Koya University Journal of Humanities and Social Sciences (KUJHSS)

Econometric Analysis of Factors Influencing Export Diversification in the Iraqi Economy

Hewa O. Ismael

Department, Business Administration, Shaqlawa Technical College, Erbil Polytechnic University -Erbil, Kurdistan Region, Iraq

ABSTRACT

This comprehensive study meticulously explores and delves into the critical determinants of Iraq's export diversification over the extended period from 2005 to 2023, with a particular and concentrated focus on a wide range of economic, financial, and political factors. By thoughtfully employing the advanced Autoregressive Distributed Lag (ARDL) Bounds Testing method, the research rigorously examines both the short-term and long-term relationships between export diversification (DIV) and several interconnected variables, including exports of goods and services (EXGS), political stability (POST), oil revenue (OILR), and trade openness (TRADE). The detailed findings clearly and unequivocally highlight that trade openness and political stability emerge as the most significantly influential positive determinants of export diversification, as they collectively create a more conducive and enabling environment for broader market expansion and substantially reduce economic vulnerabilities. Conversely, a higher dependence on exports of goods and services exerts a pronounced negative impact on diversification, likely due to excessive and unsustainable overreliance on limited economic sectors. The F-Bounds test robustly confirms the existence of a stable and enduring long-term relationship, with an F-statistic of 11.72, while the error correction term indicates a substantial 50.95% adjustment rate toward achieving equilibrium. Furthermore, diagnostic tests comprehensively validate the robustness and reliability of the model utilized in this research. These compelling results underscore the urgent and critical need for policies that systematically and effectively promote trade liberalization, enhance and ensure political stability, and prudently manage oil revenues to achieve sustainable economic diversification and reduce Iraq's overdependence on volatile oil exports.

KEYWORDS: Export Diversification, Economic Factors, ARDL Bounds Testing, Iraq.

1. INTRODUCTION

Export diversification is the process of broadening a country's export base by reducing dependence on a limited set of goods or commodities. It is a critical strategy for long-term economic stability, especially for resource-dependent countries like Iraq. Export diversification reduces vulnerability to fluctuations in global commodity prices, dispels economic risks and promotes sustainable growth. Iraq's economy relies heavily on oil exports, which account for a large part of its revenues. This dependence exposes the country to external shocks from volatile oil prices, undermining its economic stability and development. To meet these challenges, export diversification is essential to create a more resilient and balanced economy.

Koya University Journal of Humanities and Social Sciences (KUJHSS) Volume 8, Issue 1, 2025.
Received: 27 October 2024
Accepted: 13 January 2024
Regular research paper: 20 May 2025
Corresponding author's e-mail: hiwaothman@epu.edu.iq

Key macroeconomic factors, including trade openness, political stability, oil revenues, a play a pivotal role in shaping Iraq's path toward diversification. The study examines the specific challenges Iraq faces in reducing its dependence on oil and diversifying its export base. Unlike other oil-exporting countries, Iraq's economic policies have historically lacked the structural reforms needed to boost non-oil sectors. By identifying factors influencing export diversification and proposing tailor-made strategies, this research aims to provide actionable insights for sustainable growth. The introduction highlights the importance of exports of goods and services (EXGS), political stability (POST), oil revenues (OILR), and trade openness (TRADE) as critical drivers of diversification. It also emphasizes Iraq's need to develop non-oil sectors such as agriculture, manufacturing and technology. This research focuses on analyzing the role of trade, political stability and macroeconomic factors in shaping export diversification in Iraq, providing a basis for strategic policy recommendations...(Semenova & Al-Dirawi, 2022). (Rasheed et al., 2021).

1.1 Research Objectives

This study aims to investigate the determinants of export diversification in the Iraqi economy and provide actionable insights. It starts by defining the concept of export diversification and emphasizing its importance for promoting exports of goods and services (EXGS), political stability (POST), oil revenues (OILR), and trade openness (TRADE). The research identifies and analyzes the main economic, financial and political factors affecting export diversification in Iraq, and provides a detailed assessment of their impacts through empirical analysis. Based on these findings, the study proposes targeted recommendations to promote the diversification of Iraq's exports, with the aim of reducing overdependence on oil exports and promoting a more balanced and resilient economic structure.

1.2 RESEARCH QUESTIONS

The primary aim of this study is to examine the determinants of export diversification in the Iraqi economy. To achieve this, the study addresses several key research questions: first, it explores the significance of export diversification in fostering economic stability and growth in Iraq. Second, it examines how economic factors, such as trade openness and oil revenue, influence the diversification process. Third, the study investigates the role of political stability in shaping export diversification. Additionally, it considers the impact of Iraq's reliance on exports of goods and services on the diversification efforts. Finally, the study aims to derive policy recommendations that could enhance Iraq's export diversification and reduce its dependence on oil.

1.3 Importance of the Research

The significance of this study lies in highlighting how crucial economic, financial, and political factors are in promoting sustained economic prosperity through export diversification. Diversifying exports reduces the vulnerability of developing countries to fluctuations in earnings from a limited number of commodities by spreading risks across a wider variety of export products. This general consensus emphasizes that the growth of export industries significantly influences developing countries' approaches to enhancing global integration and fostering economic progress. Recent empirical research, including the present study, demonstrates that the capacity to achieve export-financed growth (EFG) relies on establishing causal relationships between export diversification and various economic factors. Economic growth models suggest multiple pathways through which export success impacts growth, supported by empirical data. These pathways include the effects of export expansion on income distribution, dependence on imported commodities, and investment funding restrictions due to limited capital availability. By identifying and analyzing these factors, the study underscores their importance in developing strategies for reducing Iraq's dependency on oil and fostering a more resilient economy..(Brutsaert & Sys, 1989; Canh & Thanh, 2022). (Lee & Zhang, 2022).(Li et al., 2021).

