

The Problem of Promoting Exports outside the Hydrocarbon Sector in Algeria: a Standard Analysis

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Received: 28/05/2024; **Accepted:** 30/06/2024; **Published:** 15/07/2024

Abstract: The study aimed to investigate the impact of exports outside the hydrocarbon during the period 1990-2020, it examined the cointegration relationship between exports outside the hydrocarbon sector and economic growth. Furthermore, using the Granger causality methodology, the study found no causal relationship between the variables. The possible explanation for the absence of a causal relationship and the failure to estimate an error correction model lies in the weak dynamics of production activity outside hydrocarbons, the lag in the business environment, and the investment attractiveness for the national economy. This calls for clearer mechanisms to enhance non-hydrocarbon exports and to strengthen the national industrial base by producing and exporting.

Keywords: Exports outside the hydrocarbon; Cointegration; Causality; ARDL.

Jel Classification Codes : F10, C4, C40.

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Introduction:

Exporting holds significant importance for the Algerian economy. It serves as a crucial factor in stimulating internal factors within the national economy to enhance its efficiency. Additionally, exporting plays a role in achieving external balance by providing foreign exchange, which is one of the primary factors in alleviating concerns regarding the national economy's ability to pay.

The importance of exports should not be limited to primary materials alone. According to the principle of comparative advantage, natural resources, particularly hydrocarbon exports, have dominated Algeria's total exports. However, this dominance has not provided greater opportunities to break out of the cycle of slow development. This is because hydrocarbon exports are susceptible to price and quantity instability, which in turn affects the stability of income derived from them. This undermines their ability to succeed and drive the economic development process.

This imbalance manifests in the advanced countries' ability to exploit Algeria. This necessitates pursuing a more balanced development approach through economic reconstruction, sector diversification, and enhancing economic relationships to position Algeria as a competitive player on the global stage.

The problem of the study:

The research paper attempts to answer the following question: **To what extent do n-hydrocarbon exports contribute to enhancing economic growth in Algeria?**

I- Theoretical Framework of the Study:

I.1. Dynamics of Algerian Foreign Trade Liberalization:

After adopting a market economy and liberalizing its for-trad, Algeria worked on enhancing its national industry and improving the environment for exports outside of hydrocarbons by introducing a comprehensive system of export incentives, this was followed by the issuance of Executive Decree No. 91-371 ([Official Gazette of the Algerian Republic, Issue 12,1991](#)), which introduced the principle of effective liberalization of for-trad. Henceforth, every public or private institution, and every natural or legal person engaged in wholesale trad and registered in the commercial register, could conduct for-trad operations regardless of the type of imported goods. However, this excluded goods of wide consumption, which still required registration on the list of trad administration conditions.

I.2. Promotion of Non-Oil Exports:

In an attempt to overcome dependency on oil exports and build a real economy, and in response to the structural adjustment program, which added other considerations to Alg for-trad, efforts were directed towards encouraging national industries to support their competitiveness. This was done through a strategic framework aimed

at identifying various obstacles facing exporters and subsequently translating them into financial, tax, and customs facilitations.

In the field of financial facilitations, banking laws and legislation provided advantages for exporters. Law No. 90-02, dated September 1990, allowed exporters to dispose of part or all of the amounts received in hard currency when exporting non-ol products. With the establishment of an interbank exchange market in Algeria, it was tasked with covering the ongoing operations of banks and their clients, primarily related to refinancing and providing advances based on the proceeds from non-ol and mining exports (Nashashibi and all, 1998, p112). Furthermore, support is provided to exporters for certain products. Dates, The authorities have also recognized the importance of establishing a new institutional framework to promote n-hydrocarbon exports. This framework works to provide support and assistance to export sectors and oversees the government's policy in diversifying exports. To this end, several specialized bodies have been established, including those that existed previously but had their responsibilities reorganized, such as the Ministry of Trad. Others were newly created by the government, such as the Alg Chamber of Commerce and Industry (CACI), the Alg Company for Fairs and Exhibitions (SAFEX), the National Agency for the Promotion of For-Trad, the Alg Company for Expot Insurance and Guarantee, and the National Consultative Council for Export Promotion.

I.3. Analysis of the development of the value of exports outside of hydrocarbons

Regarding Algerian non-oil exports, despite efforts to reduce dependence on the hydrocarbon sector, the achieved percentage in 1996 "table 01" can be attributed to the development of exports, especially food exports, to Russia as part of external debt repayment. However, it declined in 1997 and 1998, reaching 29,516 million Alg dinars and 21,005 million Alg dinars, respectively, due to Algerian goods losing their competitive advantage. It then rose in 1999, reaching 29,343 million Alg dinars, and by 2008, it reached 124,994 million Alg dinars. This increase is attributed to exports of semi-manufactured products, which amounted to 89,308 million Algerian dinars, and raw products at 21,542 million Alg dinars. Additionally, there was a slight decline in 2003 (10.38%) compared to 2002, primarily due to the tension in the Middle East region during the invasion of Iraq, which led many Algerian exporting companies, such as "Sonacom," to halt their exports there (Barag and Abila, 2006, p. 128).

