

**The nexus between foreign trade and economic growth in Algeria-
analyzing the relevant indicators -**

العلاقة بين التجارة الخارجية والنمو الاقتصادي في الجزائر-تحليل المؤشرات ذات الصلة-

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Abstract

This study aims to analyse the role of foreign trade in Algeria's economy, by analysing the commodity structure of foreign trade and its geographical distribution based on descriptive statistics. Then investigate the importance of foreign trade in stimulating economic growth by using some indicators.

The results of study showed that the Algeria's exports structure are dominated by hydrocarbon sector, which represent nearly 95% of total exports. The composition of imports being dominated by the large share of capital goods and semi-finished products. The analysis of the indicators showed that exports and imports play a significant role in enhancing economic growth and Algerian GDP growth is greatly influenced by oil exports revenues.

Keywords: exports, imports, economic growth, indicators.

ملخص

تهدف هذه الدراسة إلى تحليل دور التجارة الخارجية في الاقتصاد الجزائري، وذلك من خلال تحليل الهيكل السلعي للتجارة الخارجية وتوزيعها الجغرافي بناء على مجموعة من الإحصائيات. والتحقق من أهمية التجارة الخارجية في تحفيز النمو الاقتصادي من خلال استعمال بعض المؤشرات.

أظهرت نتائج الدراسة أن الهيكل السلعي للصادرات الجزائرية يهيمن عليه قطاع المحروقات بنسبة 95% من إجمالي الصادرات. وتستحوذ السلع الرأسمالية والمنتجات شبه مصنعة على تركيبة الواردات. وقد أظهر تحليل المؤشرات أن كل من الصادرات والواردات تلعب دورا هاما في تعزيز النمو الاقتصادي، وأن النمو الاقتصادي يتأثر بشكل كبير بعائدات الصادرات النفطية.

الكلمات المفتاحية: الصادرات، الواردات، النمو الاقتصادي، مؤشرات.

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1. INTRODUCTION

Foreign trade plays vital role in economic development of any country especially in developing countries. Assessing the relationship between international trade and economic growth has been the topic of many studies. Foreign trade sector as a part of the country's economy, supplying the needs of other parts of the section is responsible for providing products that it is not possible through domestic production.

Algeria's economy characterized by the weakness in the production sector and industry sector because of their inability to satisfy their need from intermediate goods and capital goods and their inability to compete. The oil sector has been a dominant feature of Algeria's economy for decades, hydrocarbons accounted for providing 60% of public revenue and 95% of exports. Thus, the Algerian economy remains highly dependent on the oil and gas sector and therefore very sensitive to external shocks.

1.1 Statement of the problem

According to the previous background, this study is based to addressing the following main problem:

What is the link between foreign trade trend and structure and the economic growth in Algeria?

Thus, this research aims to answer to the main following questions:

- What is the trend and structure of the Algeria's foreign trade?
- What is the importance of Algerian foreign trade in the overall economy?

1.2 Objectives of study

The following objectives shall be pursued for this study:

- To examine the Algerian foreign trade trend and structure.
- To analyse the indicators that provide information on the significance of Algerian foreign trade relative to the economic growth.

1.3 Methodology

The study adopts a qualitative method in order to analyse the foreign trade trend and structure, and it is linkage with economic growth by using some indicators and descriptive statistics.

1.4 Study outline

The present study has been divided in two main axes, which are as

follows:

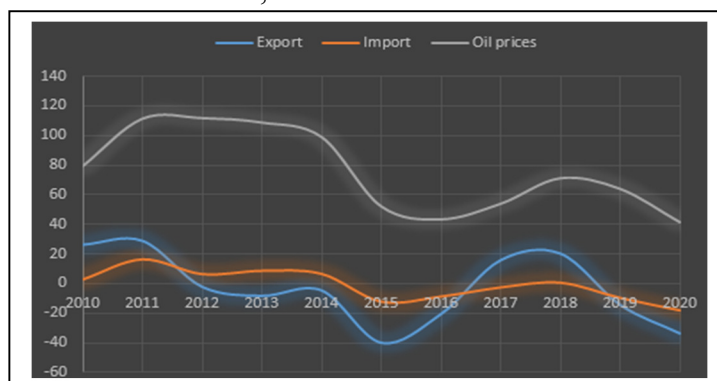
- Overview about Algerian foreign trade trend and structure.
- Analysis the relevant indicators.

2. Overview about Algerian foreign trade trend and structure

2.1 Foreign trade trend:

It is obviously from the figure.1 that both of exports and oil prices had the same trend, which reflect the close and strong relationship between Algerian exports and hydrocarbon sector.