2 Literature review

The literature on the determinants of export diversification is scarce and largely lacks consensus due to the significant heterogeneity in the data and methodology used. The existing empirical literature can be summarized by determinants, which include countries' initial conditions and the extent to which these conditions affect long-term growth and structural transformation, public policies concerning trade like import tariffs and export taxes, the business environment, climate, and geography. Recent research in growth, development, and macroeconomics has had a big impact on how we think about what causes export diversification. This research looks at how firm-age distribution affects long-term income growth and welfare characteristics. This study reviews economic complexity, export quality, and trade diversification from 1966 to 2021, focusing on structural change, social change, and trade indicators. It is the first integrative review to report theoretical contributions, future research agendas, and thematic analysis, aiming for sustainable growth in industries and innovation.(Doğan et al., 2023). This study explores the impact of export product diversification on renewable energy consumption in 14 countries from 1990 to 2017, using panel data and nonlinear hypothesis. Results show positive effects on renewable energy demand.(Shahzad et al., 2021). This paper explores the economic diversification performance of resource-rich countries, focusing on per capita non-resource sector growth. It identifies policy-relevant correlates of diversification, revealing that resource-abundant countries perform better on human capital and public capital.(Lashitew et al., 2021). This paper explores economic diversification in resource-rich countries from 2001 to 2019, finding that factors like gross capital formation, financial development, labor force participation, education, and rule of law positively impact diversification performance, while inward foreign direct investment negatively impacts it.(Jolo et al., 2022). This research examines the impact of agricultural employment and export diversification index on ecological footprints in 96 countries. It reveals a heterogeneous relationship, with increased product production increasing ecological footprint pressure. Joint efforts between countries and green growth are needed for environmental sustainability.(Jiang et al., 2022). The study reveals that internet access positively impacts

services export diversification, particularly in least developed countries (LDCs), affecting innovation, merchandise exports, export product concentration, and FDI inflows, emphasizing the need for digital infrastructure development.(Gnangnon, 2020). Economic diversification is crucial for low- and middle-income economies, but many African countries struggle to achieve this goal. Eight of the world's fifteen least economically diversified countries are African, weakening their economic transformation and making them vulnerable to external shocks. Fiscal diversification, which involves expanding government revenue sources and public expenditure targets, can help catalyze broader economic transformation. However, not all dimensions and measurements of economic diversification are equally applicable for all countries. Structural differences, such as national income, natural resource dependence, and governance quality, also impact the pursuit of economic diversification.(Usman & Landry, 2021). This study examines the determinants of export sophistication, focusing on digitalization. It found that digitalization promotes sophistication in exports. Other drivers include institutional quality, access to credit, and R&D. However, evidence on tertiary enrolment and FDIs is mixed. Democracy has limited effect on sophistication. Governments should improve property rights, rule of law, business ease, access to credit, tertiary enrolment, and R&D expenditures.(Atasoy, 2021). The paper examines the impact of oil rents on economic growth in oil exporters and the role of governance in avoiding resource curse and promoting economic diversification. Results show that diversification, good governance, and oil rents are crucial for sustainable growth, with higher improvements in diversification in GCC countries.(Matallah, 2020). This dissertation explores the relationship between export concentration and economic development in countries, using data from the IMF World Bank. Findings show export diversification positively impacts economic development, supporting sustainable growth in emerging economies.(Basodan, 2023). Economic diversification in developing countries, particularly in Iraq, is crucial for economic growth. To address this, the government must develop and diversify non-oil economic sectors, eliminate reliance on a single resource, and prevent the rent trap. (ALyaseri & Abbas, 2022). Resource-rich economies often leverage their natural wealth to modernize infrastructure and establish robust welfare systems. However, excessive dependence on oil and gas exports has frequently led to economic and political vulnerabilities in such nations. This over-reliance exacerbates structural weaknesses, including a lack of economic diversification and the concentration of power among political elites. Addressing these issues necessitates the promotion of economic diversification as a strategic imperative to reduce dependency on oil revenues and mitigate elite dominance.(Abdullah & Gray, 2022). The study examines economic diversification. Findings suggest moderate pace of diversification, suggesting the need for dynamic tradeable sectors. (Malik & Masood, 2020).

2.1 Theoretical frameworks

The theoretical basis of this study emphasizes the importance of export diversification, defined as the process by which a country expands its range of exported goods and services in order to reduce dependence on a limited number of commodities. Such diversification increases economic resilience, stabilizes export earnings, and promotes long-term growth by reducing vulnerability to fluctuations in global commodity prices, stimulating innovation, and promoting sustainable development. Several factors influence the diversification of exports, especially in resource-dependent economies such as Iraq. These include the quality of governance, the development of infrastructure, political stability and the degree of economic dependence on oil. Transparent governance helps create an enabling environment for innovation, while reliable infrastructure reduces trading costs and facilitates access to markets. Political stability reduces risks for investors, and economic diversification reduces the negative effects of over-reliance on oil revenues, as emphasized in economic theories such as Prebisch's dependency theory and Porter's concept of economic stability. The link between export diversification and economic growth is also supported by Osmann and Klinger's "Product Space" theory, which emphasizes the strategic development of new products in relation to existing sectors, and Rostow's "Stages of Growth", which positions diversification as an indicator of structural economic change. Empirical evidence supports these theoretical findings. Given Iraq's vulnerability to oil market volatility, fostering export portfolio diversification is critical to strengthen economic resilience and achieve sustainable growth. This concept combines theoretical perspectives with empirical conclusions and provides a solid basis for analyzing the dynamics of export diversification in Iraq.(Alfakih & Tabassum, 2020).(Hasanov et al., 2022).(Usman & Landry, 2021).

