

The Algerian Economy and the Diversification Problem: Analyzing the Impact of the Interaction between Non-hydrocarbon Revenues and Export Concentration on Economic Growth

الاقتصاد الجزائري وإشكالية التنويع: تحليل أثر التفاعل بين الإيرادات خارج المحروقات و تركيز الصادرات على النمو الاقتصادي

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Abstract:

This study aims to measure and analyze the impact of diversification economy indicators on economic growth in Algeria over the period 1996–2024, using the Autoregressive Distributed Lag (ARDL) model. The results indicate the presence of a long-run equilibrium relationship among the variables. The export concentration index on a limited number of products (HHI) recorded a negative impact on long-term economic growth (-83.30).

In contrast, the Non-Hydrocarbon Revenues Index (NHR) showed a long-term negative impact (-14.09), reflecting the absence of a clear strategic framework for the effective allocation of these revenues to productive sectors in the long term, preventing their expected positive impact. Moreover, the interactive index between non-hydrocarbon revenues and export concentration (NHR_HHI) shows a positive impact (26.96) on economic growth, which confirms that the impact of export concentration on non-hydrocarbon GDP is positively moderated by higher levels of non-oil revenues.

Keywords: Non-hydrocarbon Economic Growth; diversification economy; Algeria; ARDL model.

JEL Classification Codes: O11; O40 ; C32.

ملخص:

تهدف هذه الدراسة إلى قياس وتحليل أثر مؤشرات تنويع الاقتصاد على النمو الاقتصادي في الجزائر خلال الفترة 1996–2024، باستخدام نموذج الانحدار الذاتي ذي الفترات الموزعة (ARDL). تشير النتائج إلى وجود علاقة توازن طويلة الأجل بين المتغيرات. سجل مؤشر تركيز الصادرات على عدد محدود من المنتجات (HHI) أثراً سلبياً على النمو الاقتصادي طويل الأجل (-83.30).

في المقابل، أظهر مؤشر الإيرادات غير النفطية (NHR) أثراً سلبياً طويل الأجل (-14.09)، مما يعكس غياب إطار استراتيجي واضح للتخصيص الفعال لهذه الإيرادات للقطاعات الإنتاجية على المدى الطويل، الأمر الذي يحول دون تحقيق أثرها الإيجابي المتوقع. علاوة على ذلك، يُظهر المؤشر التفاعلي بين الإيرادات غير النفطية وتركيز الصادرات (NHR_HHI) أثراً إيجابياً (26.96) على النمو الاقتصادي، مما يؤكد أن أثر تركيز الصادرات على الناتج المحلي الإجمالي غير النفطي يتأثر إيجاباً بارتفاع مستويات الإيرادات غير النفطية.

كلمات مفتاحية: النمو الاقتصادي خارج المحروقات، التنويع الاقتصادي، الجزائر، نموذج ARDL.

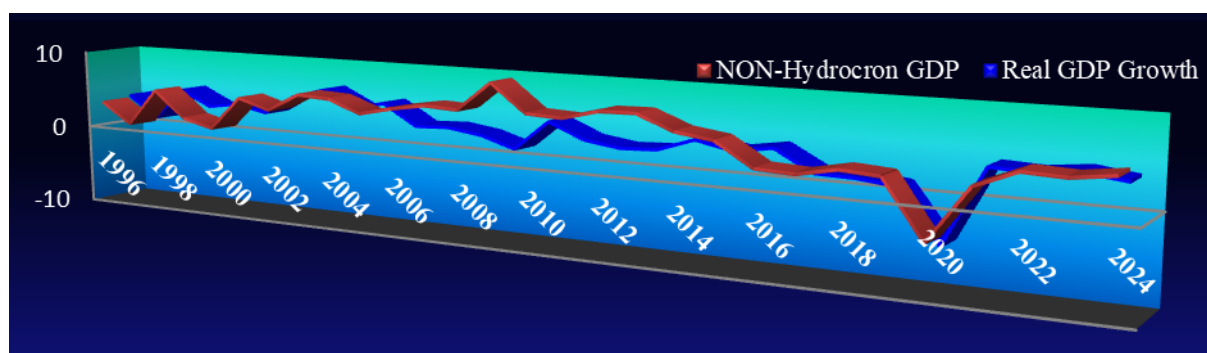
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INTRODUCTION:

Economic diversification and growth have consistently been key subjects in economic research and policy development. As economies change, diversification gains greater significance, allocate resources effectively, facilitate investment, and boost productivity. Moreover, to facilitating the growth of the private sector, it enhances an economy's capacity for inclusive, sustainable growth, ensuring long-term macroeconomic stability and sustainable growth.

Algeria is seeking to expand its production channels beyond the oil sector. Strengthening non-hydrocarbon sectors plays a vital role in this endeavor. Data analysis shows that Algeria's non-oil economy experienced significant fluctuations in the late 1990s, with growth rates ranging from 0.8% in 1997 to 5.5% in 1998. This period then witnessed strong and sustained growth, reaching an exceptional peak of 9.6% in 2009. Economic activity then reached a sharp decline of -3.8% in 2020 due to the COVID-19 crisis. The economy then returned to a strong recovery path, recording growth of 4.4% in 2022 and 4.8% in 2024.

Figure (1): Evolution of the growth rate in Algeria from 1996 to 2024.



