and Saudi Arabia, where public investments have been aligned with financial reforms, provide valuable lessons. In these countries, national strategies such as Vision 2030 in Saudi Arabia and Vision 2021 in the UAE have enabled the financial sector to support growth in non-oil industries like tourism, real estate, and renewable energy. This demonstrates the need for an integrated approach where fiscal policies are coordinated with financial sector reforms. Policymakers across the GCC should focus on this kind of

coordination, ensuring that public investments in infrastructure and education complement financial reforms to maximize the potential for diversification.

Another significant finding from this study is the negative relationship between oil dependence and diversification, which highlights the urgency for GCC countries to decouple their economies from hydrocarbons. While oil has historically been a major source of wealth for these countries, its continued dominance poses risks to long-term economic sustainability. One effective strategy that GCC countries have begun to adopt is the use of sovereign wealth funds (SWFs) to channel oil revenues into productive non-oil sectors. The UAE's Mubadala and Saudi Arabia's Public Investment Fund (PIF) are prime examples of how oil wealth can be redirected into investments that promote diversification. Expanding these SWFs and directing more oil revenues into growth industries such as technology, tourism, and green energy could further reduce the economic vulnerability of GCC countries to oil price fluctuations.

Moreover, structural constraints, particularly in smaller GCC economies like Oman and Bahrain, continue to impede financial development. These countries face challenges such as limited domestic markets and conservative regulatory frameworks, which restrict financial sector growth. To overcome these barriers, policymakers should explore regional financial integration as a solution. By integrating their financial systems with more developed financial hubs like Dubai and Doha, smaller GCC economies can access larger capital pools and benefit from the expertise and innovation in more advanced markets. Liberalizing financial regulations and encouraging competition among financial institutions are also vital steps to enhance efficiency and drive financial innovation in these smaller markets.

Lastly, the nonlinear relationship between financial development and economic diversification underscores the importance of timing and sequencing in implementing reforms. Policymakers must recognize that the benefits of financial development for diversification are not immediate. Early-stage reforms should focus on establishing a stable financial system and expanding access to financial services, while later-stage reforms can focus on more advanced financial instruments and deeper market integration. Rushing into complex financial reforms without first building a solid foundation can lead to instability, so a carefully managed and phased approach is essential for ensuring that financial development supports sustainable diversification in the long run.

In conclusion, the study's findings suggest that GCC countries must pursue a comprehensive and strategic approach to financial sector reform, ensuring that these reforms are supported by public investments and aligned with broader economic diversification efforts. Only by reaching critical thresholds of financial maturity and coordinating fiscal and financial policies can GCC countries reduce their dependence on oil and build more resilient, diversified economies.

## 6. Research Limitations and Further Research

One limitation of this study is its reliance on aggregate data for financial development and economic diversification, which may mask important country-specific and sectoral nuances within the GCC. Additionally, the study primarily focuses on macroeconomic indicators, leaving out potential micro-level factors such as firm-specific financial constraints or entrepreneurial dynamics that could further enrich the understanding of the diversification

process. Lastly, external shocks, such as geopolitical events or global financial crises, may introduce biases that are not fully accounted for in the model, potentially affecting the robustness of the results.

Future research should expand on this study by exploring the sectoral impacts of financial development on economic diversification within individual GCC countries, particularly focusing on emerging industries such as technology and green energy. A more disaggregated analysis could reveal how financial development fosters diversification in specific non-oil sectors and uncover the differential impacts of financial reforms across various industries. Furthermore, future studies could incorporate the role of governance quality and institutional reforms in strengthening the financial-development-diversification nexus, particularly considering the nonlinear dynamics identified in this study. Finally, examining the interaction between financial development and global factors, such as oil price volatility or the transition to renewable energy, would provide valuable insights into how external forces shape the effectiveness of financial reforms in promoting long-term economic sustainability in the region.

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