3 METHODOLOGY

This study employs the Autoregressive Distributed Lag to analyze the impact of spending on goods and services, oil revenues, and trade openness on export diversification in the Iraqi economy. Export diversification is the dependent variable, while the factors serve as independent variables. The ARDL model is chosen for its ability to capture both short-term and long-term dynamics among variables, making it suitable for time

series data with mixed integration orders. The optimal lag structure is determined using the Akaike Information Criterion (AIC), ensuring a precise depiction of relationships. The model quantifies the immediate and equilibrium impacts of exports goods and services, political stability, oil revenue, and trade openness on export diversification, providing comprehensive insights into the underlying economic mechanisms. Using the Autoregressive Distributed Lag (ARDL) model, we will specifically examine the impact of trade, political stability, exports of goods and services, and oil revenues on Iraq. Ultimately, we will evaluate the results in terms of export diversification.

4 DATA COLLECTION AND SOURCES

This research examines the impact of exports goods and services, political stability, oil revenues, and trade openness on export diversification in Iraq using an ARDL model. data is sourced from the IMF and World Bank, political stability is assessed through the World Bank's Worldwide Governance Indicators, oil revenue statistics come from OPEC and the IMF, and trade openness is measured by the ratio of total trade to GDP using data from the World Bank and IMF. Export diversification data is obtained from UNCTAD and the World Bank. Covering 2005-2023.

5 RESULTS

5.1 Graphical presentation.

To observe the variations in the variables over time, refer to Figure (1), which presents the data graphically. Evaluating stability is essential for conducting time series analyses. Non-stationary time series are marked by trends and varying statistical properties, while stable time series maintain consistent statistical properties over time. The time series data of the variables demonstrate variability, as illustrated in Figure (1). To address these inconsistencies, differentiation or transformations, along with other techniques, are applied to stabilize the series before proceeding with further analysis or modeling.

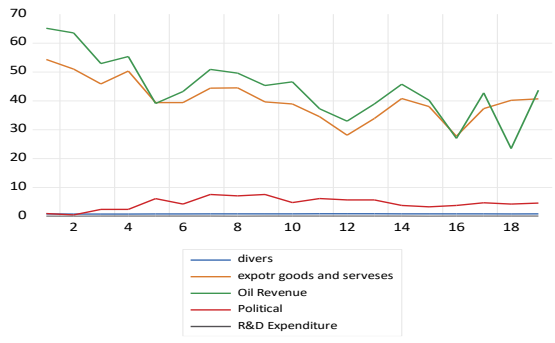

Figure 1: Assessing the Stability of Time Series Data for Variables Under Study

5.2 Descriptive statistics

Table 1:
Descriptive statistics for the variables included in the research

Mean	0.858626	40.49059	44.42237	4.514051	72.22353
Median	0.865700	39.66354	43.70000	4.600000	69.59177
Maximum	0.896100	54.34787	65.15760	7.582938	115.7425
Minimum	0.804700	27.75028	23.50000	0.483092	54.58832
Std. Dev.	0.027995	6.979982	10.71928	2.033663	13.37606
Skewness	-0.475023	0.092479	0.073906	-0.293872	1.824635
Kurtosis	2.143056	2.793766	2.869133	2.419689	7.084654
Jarque-Bera	1.295912	0.060754	0.030855	0.540079	23.75124
Probability	0.523114	0.970080	0.984691	0.763349	0.000007
Sum	16.31390	769.3213	844.0251	85.76697	1372.247
Sum Sq. Dev.	0.014107	876.9626	2068.254	74.44412	3220.541
Observations	19	19	19	19	19

Prepared by the researcher using the electronic program Evies-12

The descriptive statistics of the variables analyzed provide insight into the economic structure in Iraq and the challenges it faces. The diversification index (DIV) shows a mean of 0.8586, with a narrow range (minimum 0.8047 and maximum 0.8961) and a low standard deviation (0.0280), indicating limited differentiation and consistent diversification efforts. The average share of exported goods (EXGS) is 40.49%, with a moderate variance (standard deviation of 6.98) and a range of

Prepared by the researcher using the electronic program Evies-12

27.75% to 54.35%, indicating fluctuations in the composition of exports. Oil revenues as a share of GDP (OILR) average 44.42%, with a wide range (minimum 23.50%, maximum 65.16%) and relatively high volatility (standard deviation 10.72), highlighting Iraq's economic dependence on oil and its susceptibility. to external price shocks. The Political Stability Index (POST) shows a mean of 4.51 and a wide range (minimum 0.48 and maximum 7.58), with a standard deviation of 2.03, reflecting large fluctuations in political stability, which can negatively impact economic growth and diversification efforts. Finally, the average trade-to-GDP ratio is 72.22%, with a wide range (minimum 54.59 and maximum 115.74) and standard deviation of 13.38%, indicating significant trade

fluctuations resulting from fluctuations in oil revenues and foreign trade dynamics. Skewness and dispersion values indicate varying degrees of symmetry and shape of the distribution, with the Jarque-Bera test indicating that most variables follow a normal distribution. These results confirm Iraq's dependence on oil, the need to enhance political stability, and the importance of policies aimed at promoting diversification and trade stability.

5.3 Unit Root Test

In this section we present the results of augmented Dickey-Fuller (ADF) and (PP) unit root tests conducted on the main economic variables in our study: export diversification (DIV), export of goods and services (EXGS), and political stability. (POST), oil revenues (OILR), and trade openness (TRADE). ADF and PP tests were used to determine the stationarity of each variable, which is crucial for subsequent time series analysis, such as cointegration and ARDL modeling. The results of the ADF and PP unit root tests are summarized in the tables below. The tests were conducted at three levels: with a constant, with a constant and a trend, and without a constant and a trend. Each variable was tested at its level and its first difference.