Source: Estimated by Author based on the data of the Word Bank database & Bank of Algeria , Available on the following site: <https://openknowledge.worldbank.org/handle/10986/40587> . (Accessed 14 June 2025).

Despite Algeria's adoption of policies aimed at reducing dependence on the hydrocarbon sector and strengthening the national production base, the economy still suffers from a high degree of export concentration and a weak contribution of non-oil revenues to development financing. This reality raises a fundamental question: *To what extent do the determinants of economic diversification contribute to promoting economic growth outside the hydrocarbon sector in Algeria?* To answer the study's problem, we proposed a hypothesis:

There is a positive and significant relationship between some economic diversification indicators and economic growth in Algeria.

The main objective this study seeks to reach is to contribute to the existing literature and address its gap by providing a framework for the empirical assessment of the potential long-term effects of the determinants of economic diversification and non-hydrocarbon economic growth. The period covered extends from 1996 to 2024. The significance of the present study stems from the addressed topic's importance; namely, examining the influence that the various dimensions of diversifying economy have on the growth of economy in the long-run.

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Thus, contributing to the discussion about the sources of economic growth in the country under study. Especially to demonstrate the efficiency of dual policy, which combines to expand the export base and expand non-hydrocarbon revenue, and amplifies its multiplier effects on non-hydrocarbon growth.

The rest of the paper is organized this way: Section Two reviews the relevant literature, Section Three provide a presentation of the empirical application and principal findings, and Section Four concludes the study and offers recommendations.

1- Previous Studies:

The importance of economic diversification has been emphasized as the beating heart and driving force behind economic growth. It promotes job creation through the development of productive industries and sectors, increases non-oil revenues, and improves the balance of payments in any economy. Some studies in the literature support this claim. For instance, in their research, (Smith, S. M., & Gibson, C. M., 1988) addressed how economic stability is influenced by diversifying industry particularly within developing counties. The conclusion they reached is that in an economic diversified setting, the unemployment is less sensitive to cyclical changes unlike the case in a less economic diversified setting. (Hirschman, 1943), provided new ways to measure how concentrated a country's exports are. He also found that the way a country exports things shows how complicated its economy is. He said that new technologies and industrial revolutions change the way trade works over time. According to (Belhia, Y., & MAHCENE, Z., 2019), their study primarily sought to define the influence that diversified export (beyond the oil and gas sector) had on the growth of economy in Algeria withing the period 1980-2016. The research adopted the model of Autonomous Distributed Lag and relied on Pesaran et al. (2001) methodology. The research findings indicated that exports beyond oil and gas sector weakly contributed to the Algerian economy in the period 1980-2016 due to the country's oil revenue dependency. The results also revealed that, over the period of the study, exports beyond oil and gas sector and the growth of the country's economy had a negative relationship between them, and this assured that there was not an effective strategy for economic diversification in Algeria. As well as the study (Belhia, Y., & Tchiko, F., 2021), the main goal of this paper is to look at how economic diversity affects economic growth in Algeria using yearly data from 1970 to 2017. The Autonomous Distributed Lag (ARDL) model was adopted, following the bounds testing approach. The results showed that weak economic diversification is negatively related to economic growth rates in Algeria, reflecting the negative impact of the Algerian economy's reliance on a limited sector of economic activities. Similarly, the research by (Bitat, S., & Djellit, T., 2022) sought to investigate the kind of relationship that exists between diversifying economy and its growth through the panel data model, particularly in these countries: Algeria, Tunisia, Morocco, Egypt, United Arab Emirates, and Saudi Arabia, which constitute oil and non-oil economies. The findings indicated that the most suitable model for assessing that relationship was the fixed effects model. The results revealed that there was a positive association between economic diversification and its growth, with the services sector exerting a stronger impact than the industrial and agricultural sectors. However, the cointegration analysis indicated that there is a lack in long-term relationship among the model's

included variables. (Senouci Bereksi, I., and others, 2024) study seeks to provide a realistic picture on the Algerian strategy of diversifying economy with emphasis on this diversification path from 2008 until 2020. This research is based on the index of Herfindahl-Hirschman of measuring national economic diversification degree, which relies on macroeconomic indicators reflecting economic performance. In its conclusion, the study revealed that although the country made significant efforts for the diversification of the national economy, it still suffers from sectoral concentration. In an additional study, (Kourtel,N and others, 2024), examined how efforts to diversify the economy influenced Algeria's economic growth between 1990 and 2021. Using empirical analysis, it explored the relationship between diversification and growth. The findings revealed that diversification negatively affected growth, as the country remained heavily reliant on oil revenues, showed weak performance in key productive sectors, particularly industry, and struggled to create significant added value.