Fig.1. Algeria Export& Import Evolution (%) and Oil Prices, 2010-2020



Source (World Bank Indicators, 2022)
(Our Workd in Data, 2021)

From 2011 till 2016, the Algerian export's was continuously decreasing where it recorded a negative growth rate averaged 7.78%. This drop is mainly due to the decrease in the oil exports from USD 73.49 billion in 2011 to USD 30.03 billion in 2016, because of the fall in the oil prices from USD 111.26 per barrel in 2011 to USD 43.73 % per barrel in 2016. As for the imports, decreased by around 0.33% in this period, due to the decrease in oil exports revenue, that contribute to the financing of imports of goods and services.

The exports raised up again for a two consecutive year in 2016, which increased by 39.20% in 2018 compared to 2016. Prompted by the oil price recovery in this two years that increase from USD 43.73 per barrel in 2016 to reach USD 54.19 per barrel in 2017 and USD 71.31 per barrel in 2018. In this period, the imports increased by 0.30% in 2018 compared to 2017.

In 2019, the exports decreased by 14.29% compared to 2018, the fall in hydrocarbon exports being largely offset by a managed fall in goods imports (decreased by 9.4%) in order to preserve foreign exchange reserves (World Bank Group, 2021, p. 11). Followed by a sharp slowdown in exports

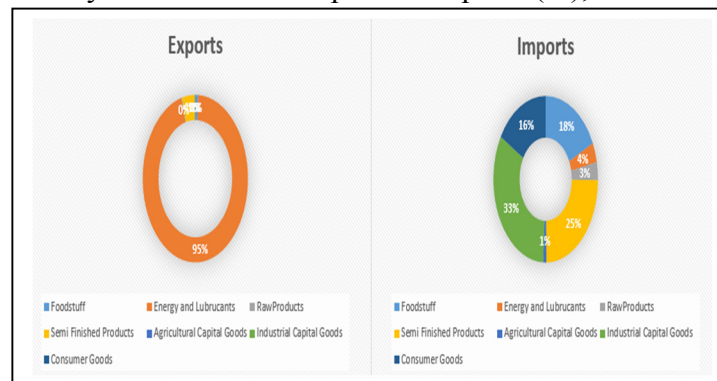
to reach USD 23.80 billion in 2020, which represent a drop of 33.56% over the year. This contraction is essentially the consequence of a drop in the price (fall to USD 41.84 per barrel in 2020) and quantities sold of hydrocarbons (Direction générale du trésor, 2021). Meanwhile, the economic recovery in nonhydrocarbon sectors lost steam, remaining largely incomplete (World Bank Group, 2021, p. 3). On the imports side, it also witnessed a negative growth rate of 17.99% in 2020, due to the tightening of import restrictions and the fall in demand for machinery and equipment (World Bank Group, 2020, p. 12) as a result of Covid-19 outbreak.

This highlights that the Algerian economy is unable to engage in structural transformations, the results of which would be import substitution and export diversification (CNUCED, 2017, p. 17).

2.2 foreign trade commodity structure:

The structure of trade represents the nature of the products either exported or imported, their quality and the share of each group of the total exports and imports.

Fig.2. Commodity distribution of exports& imports (%), 2010-2020



Source: (Ministère des Finance Rapports, 2010-2020)

By examining the exports structure of Algeria as shown in Figure 2, the hydrocarbon exports accounted the largest share of total exports where they represented 94.88% of total exports. During the period of 2010-2020, the non-oil exports recorded fluctuations between the slight increase and decline where their share to the total exports was very low represented only 5.12% in average. Concerning the commodity composition of the non-oil exports concentrated in three main groups, which are semi-finished products, foodstuff and raw products, where they represented 3.86%, 0.84% and 0.23% respectively of total exports.

In analyzing imports composition, as it follow from the Figure 2, we can see that Algerian imports concentrated in four main groups which are: the industrial capital goods, semi-finished products, foodstuff and consumer goods, since these goods had occupied the top four places during the period of 2010-2020 with 32.78%, 24.62%, 17.93% and 16.49% respectively. Whereas the agricultural equipment' share to the total imports were very small represented only 1% of total imports.