Table (2)
Stationarity Test Results for Economic Variables at Level and First Difference

(ADF) At Level						
		DIV	EXGS	POST	OILR	TRADE
With Constant	t-Statistic	-1.5864	-2.6108	-2.5714	-2.9354	-3.2428
	Prob.	0.4687	0.1091	0.1188	0.0608	0.0340
		n0	n0	n0	*	**
With Constant & Trend	t-Statistic	-1.5546	-2.5502	-2.1175	-4.4014	-2.2192
	Prob.	0.7702	0.3034	0.5026	0.0173	0.4520
		n0	n0	n0	**	n0
Without Constant & Trend	t-Statistic	0.5993	-0.9457	-0.4070	-1.7246	-0.6159
	Prob.	0.8363	0.2940	0.5206	0.0800	0.4364
		n0	n0	n0	*	n0
(ADF)At First Difference						
		d(DIV)	**d(EXGS)**	**d(POST)**	**d(OILR)**	**d(TRADE)**
With Constant	t-Statistic	-4.0154	-4.5573	-6.4822	-7.0367	-4.0925
	Prob.	0.0078	0.0030	0.0001	0.0000	0.0067
		***	***	***	***	***
With Constant & Trend	t-Statistic	-3.7913	-4.9595	-7.3251	-7.0427	-4.4582
	Prob.	0.0454	0.0061	0.0001	0.0002	0.0144
		**	***	***	***	**
Without Constant & Trend	t-Statistic	-4.0286	-4.6169	-6.4757	-6.8172	-4.2832
	Prob.	0.0005	0.0001	0.0000	0.0000	0.0003
		***	***	***	***	***

(Phillips-Perron) At Level						
With Constant		DIV	EXGS	OILR	POST	TRADE
	t-Statistic	-1.4898	-2.6828	-2.9354	-2.3498	-5.4619
	Prob.	*0.5156*	*0.0962*	*0.0608*	*0.1685*	*0.0004*
		n0	*	*	n0	***
With Constant & Trend	t-Statistic	-1.6164	-2.2776	-4.3601	-2.0175	-4.7644
	Prob.	*0.7451*	*0.4237*	*0.0148*	*0.5534*	*0.0070*
		n0	n0	**	n0	***
Without Constant & Trend	t-Statistic	0.7857	-1.3276	-1.2918	-0.2248	-1.8615
	Prob.	*0.8739*	*0.1638*	*0.1739*	*0.5912*	*0.0611*
		n0	n0	n0	n0	*
(Phillips-Perron) At First Difference						
		d(DIV)	d(EXGS)	d(OILR)	d(POST)	d(TRADE)
With Constant	t-Statistic	-4.0435	-5.6558	-8.7082	-6.0633	-6.4882
	Prob.	*0.0073*	*0.0003*	*0.0000*	*0.0001*	*0.0001*
		***	***	***	***	***
With Constant & Trend	t-Statistic	-6.7260	-8.5101	-11.5978	-7.0411	-9.7372
	Prob.	*0.0003*	*0.0000*	*0.0000*	*0.0002*	*0.0000*
		***	***	***	***	***
Without Constant & Trend	t-Statistic	-4.0244	-5.1248	-6.8358	-6.0626	-6.1124
	Prob.	*0.0005*	*0.0000*	*0.0000*	*0.0000*	*0.0000*

Prepared by the researcher using the electronic program Evies-12

The results from the ADF tests indicate the following:

At Level:

DIV, EXGS, POST: These variables are not stationary at their levels across all three test conditions (constant, constant and trend, without constant and trend), as evidenced by the non-significant p-values.

OILR: This variable is stationary at the 5% significance level when tested with a constant and trend (t-statistic = -4.4014, p-value = 0.0173).

TRADE: This variable is stationary at the 5% significance level with a constant (t-statistic = -3.2428, p-value = 0.0340).

At First Difference:

All variables (d(DIV), d(EXGS), d(POST), d(OILR), d(TRADE)) are stationary at their first differences, as indicated by highly significant p-values (all below 0.05) across all three test conditions. This means they do not have a unit root and are integrated of order one, I (1). The ADF and PP (Phillips-Perron) unit root test results indicate that all variables, except OILR and TRADE under certain conditions, are non-stationary at their levels but become stationary after differencing once. This finding justifies the use of the ARDL modeling approach, which can handle variables integrated of different orders, I (0) and I (1).

5.4 Analysis of ARDL Model Results

Table (3)
ARDL Model Results for Determining the Impact on DIV

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
DIV (-1)	0.490547	0.091502	5.361073	0.0002
TRADE	0.001195	0.000457	2.616091	0.0225
POST	0.003222	0.001138	2.831049	0.0151
OILR	0.001356	0.000418	3.246542	0.0070
EXGS	-0.004419	0.000846	-5.220659	0.0002
C	0.458604	0.093139	4.923875	0.0004

R-squared	0.936633	Mean dependent var	0.860628
Adjusted R-squared	0.910231	S.D. dependent var	0.027372
S.E. of regression	0.008201	Akaike info criterion	-6.507879
Sum squared resid	0.000807	Schwarz criterion	-6.211088
Log likelihood	64.57091	Hannan-Quinn criter.	-6.466956
F-statistic	35.47481	Durbin-Watson stat	2.565804
Prob(F-statistic)	0.000001		

Prepared by the researcher using the electronic program Evies-12

Interpretation of Coefficients:

The coefficient for the lagged dependent variable DIV (-1) is 0.490547, with a highly significant p-value of 0.0002. This indicates that past levels of export diversification have a moderate impact on current levels, reflecting a degree of continuity in diversification trends over time. In the context of Iraq's economic reality, this suggests that historical patterns, shaped by structural dependence on oil and limited progress in non-oil sectors, continue to influence present diversification efforts. The gradual nature of diversification change underscores the necessity of sustained and coherent policy measures aimed at fostering a diversified and resilient economic structure for Iraq, addressing both historical constraints and future opportunities.