(Djanane, A., & Hireche, Z. , 2024), Emphasizes the urgent need for economic diversification in developing countries like Algeria, driven by key sectors, but concludes that the country remains a rentier state. This persistence is attributed to the long-term failure of development policies to effectively reduce the economy's entrenched dependence on the hydrocarbon sector. Furthermore, despite the focus afforded to the private sector within the framework of economic reforms, its position and contribution to driving development remain significantly limited. (Zahrani, Mashaël & Shaheen, Rozina, 2025) research analyses the effect that diversifying economy has on Saudi Arabian economy growth from 2000 to 2023 , The findings reveal that there is a positive and significant effect of fuel exports, total exports, and capital formation across all three GDP categories. Conversely, export diversification shows a significant negative relationship with oil GDP, while exerting a significant positive effect on non-oil GDP. Moreover, enhancements in human capital contribute positively to all GDP categories along with a strong influence on non-oil GDP. (Olisemeka & Ezenekwe, 2025). their study sought to investigate the effect that economic diversification has on economic growth and employment in Nigeria over the period between 1970 and 2022. The Augmented Dickey-Fuller (ADF) unit root test confirmed the stationarity of all variables examined. Johansen cointegration analysis indicated a long-term equilibrium relationship among the variables. Findings from the Two-Stage Least Squares (2SLS) regression showed that economic diversification had a statistically significant yet marginal positive impact on employment, while its effect on economic growth was negligible.

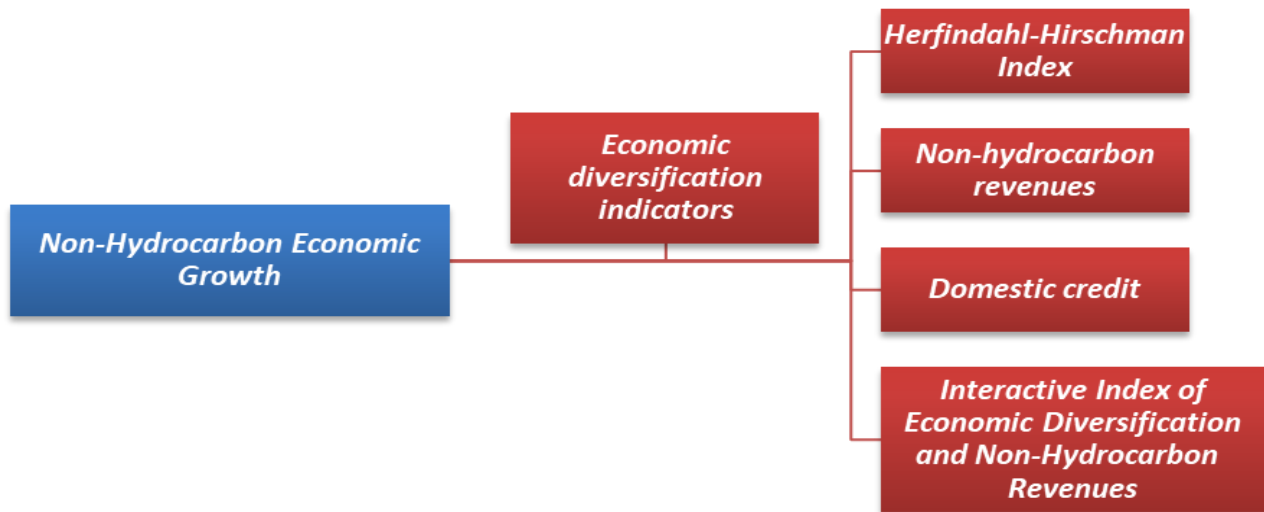
2- Empirical Framework of the Study:

2-1 Empirical Model

For the estimation of the economic models, we relied on the 9.0 version of EViews software, and our analyses were accomplished using ARDL method. This latter represents a technique for the estimation of long and short term dynamics of the studied model at the same time, and within time series that are stationary at $I(0)$ or even integrated of order $I(1)$. The mixed time series between non-stationary and stationary may be included within the variables, of the ARDL Bounds testing approach suggested by (PESARAN, M. Hashem., 1997), (Pesaran, M.

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Hashem, and others, 2001). ARDL model was used to examine the relationships between NHGDP, HHI, NHR, NHR*HHI and DC.



☞ The Model Analysais

The above figure represents the influence that diversifying economy (represented by macro indicators) has on the growth of economy outside hydrocarbon:

The model specified in equation 1 is used to express the relationship between variables:

$$NHGDP = f(HHI, NHR, NHR*HHI, DC) \dots\dots\dots(1)$$

The mathematical representation of an ARDL regression model is:

$$LN_NHGDP_{(t)} = \beta_{(0i)} + +\beta_{(1)} HHI_{(it)} + \beta_{(2)} LNNHR_{(it)} + \beta_{(3)} LNNHR_HHI_{(it)} + \beta_{(4)} LNDC_{it} + \mu_{(t)}\dots\dots\dots(2)$$

Where:

$\beta_{(0)}$ Represent the intercept of the function or we can say the constant, and μ is a random (disturbance) term. Then β_1 ; β_2 ; β_3 ; β_4 are parameters to be estimated.

The definitions of variables are presented in Table.

Table (1) : Variables definitions.