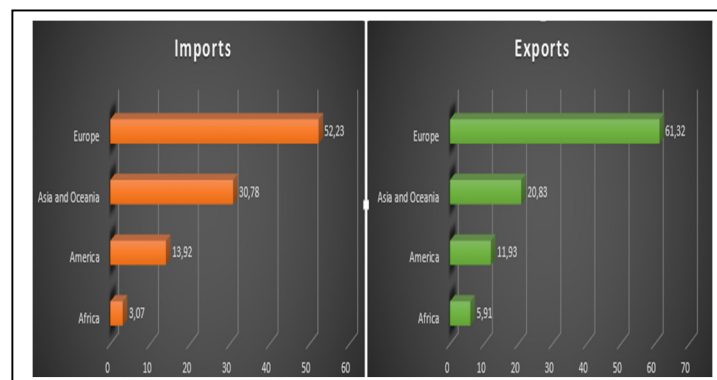
2.3 foreign trade geographic distribution:

Concerning the geographic distribution of Algeria's trade (export and import) towards countries and different geographic areas during the period of 2018-2020, we clearly see, through the Figure 3 that the European Union occupied the largest share of Algerian exports and imports where their share to the total exports and imports represented 61.32% and 52.23% respectively. The majority of these products are exported to Italy, followed by France, Spain and Turkey. France is considered as the most important supplier representing 10.60%, followed by Italy, Germany and Spain.

Countries of Asia and Oceania come in second rank in the importance of the exchanges with Algeria, accounting for 20.83% of Algeria's exports and 30.78% of its imports. The most of Algeria's trade with this region is with China followed by Turkey and India with respective shares of 35.50%, 18.04% and 6.76% in 2020 (Ministry of Finance, 2021, p. 40).

The exchanges with America it is very limited with respective shares of 11.93% for imports and 13.92% for exports in average. Concerning Algeria's exports share towards African countries they are very weak and negligible, represented only 5.91% of exports and 3.07% of imports.

Fig.3. Geographical distribution of exports& imports (%), 2018-2020



Source: (Ministry of Finance, 2021, p. 41)

3. RESULTS AND DISCUSSION

In order to know the role of foreign trade in economic growth, some indicators are used, which provide information on the significance of foreign trade relative to the overall economy performance.

3.1 Data set:

The study utilized secondary data. The data obtained from different sources contained in websites, reports and journal articles. The data used is annually and covers the period 2000-2020.

3.3 Analysis relevant indicators

- **Export propensity index**

The index measures the share of exports in GDP. It shows the overall degree of reliance of domestic producers on foreign markets. It is similar to the trade dependence index, but may provide a better indicator of vulnerability to certain types of external shocks (e.g., falls in export prices or changes in exchange rates) (Mikic & Gilbert J, 2009, p. 22). It is calculated according to the following formula:

$$\text{Export propensity index} = \frac{\sum X}{\text{GDP}} * 100$$

During the period 2000-2020, the propensity export index averaged 31.74%. The 2000s was distinguished by high values of export propensity index reached the highest value 44.89% in 2000. Since 2010, the index recorded a successive decline, where it decreased from 30.78% in 2010 to 18.53% in 2020, due to the collapse in oil price and the decline in oil. This fluctuation in oil prices caused a 39.80% drop in the Algeria's export propensity index, which means the fall in the capacity of Algeria to export (see Fig.4). Therefore, the real GDP growth rate contracted by -5% in 2020, due to the sharp decline in oil revenues.

Fig.4 Export propensity index in Algeria, 2000-2020

Source: calculated by the author based on (World Bank Indicators, 2022)

From the above analysis, we conclude that the export propensity index in Algeria's economy depends mainly on oil and gas exports, which represent 95% of total exports, which in turn are affected by changes in oil prices. Thus, the increases in the oil price lead to increase in Algerian exports, which in turn lead to increase the capacity of Algeria to export and that may affect economic growth positively. Which reflect the extent weakness of the productive and industrial sectors in Algeria.

From all the above, conclude that the export propensity index does not reflect the real capacity of the country to export because this indicator highly depend on the primary products from the hydrocarbon sector, which is not productive or industrial sectors in the country. Thus, does not reflect the country's economic activity.

▪ Trade dependence index

The trade dependence index is one of the most widely used trade statistics. Also termed the openness index, it measures the ratio of international trade to the total value of net output (gross domestic product or GDP). It can give an indication of the degree to which an economy is open to trade (subject to some serious limitations) (Mikic & Gilbert J, 2009, p. 18). It is calculated according to the following formula:

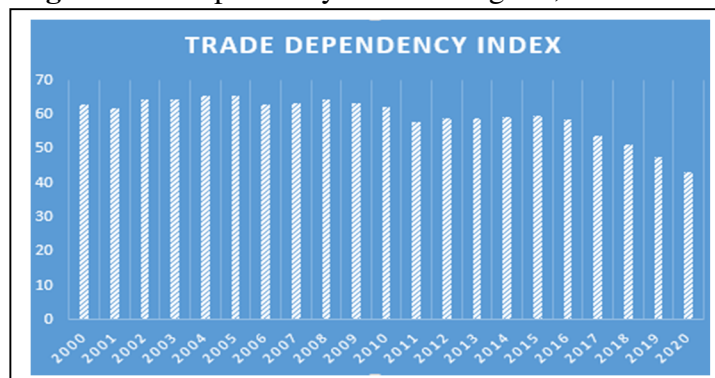
$$\text{Trade dependency index} = \frac{\sum X + \sum M}{\text{GDP}} * 100$$