The analysis of the coefficients for TRADE, POST, OILR, and EXGS highlights significant insights into the determinants of export diversification (DIV) in Iraq, reflecting both economic opportunities and structural challenges. The positive but modest coefficient for TRADE (0.001195) suggests that trade openness contributes to diversification, though its limited effect underscores the necessity for complementary factors such as robust infrastructure and supportive policies. POST (0.003222) exhibits a stronger positive relationship, indicating that political stability and effective governance play a critical role in fostering economic diversification by creating a conducive environment for investment and growth. Similarly, the positive coefficient for OILR (0.001356) implies that oil revenues may indirectly support diversification through investments in infrastructure and human capital, though this relationship also reflects the country's dependency on oil. Conversely, EXGS (-0.004419) reveals a negative association, highlighting a paradox where increased exports of goods and services correlate with reduced diversification. This outcome can be attributed to Iraq's structural distortions, including its overreliance on oil, underdeveloped non-oil sectors, and systemic inefficiencies such as weak institutions and policy misalignments. Additionally, the "Dutch Disease" effect, characterized by currency appreciation driven by oil revenues, undermines the competitiveness of non-oil exports. Collectively, these findings emphasize the urgent need for structural reforms, enhanced governance, and strategic investments in non-oil industries to mitigate economic vulnerabilities and promote a more resilient and diversified Iraqi economy.

Model Fit and Diagnostics:

R-squared and Adjusted R-squared: The R-squared value of 0.936633 and the adjusted R-squared value of 0.910231 indicate that the model explains approximately 91% of the variation in the dependent variable DIV, demonstrating a good fit. Standard Error of Regression: The standard error of the regression (0.008201) is relatively low, suggesting that the model's predictions are close to the actual values. F-statistic: The F-statistic (35.47481) with a p-value of 0.000001 indicates that the

overall model is statistically significant.

5.5 ARDL Long Run Form and Bounds Test Analysis

Bounds Test for Cointegration

The F-bounds test and t-bounds test results are shown below:

Table (4)

ARDL Model Results: Long- and Short-Term Relationships of Economic Variables

Conditional Error Correction Regression				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.458604	0.093139	4.923875	0.0004
DIV (-1) *	-0.509453	0.091502	-5.567696	0.0001
TRADE**	0.001195	0.000457	2.616091	0.0225
POST**	0.003222	0.001138	2.831049	0.0151
OILR**	0.001356	0.000418	3.246542	0.0070
EXGS**	-0.004419	0.000846	-5.220659	0.0002

* p-value incompatible with t-Bounds distribution.
** Variable interpreted as Z = Z(-1) + D(Z).

Levels Equation Case 3: Unrestricted Constant and No Trend				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
TRADE	0.002347	0.001051	2.232936	0.0454
POST	0.006324	0.002371	2.667337	0.0205
OILR	0.002662	0.000990	2.688779	0.0197
EXGS	-0.008674	0.002083	-4.163624	0.0013

EC = DIV - (0.0023*TRADE + 0.0063*POST + 0.0027*OILR -0.0087 *EXGS)

F-Bounds Test		Null Hypothesis: No levels relationship		
Test Statistic	Value	Signif.	I(0)	I(1)
			Asymptotic: n=1000	
F-statistic	11.72205	10%	2.45	3.52
k	4	5%	2.86	4.01
		2.5%	3.25	4.49
		1%	3.74	5.06

t-Bounds Test		Null Hypothesis: No levels relationship		
Test Statistic	Value	Signif.	I(0)	I(1)
t-statistic	-5.567696	10%	-2.57	-3.66
		5%	-2.86	-3.99
		2.5%	-3.13	-4.26
		1%	-3.43	-4.6

Prepared by the researcher using the electronic program Evies-12

Interpreting ARDL Model Results for Long-Run and Short-Run Periods

The ARDL model results you have provided allow us to analyze the relationship between the dependent variable (DIV) and the independent variables (TRADE, POST, OILR, and EXGS) both in the short run and the long run.

Long-Run Relationship:

The long-run relationship is indicated by the level's equation and the F-Bounds test:

Trade, post-related activities, and oil revenues positively affect diversification in the long run. The export of goods and services negatively impacts diversification, possibly due to over-reliance on specific sectors.

Interpretation:

- TRADE: A positive coefficient indicates that an increase in trade is associated with an increase in the diversification index (DIV).
- POST: Similarly, a positive coefficient suggests that post-related activities positively influence diversification.
- OILR: A positive coefficient implies that oil revenues positively affect diversification.
- EXGS: A negative coefficient indicates that an increase in exports of goods and services negatively impacts diversification.

F-Bounds Test:

- F-statistic = 11.72205, which is above the upper critical bound at the 1% significance level (5.06). The high F-statistic indicates that we reject the null hypothesis of no levels relationship, confirming a long-run relationship between DIV and the independent variables.
- The bounds test confirms a significant long-run relationship between the variables, indicating that the selected independent variables are crucial determinants of diversification in both the short and long run.