Variable	Notation	Data source	Unit
Non -hydrocarbon economic growth	NHGDP	Bank of Algeria (2024)	(In percent, unless otherwise indicated)
Export Concentration Index	HHI	Unctad (2025)	(Herfindahl-Hirschman index of export concentration (reflects diversification, where a higher value means less concentration of diversification))

Non- hydrocarbon revenues	NHR	Bank of Algeria (2024)& ONS (2025)	(Share of non- hydrocarbon revenues as a percentage of total public revenues)
An interactive variable representing the product of LNNHR and HHI	NHR*HHI	Computed By the author	(In percent)
Domestic credit to private sector (% of GDP)	DC	World Bank (2025)	as a percentage of Gross Domestic Product

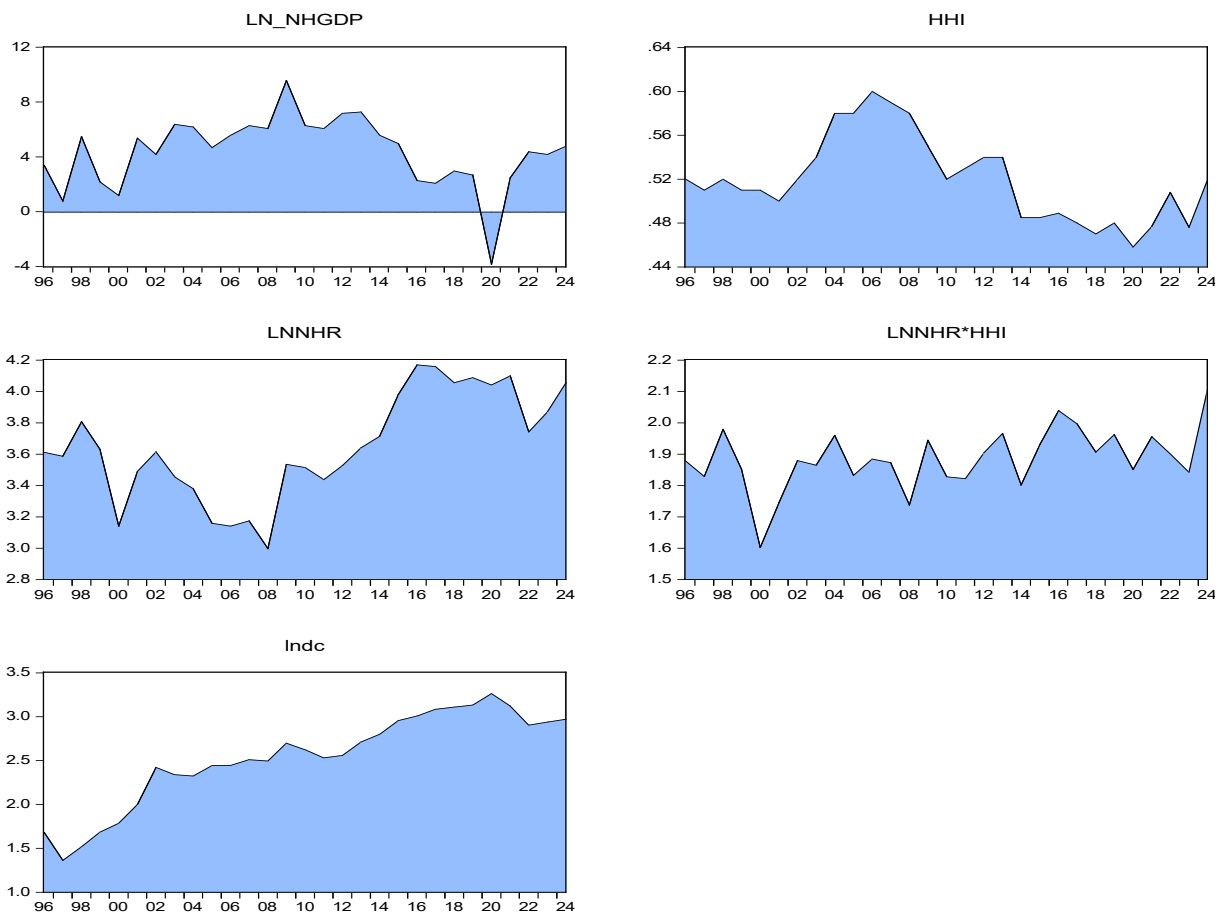
Source: Produced by the author.

2-2 Analysis of Key Statistical Indicators of Central Tendency and Variation

a) Pre-estimation Analysis

Prior to estimation, time-series plots of the variables under investigation are generated, descriptive statistics are presented, unit root tests are conducted, and cointegration analysis applied. In the following figures, the study's variables historical performance is represented in line graphs.

Figure (2): The Variables used in This Work



Source: Produced by the author using the Eviews software.

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a) Descriptive Analysis of Variables

In what follows, the descriptive statistics of the dataset are reported; the variables of interest' mean and median values represent the estimation of the distribution central tendency: The following table presents values of: mean, median, and standard deviation of the variables over the period from 1996 to 2024.

Table (2) : Descriptive Statistics

	obs.	Mean	Median	Maximum	Minimum	Std. Dev.
LN_NHGDP	29	1.416812	1.589027	2.261763	-0.223144	0.570043
HHI	29	0.521786	0.520000	0.600000	0.470000	0.037491
LNNHR	29	3.634583	3.612537	4.169761	2.995732	0.338523
LNNHR_HHI	29	1.886491	1.881630	2.110533	1.601756	0.100171
LNDC	29	2.505291	2.544410	3.131699	1.362877	0.514817

Source: Produced by the author using the Eviews software.

a) Analysis of Correlation

In the following, we present Analysis of Correlation of the variables for two models over the period 1980-2009.