There was also a sharp decline in 2009 (43.72%) compared to 2008 as a result of the repercussions of the global financial crisis, which did not provide greater opportunities for Alg products to penetrate foreign markets. However, there was improvement in the following year (113,981 million Alg dinars), and in 2013, it reached 159,899 million Alg dinars, accounting for 3.10% of total exports.

This is regarding total non-ol exports. As for their commodity composition, the analysis is as follows:

I.3.1. Analysis of Semi-Manufactured Product Exports

Non-ol exports primarily rely on semi-manufactured products. They rank first in terms of their contribution to the total national exports, averaging 2.23% for the period 1990-2014. The most significant products in this category are ols and their derivatives, Semi-manufactured products have experienced a recovery in their value, jumping from 1,891 million Alg dinars in 1990 to 189,278 million Alg dinars in 2014.

I.3.2. Analysis of the development of food exports

The data from the table also indicates a tripling of food exports in 2010 (23,405 million Alg dinars) compared to 8,133 million Alg dinars in 2009. then reaching 31,921 million Algerian dinars in 2013. However, they declined in 2014, and among the reasons for this decline was the revitalization of the agriculture sector as part of the agricultural and rural renewal program starting from 2008. However, they decreased by 18.49% in 2014 to reach 26,018 million Alg dinars.

I.3.3. Development of exports of raw materials, processing goods and non-food consumer goods

As for exports of raw materials, we find their percentage in total national exports ranging between 0.16% as a minimum and 0.44% as a maximum. As for exports of processing goods (agricultural

and industrial), their combined percentage to total exports was between 0.041% and 0.69%. This explains the inability of national products to compete with their foreign counterparts, and with regard to exports of non-food consumer goods, their percentages ranged between 0.02% and 1.16% (in 1996, the equivalent of 8539 MAD) of the total volume of exports.

I.3.4 The 2014 Oil Crisis and its Implications on Non-Oil Exports

The development of Alg non-ol exports after the 2014 ol crisis can be traced through the following table:

Table (01): Development of Algerian Non-Oil Exports for the Period 2014-2019

Unit: Million US Dollars

Year	2014	2015	2016	2017	2018	2019
Value	2810	2057	1781	1367	2216	3068

Source: Tripartite Statistical Bulletin No. 29, 41, 49: Bank of Algeria

I.3.5 Evaluation of the Structure of Algerian Exports

Alg expots are characterized by their primary nature and commodity concentration, which makes non-fuel exports marginal. Fuel exports accounted for 96.64% of total national exports, which is almost the same as the value of its commodity concentration degree according to the "Hirschman" index shown in the following table, Which is calculated according to the following mathematical relationship:

$$H = \frac{\sqrt{\sum_{i=1}^I \left(\frac{X_i}{X}\right)^2} - \sqrt{1/I}}{1 - \sqrt{1/I}}$$

X_i : export value of commodity I , X : total exports, I : total number of exports that can be exported.

Table No. (02): Commodity Concentration Index of Algerian Exports
1990-2020

Year	Concentration Index	Year	Concentration Index	Year	Concentration Index	Year	Concentration Index	Year	Concentration Index
1990	0,9381	1997	0,9416	2004	0,9613	2011	0,9554	2018	0,9469
1991	0,9505	1998	0,9444	2005	0,9686	2012	0,9544	2019	0,9424
1992	0,9340	1999	0,9440	2006	0,9654	2013	0,9478	2020	0,9150
1993	0,9240	2000	0,9558	2007	0,9648	2014	0,9548		
1994	0,9453	2001	0,9463	2008	0,9613	2015	0,9427		
1995	0,9209	2002	0,9382	2009	0,9624	2016	0,9411		
1996	0,8956	2003	0,9565	2010	0,9574	2017	0,9460		

Source: Prepared by the researchers

What can be observed from the results of the concentration index applied to the structure of Alg exports is that it has maintained its high level within the range of 0.9472 as an average for the period 1990-2013.

II– Methodology:

II.1.The Role of Economic Measurement in Interpreting the Relationship between Exports and Economic Growth

In the study conducted by researcher Emery (1967), he relied on data from 50 developing countries for the period from 1953 to

1963. Through this study, he attempted to analyze the impact of changes in exports on changes in the gross national product (GNP). He concluded that exports lead to an increase in economic growth, suggesting the necessity of adopting an export-oriented development policy.