The foreign trade dependency index is taken as an indicator in this study in order to show the increasing importance of foreign trade in the Algerian economy. Algeria as an oil exporter country, the degree of openness follows closely the oil prices cycle. In general, by looking at the increasing trend of foreign trade dependency ratio of Algeria, it can be argued that foreign trade became more and more important in the Algerian economy as the country increasingly engaged into the world economy and the economic growth of Algeria relies on the growth of foreign trade volume to a certain degree.

On the international side, Algeria remains weakly integrated into the global economy. The country is not a member of the world trade organization, but, it signed in 2002, a partnership agreement with the European Union. Thus, Algeria's trade openness remained weak, as measured by the ratio of exports plus imports to GDP (Merghit, 2021, p. 28).

The Figure 5 shows the foreign trade dependency ratio in Algeria during the period 2000-2020. The ratio explains the dependency of Algerian economy on foreign trade, which includes the total volume of exports and imports, and shows the trade openness of country.

Fig.5. Trade dependency index in Algeria, 2000-2020



Source: calculated by the author based on (World Bank Indicators, 2022)

The trade dependency index fluctuated between rises and down, the average value during the period 2000-2010 was 59.43% with a maximum of 65.45% in 2005 and a minimum of 42.99 in 2020. Since 2014, the trade dependency index witnessed successive decreasing (from 59.34% in 2014 to

42.99% in 2020), which reflect that the Algerian economy depends decreasingly on the global economy. This result is mainly due to the fall in the international oil prices from USD 98.95 per barrel in 2014 to USD 41.84 per barrel in 2020 and import-export difficulties in Algeria with closed borders, in addition to the declining global demand due to the Covid-19 outbreak.

The non-continuation of rising in the trade dependence index during the study period, it is evidence that the degree of trade openness in Algeria influenced by the fluctuations in world oil prices, which is characterized by instability.

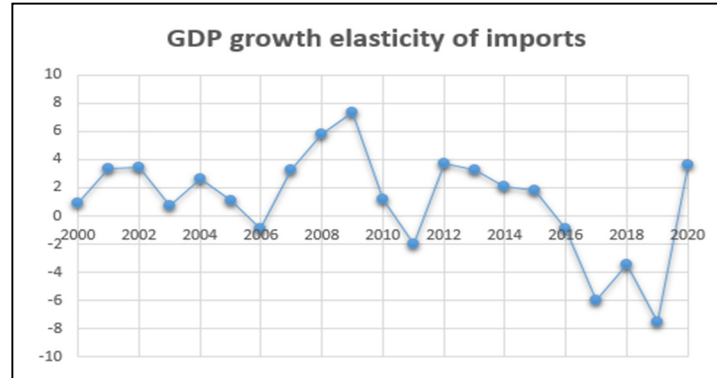
▪ **GDP growth elasticity of imports**

This indicator can accurately describe the impact of increase the total growth rate of imports on domestic economic growth. It is calculated according to the following formula:

$$\text{GDP growth elasticity of imports} = \frac{\Delta M * \text{GDP}}{\Delta \text{GDP} * M}$$

During the period of 2000-2010, the GDP growth elasticity of imports was 2.62% in average, where the GDP growth elasticity of imports was bigger than one, which means that during these years the imports played a significant role in motivate the economic growth. That means 1% changes in imports lead to 2.62% increase in GDP growth. In the period of 2011-2020, the GDP growth elasticity of imports was -0.53% in average that means the imports had a negative impact on economic growth, where 1% changes in imports lead to 0.53% decrease in GDP growth.

As for the whole period (2000-2020), the GDP elasticity of imports was 1.12% in average, which means that the imports played a positive role in promoting the economic growth where 1% changes in imports lead to 1.12% increase GDP growth.