Table (3) : Correlation matrix for the variables of interest

Correlation	LN_NHGDP	HHI	LNNHR	LNNHR_HHI	LNDC
LN_NHGDP	1.000000				
HHI	0.486336	1.000000			
LNNHR	-0.280860	-0.815677	1.000000		
LNNHR_HHI	0.156235	-0.124475	0.671685	1.000000	
LNDC	0.257443	-0.278748	0.500219	0.452034	1.000000

Source: Produced by the author using the Eviews software.

The previously presented results indicate that most correlation coefficients range from moderate to strong. Particularly, a strong negative relationship is observed between the export concentration index (HHI) and non-hydrocarbon revenues (LNNHR), with a correlation coefficient of -0.815677. In contrast, the remaining variables exhibit positive correlations with the growth rate of non-hydrocarbon GDP. Except for the variable (LNNHR) has negative correlation with the NHGDP.

Prior to reporting the empirical ARDL model results, a series of econometric procedures related to the stationary and non-stationary tests are applied on time-series data using the 1979 Augmented Dickey-Fuller (ADF). (Dickey, David A., & Wayne A. Fuller, 1979) Test. The following table (4) reports ADF test results for the time series variables:

Table (4):Unit root test

<i>At Level</i>						
	VAR	<i>LN_NHGDP</i>	<i>HHI</i>	<i>LNNHR</i>	<i>LNNHR_HHI</i>	<i>LNDC</i>
<i>Model 1</i>	<i>prob.</i>	(0.0176)**	(0.5145) ^{NO}	(0.1368) ^{NO}	(0.0058)***	(0.0001)***
<i>Model 2</i>	<i>prob.</i>	(0.0654)*	(0.7233) ^{NO}	(0.3870) ^{NO}	(0.0028)***	(0.0002)***
<i>Model 3</i>	<i>prob.</i>	(0.2840) ^{NO}	(0.6372) ^{NO}	(0.2764) ^{NO}	(0.0307)**	(0.0000)***
<i>At First Difference</i>						
<i>Model 1</i>	<i>prob.</i>	(0.0000)***	(0.0005)***	(0.0001)***	-	-
<i>Model 2</i>	<i>prob.</i>	(0.0000)***	(0.0032)***	(0.0008)***	-	-
<i>Model 3</i>	<i>prob.</i>	(0.0000)***	(0.0000)***	(0.0000)***	-	-
Order of integration		I(1)	I(1)	I(1)	I(0)	I(0)

Source: Produced by the author using the Eviews software. (***) significant at the 1%,(**) significant at the 5%,(*) significant at the 10%.(no) Not significant.

The results reported above show that the variables *LNNHR_HHI* and *LNDC* are stationary at level, as the ADF test probability values are below 5%. Thus, this leads us to rejecting the null hypothesis and accepting the alternative one, meaning that both series do not contain a unit root. In contrast, the other variables *LN_NHGDP*, *HHI*, and *LNNHR* become stationary after taking the first difference in the two models.

The ARDL model is used to obtain reliable results for better explaining the relationship that exists between the Algerian economy growth and the diversified economy main factors. This model is suitable since it allows the inclusion of variables that are stationary at level *I(0)* as well as the first difference *I(1)*. Additionally, it fits from one hand the nature of the variables stability, and from another hand the objective of the study, which is to examine whether the relationship between the main factors of diversified economy and the growth of economy exists in the short-run, long-run, or both.

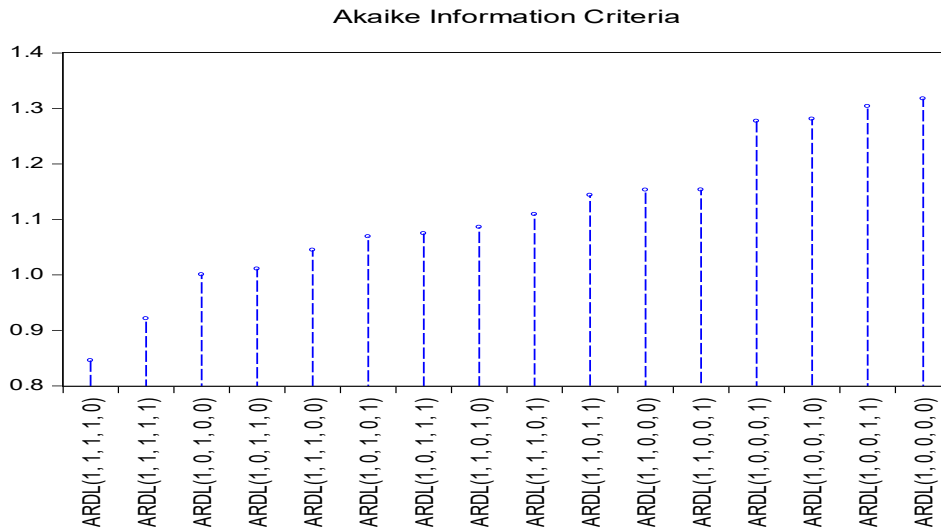
2-3-2 ARDL model

a) Test the model's optimum idle intervals

Figure (4) shows the sum of the possible models when changing the degrees of the model variables' slowdowns, By assigning a degree of (1) according to the statistics (Akaike Information Criteria), Thus, it becomes clear that the ARDL (1,1,1,1,0) model is the optimal model and takes the lowest value according to the (AIC) statistic.