In the study conducted by Tayler (1981), he attempted to test the same hypothesis that enhances the overall productivity of production factors in a sample of 55 developing countries for the period from 1960 to 1977. Using a standard production function model for cross-sectional data including exports as an explanatory variable for GDP, the results confirmed that both capital formation and exports play an active role in GDP. When total exports were replaced with manufacturing exports, the coefficient of determination increased, indicating that manufacturing exports play a big role in explaining industrial growth. In other words, the relationship between economic and export growth becomes clearer with an increase in manufacturing exports.

In the study by Merza (2007) on Kuwait during the period 1970-2004, the relationship between two variables, namely oil and non-oil exports, and economic growth was examined. The researcher employed a range of standard methods such as data stationarity tests, causality tests, cointegration analysis, and error correction models. The results revealed a bidirectional causal relationship between oil

exports and economic growth, and a unidirectional causal relationship between the two. **(Kasim H. Sarah J, 2014, P11).**

In the study of Bouchenafa Redha **(Bouchnafa, 2015)** aimed to estimate the impact of n-hydrocarbon exports on economic growth in Algeria for the period of 1990-2013. It was found that there is no common integration relationship between the two in Algeria under trade liberalization.

II.2.The impact of n-hydrocarbon exports on economic growth in Algeria: A standard study for the period 1990-2020.

We will begin by discussing the standard methodology of the study, then we will review the most important findings reached by the study.

II.2.1.Standard modeling :

The methodology of the standard applied framework is based on the following basic steps: testing the unit root of time series to determine their stability, then testing the cointegration between variables for the proposed models, and if the conditions for testing the cointegration relationship are met, an Error Correction Model (ECM) will be estimated using the ARDL approach. Testing for cointegration using the bounds test involves estimating an Unrestricted Error Correction Model (U.E.C.M), through which we can estimate the parameters of our model for both the short and long term in one equation, and the formulation is as follows:

$$\Delta GDP_t = \alpha_{00} + \sum_{i=1}^n \alpha_{0i} \Delta GDP_{t-i} + \sum_{i=0}^n \alpha_{1i} \Delta EXhoil_{1t-i} + \lambda_0 GDP_{t-1} + \lambda_1 EXhoil_{1t-1} + \varepsilon_t$$

where:

GDP: Raw domestic product, which expresses economic growth.

Exhoil: The volume of exports outside of hydrocarbons.

The length of the delay periods (delays) of the model can also be determined using the (AIC) and (SC) criteria by taking the length of the period during which the value of each of the two criteria decreases. And estimating the Unrestricted Error Correction Model (U.E.C.M), the long-run impact coefficient of an independent variable can be derived using the following method:

$$\left(-\left(\frac{\alpha_{00}}{\lambda_0} \right), -\left(\frac{\lambda_1}{\lambda_0} \right), -\left(\frac{\lambda_2}{\lambda_0} \right) \right)$$

And thus, the long-term model can be formulated as follows:

$$GDP_t = a_0 + a_1 EXhoil_{1t} +$$

Knowing that:

$$a_0 = -\left(\frac{\alpha_{00}}{\lambda_0} \right), a_1 = \left(\frac{\lambda_1}{\lambda_0} \right),$$

Furthermore, hypothesis testing for the absence of cointegration between the variables of the model can be conducted by examining the significance of the coefficients of the lagged variables in the Unrestricted Error Correction Model (U.E.C.M). If the computed value of the (F) statistic exceeds the critical value, the

alternative hypothesis of the presence of cointegration between the study variables can be accepted. The results are as follows:

Table (03): Results of cointegration testing for the model of the impact of non-hydrocarbon exports on economic growth in Algeria for the period (1990-2019)

ARDL Bounds Test		
Sample: 1991 2019		
Included observations: 29		
Null Hypothesis: No long-run relationships exist		
Test Statistic	Value	k
F-statistic	3.223036	1
Critical Value Bounds		
Significance	I0 Bound	I1 Bound
10%	4.04	4.78
5%	4.94	5.73
2.5%	5.77	6.68
1%	6.84	7.84

Source: Prepared by the researcher, based on the outputs of the Eviews9 program

From the results presented in Table (3) above, and by comparing the computed statistical (**F**) value with the critical value from the table, we observe that the value (3.22) is statistically insignificant and is lower than the critical value at various significance levels. This indicates the absence of cointegration between economic growth and n-hydrocarbon exports in Algeria during the period (1990-2019). Therefore, it is not possible to draw conclusions regarding the estimation of the Unrestricted Error Correction Model (U.E.C.M) between the two variables in both short and long terms. The lack of cointegration between the variables necessitates further investigation into the causal relationship between them.

II.2.2 Causality Test Results:

To verify whether n-hydrocarbon exports cause economic growth in Algeria during the study period, the Grangerr caussality test was utilized. The results are illustrated in Table (04).