Short-Run Relationship

The short-run dynamics are captured by the conditional error correction regression:

- Short-run adjustments indicate that trade, post-related activities, and oil revenues have immediate positive impacts on diversification, while exports of goods and services have an immediate negative impact.
- The significant coefficient for **DIV(t-1)** reflects the influence of past export diversification levels on the current state, indicating a degree of persistence over time. Additionally, the error correction term. (**CointEq(-1)**) is crucial for understanding the adjustment dynamics and shows that deviations from the long-run equilibrium are corrected by approximately **50.95%** in each period. This dual interpretation highlights both the persistence of diversification trends and the responsiveness of the system to equilibrium-restoring forces.

Interpretation:

- The constant (C) term represents the short-run intercept.
- DIV (-1): The negative coefficient indicates that there is an error correction mechanism that adjusts 50.95% of the disequilibrium from the previous period in the current period, moving towards the long-run equilibrium.
- The coefficients for TRADE, POST, OILR, and EXGS indicate the short-run impact of these variables on DIV.

- The significant coefficient of **DIV (-1)** reflects the influence of past export diversification levels on the current state, indicating a degree of persistence in the variable over time. If an error correction term is also included in the model, it would confirm the presence of a long-run equilibrium relationship and provide an estimate of the speed of adjustment from short-term deviations to long-term equilibrium.

Cointegration Test

Table (5)
Summary of Cointegration Test Results

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.988893	138.0770	69.81889	0.0000
At most 1 *	0.814977	61.57323	47.85613	0.0016
At most 2 *	0.670466	32.88956	29.79707	0.0213
At most 3	0.485656	14.01829	15.49471	0.0824
At most 4	0.147637	2.715618	3.841465	0.0994

Trace test indicates 3 cointegrating eqn(s) at the 0.05 level
* Denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.988893	76.50374	33.87687	0.0000
At most 1 *	0.814977	28.68367	27.58434	0.0360
At most 2	0.670466	18.87127	21.13162	0.1006
At most 3	0.485656	11.30267	14.26460	0.1397
At most 4	0.147637	2.715618	3.841465	0.0994

Max-eigenvalue test indicates 2 cointegrating eqn(s) at the 0.05 level
* Denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Prepared by the researcher using the electronic program Evies-12

The Johansen cointegration tests, including the Trace and Maximum Eigenvalue tests, reveal the presence of multiple cointegrating equations among the variables DIV, EXGS, OILR, POST, and TRADE, indicating a long-run equilibrium relationship. Specifically, the Trace test identifies three cointegrating equations at the 5% significance level, while the Maximum Eigenvalue test confirms two. The normalized cointegrating coefficients highlight the long-term relationships, showing that DIV is primarily influenced by EXGS, OILR, POST, and TRADE, with small standard errors demonstrating statistical precision. Adjustment coefficients (alpha) further reveal the speed of correction for deviations from the long-run equilibrium, with significant adjustments observed in D(DIV) and D(EXGS), reflecting their roles in restoring balance. These findings confirm a stable and significant long-term relationship among export diversification, oil revenue, trade openness, and post-war economic conditions, emphasizing their interconnected dynamics.

5.5.1 Comprehensive Analysis of ARDL Model Residual Diagnostics

5.5.1.1 Breusch-Godfrey Serial Correlation LM Test Results

The Breusch-Godfrey Serial Correlation LM Test is conducted to check for the presence of serial correlation in the residuals of an estimated regression model. Let's interpret the provided results:

Breusch-Godfrey Serial Correlation LM Test:

Null hypothesis: No serial correlation at up to 1 lag

Table (6)
Breusch-Godfrey Serial Correlation LM Test Results

F-statistic	1.108126	Prob. F (1,11)	0.3151
Obs*R-squared	1.647346	Prob. Chi-Square (1)	0.1993

Prepared by the researcher using the electronic program Evies-12

Serial Correlation:

- The F-statistic and the corresponding p-value (0.3151) indicate that we fail to reject the null hypothesis of no serial correlation at the 1 lag level. Similarly, the Obs*R-squared value and its p-value (0.1993) also suggest that we fail to reject the null hypothesis.
- Conclusion: There is no significant evidence of serial correlation in the residuals up to the 1 lag level.
- The residual diagnostic results indicate that the ARDL model does not suffer from serial correlation up to the 1 lag level. This is evidenced by the non-significant p-values in both the F-statistic and the Chi-Square statistic of the Breusch-Godfrey test.

Heteroskedasticity Test (ARCH)

The ARCH (Autoregressive Conditional Heteroskedasticity) test is used to detect the presence of heteroskedasticity in the residuals of a regression model. Here's the interpretation of the provided results:

Table 7: Heteroskedasticity Test: ARCH

F-statistic	1.932633	Prob. F (1,15)	0.1848
Obs*R-squared	1.940322	Prob. Chi-Square (1)	0.1636

Prepared by the researcher using the electronic program Evies-12

Heteroskedasticity Detection:

- The p-value of the F-statistic (0.1848) is greater than the conventional significance level (0.05). This indicates that we fail to reject the null hypothesis of no heteroskedasticity.
- Similarly, the p-value of the Obs*R-squared statistic (0.1636) is also greater than 0.05, supporting the conclusion that there is no significant evidence of heteroskedasticity in the residuals.
- By confirming the absence of both serial correlation and heteroskedasticity, the diagnostic tests reinforce the reliability of the ARDL model's findings, supporting the interpretation of both long-term and short-term dynamics in the economic variables studied.

histogram and Normality Test of Residuals

The histogram shows the distribution of the residuals, providing a visual assessment of their normality.