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Figure (3): Results of the Optimum Deceleration Intervals Test.



b) ARDL Bounds test estimation results

This test ARDL Bounds cointegration test is applied to identify whether a long-term relationship exists between the independent variable, namely economic diversification and the dependent variable, namely non-hydrocarbon economic growth. This test results (Pesaran, M. Hashem, and others, 2001) are reported in the following Table 5.

Table (5): ARDL co-integration bound testing approach result

ARDL Bounds Test	OptimumLag Length		F-statistic
Variables : LN_NHGDP, HHI, LNNHR, LNNHR_HHI, LNDC	(1, 1, 1, 1, 0)		9.431813
Significance	Critical Value Bounds		
	I0 Bound	I1 Bound	
10%	2.45	3.52	
5%	2.86	4.01	
2.5%	3.25	4.49	
1%	3.74	5.06	

Source: author work based on the Outcome of E-views version.09

The conclusion drawn from the empirical results is that a relationship exists between economic growth and the factors explaining economic diversification during the study period 1996-2024. At all the significance levels, the calculated F-statistic value (9.431813) exceeded the upper bound I(1) critical values, which confirms that there is co-integration. Therefore, the null hypothesis is rejected. The analysis then proceeds to examine how the diversification variables affect the growth of the economy.

c) Short-run relationship: ECM estimates

The relationship at the short-term level among the present study variables is studied here for the measurement of adjustment speed. For this purpose, the model ECM-ARDL was applied, and this revealed the findings represented in table 6.

Table (6) : Short-run relationship ARDL model.

<i>Cointegrating Form</i>				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(HHI)	-56.019829	28.678026	-1.953406	0.0674
D(LNNHR)	-9.072846	4.257956	-2.130799	0.0480
D(LNNHR_HHI)	18.669097	8.097260	2.305607	0.0340
D(LNDC)	1.264358	0.243560	5.191164	0.0001
CointEq(-1)	-1.444431	0.181724	-7.948483	0.0000
Cointeq = LN_NHGDP - (-83.3092*HHI -14.0997*LNNHR + 26.9624				
*LNNHR_HHI + 0.8753*LNDC + 43.0556)				

Source: author work based on the Outcome of E-views version.09

The existence of a long-term relationship was proven among the study variables through estimation findings, as the error correction coefficient is negative and statistically significant. This indicates adjustment towards long-term equilibrium. The error correction coefficient (CointEq (-1) = -1.444431) is significant at the 5% level, showing that deviations caused by shocks or instability in Algeria are corrected at an adjustment speed of approximately 144,4% in the subsequent period.

b) Long-run relationship: ARDL estimates

Because co-integration is present between the variables, the long-term relationships can be estimated. The table below present this.

Table (7): Long-run relationship: ARDL estimates.

<i>Long Run Coefficients</i>				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
HHI	-83.309195	18.843676	-4.421069	0.0004
LNNHR	-14.099691	2.862427	-4.925783	0.0001
LNNHR_HHI	26.962357	5.723562	4.710766	0.0002
LNDC	0.875333	0.127160	6.883718	0.0000
C	43.055638	9.474977	4.544142	0.0003

Source: author work based on the Outcome of E-views version.09

Table.7 presents long-run estimation results, showing a Fisher probability of 0.000 that means good model quality and strong explanatory power of the independent variables for the

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dependent variable representing economic growth at (0.790363). Additionally, all variables have probability values below 5%, which confirms that economic diversification has a significant effect on non-hydrocarbon GDP in the long-term.

2-3-3. Validity test of the model

the variables significance and other diagnostic tests such as serial correlation, functional form, heteroscedasticity and normality of the model are tested for checking the ARDL models estimations. According to the diagnostic test findings, autocorrelation is absent. Additionally, the distribution of error is normal according to the normality test of the model. The adjusted R bar shows that around 79,03 % of the variation in GDP is explained by the regressors in both models.

Table (8): Diagnostics tests

Heteroskedasticity Test: Breusch-Pagan-Godfrey				Inference
F-statistic	1.652708	Prob. F(10,13)	0.1957	No heteroskedasticity
Obs*R-squared	13.43343	Prob. Chi-Square(10)	0.2004	
Scaled explained SS	2.665496	Prob. Chi-Square(10)	0.9882	
Heteroskedasticity Test : Glejser				
F-statistic	2.281777	Prob. F(10,13)	0.0825	
Obs*R-squared	15.28924	Prob. Chi-Square(10)	0.1219	
Scaled explained SS	8.028907	Prob. Chi-Square(10)	0.6260	
Heteroskedasticity Test : ARCH				
F-statistic	0.128045	Prob. F(1,20)	0.7242	
Obs*R-squared	0.139953	Prob. Chi-Square(1)	0.7083	
Test of Normality				The residuals have a standard distribution
Jarque-Bera	0,669965	Probability	0,715351	
Breusch-Godfrey Serial Correlation LM Test				
F-statistic	0.780530	Prob. F(1,12)	0.9659	No autocorrélation
Obs*R-squared	2.314330	Prob.Chi-Square(1)	0.9507	

Source: Produced by the author using the Eviews software.