Table (04): Causality Test Results

Pairwise Granger Causality Tests			
Sample: 1990 2020			
Lags: 9			
Null Hypothesis:	Obs	F-Statistic	Prob.
EXPHH does not Granger Cause GDP	21	0.67293	0.7231
GDP does not Granger Cause EXPHH		5.05785	0.1759

Source: Prepared by the researcher, based on the outputs of the Eviews9 program

From Table (04), we have $F_c = 2.69$, which is lower than the critical value $F_t = 5.05785$ at a 5% significance level. Thus, we reject this hypothesis. Consequently, there is no evidence of a caussal relationship from n-hydrocarbon exports to enomic growth in the Alg economy during the period 1990-2020 at a 5% significance level.

III- Results and discussion :

Based on the study results, it has become evident that n-hydrocarbon exports do not contribute to enomic growth during the period 1990-2020. This finding aligns with our previous study where the relationship was estimated for the period 1990-2020. Therefore, the potential interpretation for the lack of a long-term equilibrium

relationship between the two in the national economy can be attributed to the following reasons:

- **Weakness in the Productive Activity of N-Hydrocarbon Sectors:** This weakness can be attributed to the fact that Alg enterprises (both private and public) have operated for many years in a context of limited competition, leading them to maintain their products within purely national standards, targeting a single market.
- **The delay in the business environment and the weakness of the investment attractiveness of the Algerian economy:** The extent to which investments are encouraged, whether foreign or local, are important element to establish in Algeria, within the business environment. However, attracting them remains one of the challenges that Algeria has not succeeded in, as it requires a conducive institutional environment, an advanced financial sector, and a predictable economic policy.
- **Weak innovative energy and localization of technology:** Innovation constitutes the most important element in ensuring the provision of competitive advantages for projects, industries, and economies. Its importance lies in the fact that it affects a number of factors related to competitiveness, such as cost, use, income distribution, quality of exports, and their shares in foreign markets.
- **The lack of emergence of the economic mind:** In Algeria's economy, however, rentier income from fuels did not contribute to

enhancing economic growth due to the lack of the emergence of an economic mind capable of developing sectors that help increase productivity and develop their exports alongside oil exports.

▪ **Available alternatives for exports outside of hydrocarbons**

The applied study showed that exports outside of hydrocarbons do not contribute to enhancing economic growth, which makes it necessary to look for mechanisms available to encourage exports outside of hydrocarbons. Among these alternatives we find:

➤ **Development of the agricultural sector:**

Algeria was concerned with the industrial sector at the expense of the agricultural sector in most of its economic planning, and according to World Bank data, the agricultural sector's weak contribution to GDP was estimated at 6.08% in 2008, up from 10.6% in 2003. However, it has subsequently improved to 13.32% in 2016, requiring the development of the agricultural sector, raising its efficiency. This requires the Alg Government and the various companies and institutions active in the agricultural sector to adopt a program to increase production in quantity and quality through:

- Ensuring water security.
- Providing agricultural scientific technology;
- Managing and improving agricultural quality and enhancing the capabilities and protection of agricultural producers.
- The search for the possibility of regional integration, especially with Arab countries, involves joining an economic bloc,

particularly an Arab economic bloc, thereby enhancing economic performance efficiency.

➤ **Building a real industry**

The contribution of the industrial sector to the gross domestic product was weak, estimated at 5.5% and 5.6% respectively for the years 2017 and 2018. Therefore, it is necessary to develop the sector to make it more competitive and enhance its major role. This can be achieved through:

- ✚ Strengthening the national industrial base;
- ✚ Restructuring the national industrial sector: By producing and exporting materials transformed with more advanced technology
- ✚ Qualifying human resources and developing industrial sector skills.

Conclusion:

The level of n-hydrocarbon exports has improved since 1990, rising from 3,933 million Alg dinars in 1990 to 246,422.05 million Alg dinars in 2019. However, the results of the empirical study indicated that the hypothesis that n-hydrocarbon exports contribute to economic growth is not valid. Consequently, there is no long-term equilibrium relationship between these two variables. Therefore, the issue of absolute trade openness may not pose a significant challenge to the Alg economy. The real challenge lies in diversifying the local economic base.

The weakness of the foundations of our export economy has been emphasized, which calls for significant changes in the economy that allow for the establishment of programs and plans in all fields, Therefore, the researcher recommends the following:

- The mechanisms for promoting exports outside of hydrocarbons ;
- Strengthening the national industrial base: By encouraging companies, including private ones;
- Restructuring the national industrial sector: By producing and exporting materials transformed with more advanced technology ;
- Qualifying human resources and developing industrial sector skills: It is essential to train the workforce in the industry and transform accumulated experiences into creative capabilities, enhancing individual productivity by acquiring self-knowledge that enables creativity and scientific achievement.

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