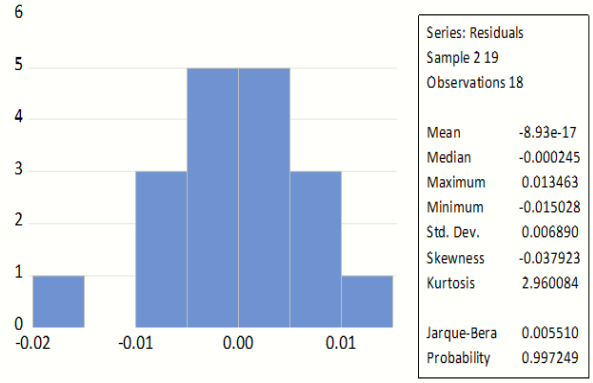

Figure 2: histogram and Normality Test of Residuals

Prepared by the researcher using the electronic program Evies-12

- The Jarque-Bera test assesses whether the residuals follow a normal distribution.
- The Jarque-Bera statistic is 0.00551 and the probability is 0.9972.
- Since the p-value is greater than the common significance level of 0.05, we fail to reject the null hypothesis that the residuals are normally distributed. This suggests that the residuals are not significantly different from a normal distribution.

Based on the histogram and the Jarque-Bera test, the residuals from the ARDL model appear to be normally distributed. This is a favorable result as normality of residuals is one of the assumptions for the validity of many statistical tests. This supports the reliability of the model and its estimates.

Ramsey RESET Test

The Ramsey RESET test indicates no significant evidence of omitted variables or functional form misspecification, with p-values for the t-statistic (0.1717), F-statistic (0.1717), and Likelihood Ratio (0.0738) all exceeding the 0.05 threshold. The model demonstrates high explanatory power (R-squared: 0.927, Adjusted R-squared: 0.888), no autocorrelation (Durbin-Watson: 2.223), and compliance with statistical and economic standards. These results confirm the model's validity and reliability for interpretation, with no evidence of multicollinearity or non-linear term omission.

Table (8)
Ramsey RESET Test for Model Specification

Ramsey RESET Test
Equation: UNTITLED
Omitted Variables: Squares of fitted values
Specification: DIV DIV (-1) EXGS OILR POST TRADE C

	Value	df	Probability
t-statistic	1.462167	11	0.1717
F-statistic	2.137931	(1, 11)	0.1717
Likelihood ratio	3.196949	1	0.0738

F-test summary:

	Sum of Sq.	df	Mean Squares
Test SSR	0.000180	1	0.000180
Restricted SSR	0.001107	12	9.23E-05
Unrestricted SSR	0.000927	11	8.43E-05

LR test summary:

	Value
Restricted LogL	61.72675
Unrestricted LogL	63.32522

Unrestricted Test Equation:
Dependent Variable: DIV
Method: Least Squares
Date: 12/26/24 Time: 10:09
Sample: 2 19
Included observations: 18

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DIV(-1)	5.352178	3.267156	1.638176	0.1296
EXGS	-0.035247	0.021550	-1.635635	0.1302
OILR	0.007900	0.004853	1.627972	0.1318
POST	0.032186	0.019626	1.639975	0.1293
TRADE	0.009371	0.005754	1.628578	0.1317
C	0.110875	0.239886	0.462201	0.6529
FITTED^2	-4.843110	3.312283	-1.462167	0.1717
R-squared	0.927227	Mean dependent var		0.860628
Adjusted R-squared	0.887532	S.D. dependent var		0.027372
S.E. of regression	0.009180	Akaike info criterion		-6.258358
Sum squared resid	0.000927	Schwarz criterion		-5.912102
Log likelihood	63.32522	Hannan-Quinn criter.		-6.210614
F-statistic	23.35909	Durbin-Watson stat		2.223173
Prob(F-statistic)	0.000012			

Prepared by the researcher using the electronic program Evies-12

5.5.1.2 Variance Inflation Factors (VIF) for Multicollinearity Assessment

Table (9)
Variance Inflation Factors (VIF)

Variance Inflation Factors			
Variable	Coefficient Variance	Uncentered VIF	Centered VIF
DIV(-1)	0.020520	2950.871	3.113908
EXGS	9.60E-07	302.6827	7.019784
OILR	1.74E-07	66.54311	3.041891
POST	1.80E-06	8.967250	1.191185
TRADE	6.09E-07	586.6401	8.057035
C	0.023421	4569.682	NA

Prepared by the researcher using the electronic program Evies-12

The VIFs for DIV (-1), EXGS, OILR, and POST are well below 10, suggesting minimal multicollinearity. The TRADE variable has a VIF of 8.06, which is relatively high but still below the threshold of 10, indicating some level of collinearity that is not excessively problematic. The POST variable shows a very low VIF of 1.19, indicating low correlation with other variables. Overall, the results suggest that multicollinearity is not a major concern, with only the TRADE variable warranting a closer inspection, but no immediate adjustments are necessary.

6 DISCUSSION

This study examines the impact of economic, financial, and political factors on the diversification of Iraq's exports using data from 2005 to 2023. By applying the Autoregressive Distributed Lag (ARDL) bounds testing approach, the research explores short- and long-term relationships Export Diversification (DIV), Export of Goods and Services (EXGS), political stability (POST), Oil Revenue (OILR), and Trade openness (TRADE). The ARDL model results reveal significant long-term associations, with increased trade (positive long-run coefficient of 0.0023) and (positive coefficients of 0.0032 in the short run and 0.0063 in the long run) enhancing diversification. Oil revenue positively impacts diversification (coefficients of 0.0014 short run and 0.0027 long run), while higher exports of goods and services reduce it (negative coefficients of -0.0044 short run and -0.0087 long run). The F-Bounds test confirms a long-run equilibrium relationship, and the error correction term indicates moderate adjustment speed. Diagnostic tests show no significant serial correlation or heteroskedasticity, and residuals are normally distributed.