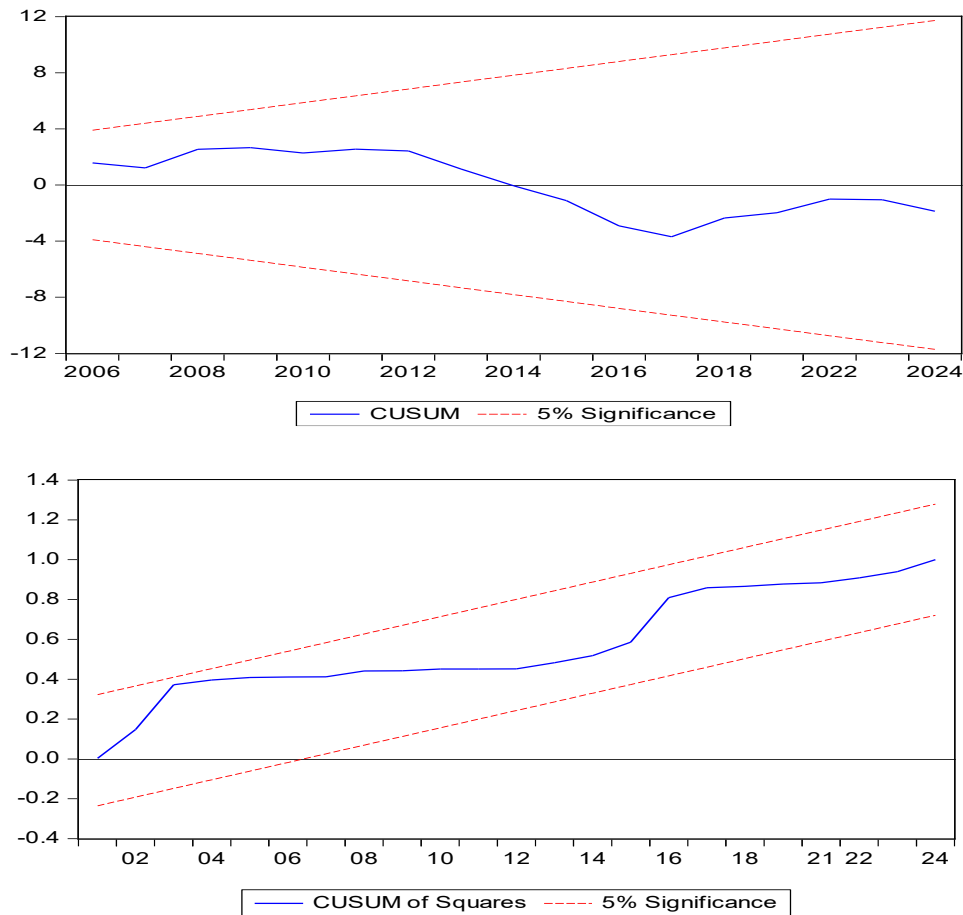
2-3-4 structural stability test results for the estimated ARDL model

Lastly, the study applied the cumulative sum (CUSUM) and cumulative sum squares (CUSUMSQ) tests suggested by (Brown, R. L., and others, 1975) for checking the robustness of the estimated models and the reliability of both the long-term and short-term coefficients.

The estimated parameters in the format of UECM of ARDL model are considered structurally stable when the CUSUM and CUSUMSQ statistics are within the 5% critical bounds. Figure 5 presents the results of the CUSUM and CUSUMSQ stability tests, which indicate that all specified models are stable at the 5% significance level, as the test lines stay

within the required limits. This confirms the robustness of the models and shows that both the short-term and long-term coefficients remain stable throughout the sample period from 1996 to 2024.

Figure (5): Plot of CUSUM and CUSUMSQ (Stability Test).



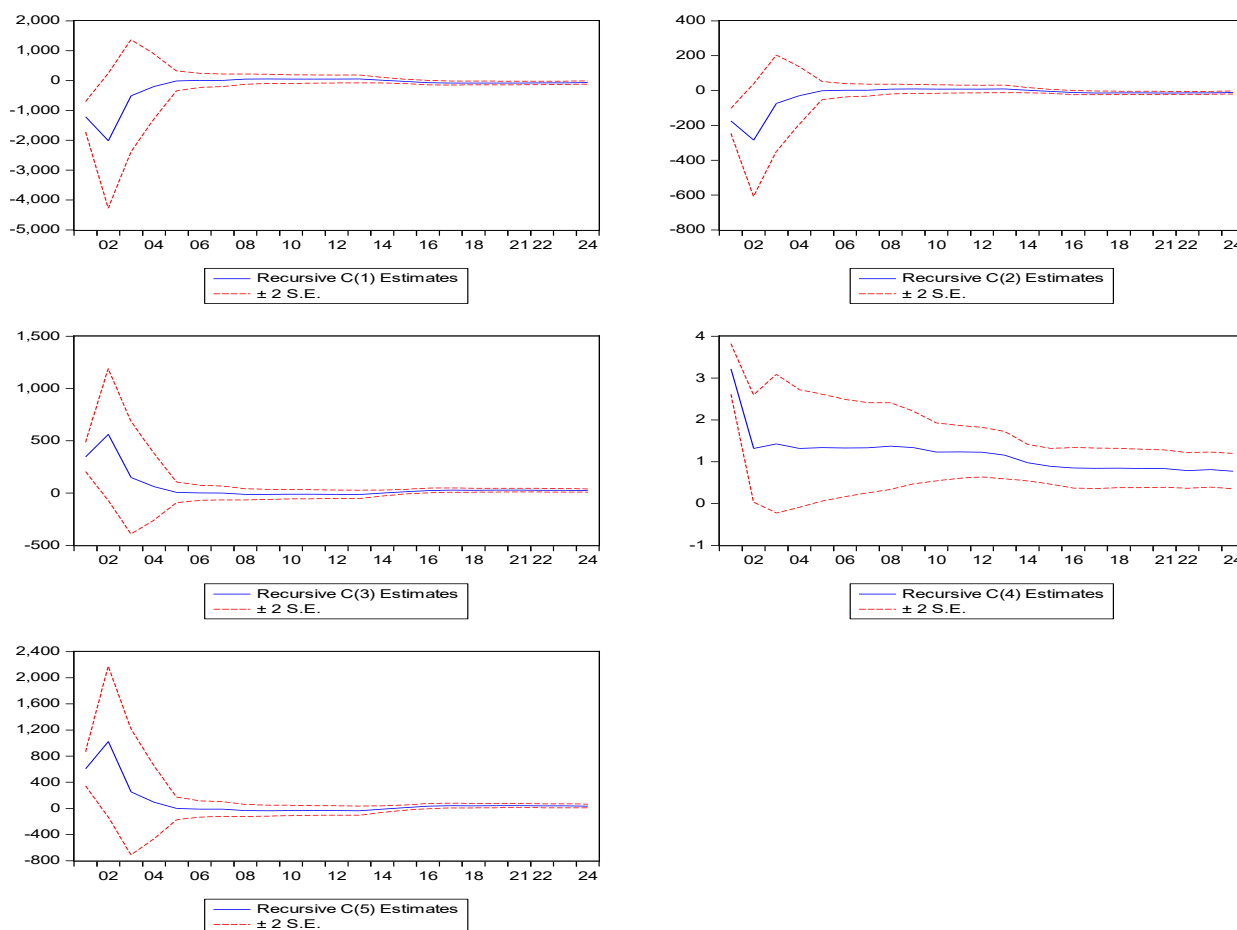
Source: Produced by the author using the Eviews software.

2-3-5 Parameter Stability via Recursive Estimates

To check whether the estimated relationships between economic diversification and economic growth outside the hydrocarbon sector in Algeria during the period 1996–2024 are constant and stable over the study period, or whether they have undergone structural changes, parameter stability tests are used. The most prominent test used in this study is the recursive estimates test (Brown, R. L., and others, 1975, p. 153) It aims to verify the null hypothesis (H_0), which states that the model parameters are constant and stable.

Figure (6):plot of Recursive Estimates

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Source: Produced by the author using the Eviews software.

The recursive coefficient plots show initial fluctuations due to a small sample, but from 2006 onward, all estimates stabilize within the ± 2 standard error bands. This indicates that the model's parameters are statistically stable over time, with no evidence of structural breaks. This proves that the estimation regarding the link that exists between diversifying the Algerian economy and its growth beyond oil and gas.

Conclusion:

The present study examines whether the key macroeconomic indicators role is valid, particularly the interactive index of economic diversification and non-hydrocarbon revenues, in enhancing economic growth, covering the period from 1996 to 2024. The researcher applied the model of ARDL to identify what is the impact that diversifying economy has on its growth.

The Fisher probability of 0.000 showed a positive outcome, and this revealed the model quality and the independent variables ability:

the export concentration index (HHI), non-hydrocarbon revenues (NHR), the interactive variable between non-hydrocarbon revenues and export concentration (NHR*HHI), and

domestic credit directed to the private sector (DC) to explain the dependent variable, non-hydrocarbon economic growth (NHGDP).

The error correction coefficient also appeared to us with a negative value of -1.444431 and is statistically significant at 1%. This means that, between the variables, there actually is a relationship of long-run equilibrium. As a conclusion, the paper indicated that at the 1% & 5% level, there is a negative and significant impact of the export concentration index (HHI) on Algeria's non-hydrocarbon economic growth. (-56.01) & (-83.30) in both the short and long run, respectively. This explains why overreliance on a small number of exports limits the long-term growth and development of non-hydrocarbon sectors. This finding strongly supports the economic argument that economic diversification is crucial for achieving sustainable growth and relieving the risks associated with dependence on a single sector, particularly in rentier economies.

Non-hydrocarbon revenues or the variable (NHR) had had a negative correlation with non-hydrocarbon economic growth, measuring (-14.09) over the long term and (-9.07) over the short term (with a two-year lag). This result may indicate that these revenues are not being used effectively to promote growth, or it may reflect the absence of a clear strategy to employ these revenues in productive sectors, which prevents their expected positive impact.

Moreover, the results showed that there is a positive impact (0.87) of the variable (DC) on the Algeria economy in that period at the 1% level. This result is consistent with theoretical and practical studies that discussed the potential impact of one of the macroeconomic indicators, namely domestic credit directed to the private sector, as triggers to economic growth.

Lastly, the interactive variable (NHR*HHI) & Non-hydrocarbon GDP growth in Algeria have a negative relationship that is statistically significant according to this study estimation findings. This explains why higher levels of non-hydrocarbon revenues positively moderate the effect of export concentration on non-hydrocarbon GDP growth.

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