7 CONCLUSIONS

This study investigates the influence of key economic, financial, and political variables on Iraq's export diversification, utilizing annual data from 2005 to 2023 and employing the ARDL bounds testing approach. The findings reveal significant long-term relationships between export diversification and critical factors such as trade openness, political stability, and oil revenue. A positive long-run coefficient for trade openness (0.0023) indicates its pivotal role in promoting diversification by broadening access to global markets, while the positive short- and long-term associations with political stability underscore governance as an essential enabler of balanced export structures. Conversely, a negative relationship between higher exports of goods and services and diversification highlights concentration risks within Iraq's export structure, necessitating careful policy interventions. Additionally, effective management of oil revenue is identified as crucial for reducing dependency on oil exports and fostering economic resilience. These results emphasize that Iraq's export diversification depends significantly on advancing trade policies, ensuring political stability, and adopting strategic approaches to oil revenue management, all of which are vital to building a robust and sustainable economy.

8 RECOMMENDATIONS:

Recommendations for Future Development

1. Strategic Management of Oil Revenue: Develop a sovereign wealth fund to manage oil revenue effectively, ensuring that surplus funds are invested in sectors that promote economic diversification and long-term sustainability.
2. Promote Trade Expansion: Establish trade agreements and partnerships to open new markets for non-oil exports, enhancing the diversification of export products and destinations.
3. Implement Comprehensive Economic Policies: Formulate and implement policies that address macroeconomic stability, including managing inflation and budget deficits, to create a conducive environment for economic diversification.
4. Support Non-Oil Industries: Provide subsidies and support for emerging industries such as manufacturing, agriculture, and technology, which can reduce the economy's reliance on oil.

REFERENCES

Abdullah, S., & Gray, T. (2022). Political constraints on economic diversification in the Kurdistan Region of Iraq. *Energy Policy*, *171*, 113274.

Alfakih, M. A., & Tabassum, S. R. (2020). The impact of non-oil exports on economic growth in Saudi Arabia. *International Journal of Management and Development Studies*, *9*(1), 24-31.

ALyaseri, I. J. J., & Abbas, M. K. (2022). Iraqi Ability for Economic Diversification and Methods of Avoiding the Rent Trap. *Mathematical Statistician and Engineering Applications*, *71*(4), 2440-2451.

Atasoy, B. S. (2021). The determinants of export sophistication: Does digitalization matter? *International Journal of Finance & Economics*, *26*(4), 5135-5159.

Basodan, H. A. (2023). The Role of Mediators in the Relationship Between Export Diversification and Economic Development.

Brutsaert, D. L., & Sys, S. U. (1989). Relaxation and diastole of the heart. *Physiological reviews*, *69*(4), 1228-1315.

Canh, N. P., & Thanh, S. D. (2022). The dynamics of export diversification, economic complexity and economic growth cycles: Global evidence. *Foreign Trade Review*, *57*(3), 234-260.

Doğan, B., Rao, A., Ferraz, D., Sharma, G. D., & Shahzadi, I. (2023). What do we learn from Nexus between trade diversification and structural change: informing the future about climate action and Sustainability. *Environmental Science and Pollution Research*, *30*(40), 92162-92181.

Gnangnon, S. K. (2020). Effect of the internet on services export diversification. *Journal of Economic Integration*, *35*(3), 519-558.

Hasanov, F. J., Javid, M., & Joutz, F. L. (2022). Saudi non-oil exports before and after COVID-19: Historical impacts of determinants and scenario analysis. *Sustainability*, *14*(4), 2379.

Jiang, G., Alvarado, R., Murshed, M., Tillaguango, B., Toledo, E., Méndez, P., & Isik, C. (2022). Effect of agricultural employment and export diversification index on environmental pollution: building the agenda towards sustainability. *Sustainability*, *14*(2), 677.

Jolo, A. M., Ari, I., & Koç, M. (2022). Driving factors of economic diversification in resource-rich countries via panel data evidence. *Sustainability*, *14*(5), 2797.

Lashitew, A. A., Ross, M. L., & Werker, E. (2021). What drives successful economic diversification in resource-rich countries? *The World Bank Research Observer*, *36*(2), 164-196.

Lee, D., & Zhang, H. (2022). Export diversification in low-income countries and small states: Do country size and income level matter? *Structural Change and Economic Dynamics*, *60*, 250-265.

Li, Y., Chen, B., Chen, G., & Wu, X. (2021). The global oil supply chain: The essential role of non-oil product as revealed by a comparison between physical and virtual oil trade patterns. *Resources, conservation and recycling*, *175*, 105836.

Malik, M. A., & Masood, T. (2020). An Analysis of Economic Diversification of Middle Eastern Countries. *Saudi Journal of Economics and Finance*, *4*(2), 72-76.

Matallah, S. (2020). Economic diversification and governance challenges in MENA oil exporters: A comparative study. The ERF 26th Annual Conference,

Rasheed, M. K., Al-Bairmani, A. M. A., & Al-Hussaini, A. M. J. (2021). The impact of oil exports on consumer imports in the Iraqi economy and COVID-19 period, a theoretical study. *International Journal of Computer Applications in Technology*, *66*(3-4), 246-253.

Semenova, T., & Al-Dirawi, A. (2022). Economic Development of the Iraqi Gas Sector in Conjunction with the Oil Industry. *Energies*, *15*(7), 2306.

Shahzad, U., Lv, Y., Doğan, B., & Xia, W. (2021). Unveiling the heterogeneous impacts of export product diversification on renewable energy consumption: New evidence from G-7 and E-7 countries. *Renewable Energy*, *164*, 1457-1470.

Usman, Z., & Landry, D. (2021). Economic diversification in Africa: How and why it matters. *Available at SSRN 3842228*.