Fig.6. GDP Elasticity of Imports in Algeria, 2000-2020

Source: calculated by the author based on (World Bank Indicators, 2022)

▪ **Product concentration index of exports**

This indicator is defined as a normalized Herfindahl-Hirschmann index of the product concentration of merchandise exports at the country level (UNCTADSTAT, 2019, p. 4). It is calculated according to the following formula:

$$H_j = \frac{\sqrt{\sum_{i=1}^N \left(\frac{x_{ij}}{x_j}\right)^2} - \sqrt{\frac{1}{N}}}{1 - \sqrt{\frac{1}{N}}}$$

Export concentration reflects the degree to which a country's exports are concentrated on a small number of products or a small number of trading partners. A country that exports one product to only one trading partner has a perfectly concentrated export portfolio. Conversely, a country whose exports are comprised of a larger number of products and that trades with a larger number of trading partners has a lower export concentration ratio (ECR), i.e., has more diversified exports (UNDP, 2011, p. 24).

The hallmark of trade of developing countries is the dominance of one commodity or two commodities on the majority of the total exports value, and often these goods are in the form of raw materials or semi-finished goods, while manufactured goods represent the largest share of the imports

of these countries. The table 1 show the Algerian concentration index of exports during the period 2000-2020.

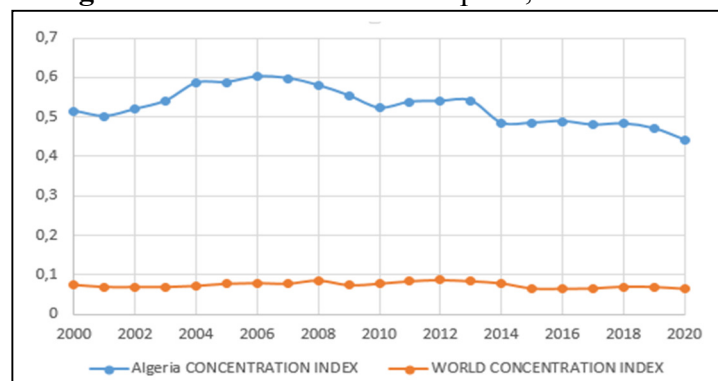
Table 1. Export concentration index, 2000-2020

years	2000	2001	2002	2003	2004	2005	2006
Export concentration	0.515	0.502	0.520	0.541	0.586	0.588	0.602
years	2007	2008	2009	2010	2011	2012	2013
Export concentration	0.598	0.58	0.554	0.523	0.538	0.54	0.541
years	2014	2015	2016	2017	2018	2019	2020
Export concentration	0.485	0.485	0.489	0.48	0.483	0.471	0.442

Source : (UNCTADSTAT, 2021)

The concentration index of exports in Algeria averaged 0.53 during the period 2000-2020, which reveal the high concentration of exports and indicate that the most exports of Algeria came from a single commodity, which is hydrocarbons, that constitutes 95% of total Algeria’s exports.

Fig.7 Concentration index of exports, 2000-2020



Source: (UNCTADSTAT, 2021)

Figure 7 shows the concentration index of exports in Algeria and the World during the period 2000-2020, it is clear from the figure that Algeria’s concentration index of exports is very high averaged 0.53 compared to a world average of 0.12. Which reflect that Algeria exports are increasingly

more concentrated in a narrow range of products (oil and gas), compared to the rest of the world.

- **Exports diversification index**

This index measures a country's extent of concentration of exports in a limited number of production sectors (ESCWA, 2018, p. 14).

$$\left(\sum_i \left| \frac{\sum_d X_{isd}}{\sum_d X_{sd}} - \frac{\sum_{wd} X_{iwd}}{\sum_d X_{wd}} \right| \right) \div 2$$

A product diversification index can be constructed by taking into account three factors: (1) the number of product categories covered by a country's exports, (2) the range of markets, and (3) the historical performance (WTO ITC UNCTAD, 2017, p. 228).

Beyond stabilizing export revenues and reducing the impact of changes of international prices on terms of trade, export diversification can also contribute to higher economic growth by enhancing productivity, stimulating structural transformation, and promoting competition. This is why export diversification is an explicit economic objective for many countries (UNCTADSTAT, 2019, p. 3).

The hydrocarbons dominated the Algerian exports where nearly 95% of merchandise exports depended only on the hydrocarbons, while the rest of the products represent only around 5% of total exports.

Table 2. Export diversification index, 2000-2020

years	2000	2001	2002	2003	2004	2005	2006
Export concentration	0.835	0.821	0.836	0.817	0.826	0.813	0.8
years	2007	2008	2009	2010	2011	2012	2013
Export concentration	0.802	0.762	0.793	0.782	0.719	0.725	0.733
years	2014	2015	2016	2017	2018	2019	2020

Export concentration	0.745	0.783	0.815	0.808	0.81	0.817	0.842
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Source: (UNCTADSTAT, 2021)

By looking at exports diversification index in table 2, it can be argued that Algeria as an oil exporter country is suffer from a lack of exports diversification as the index values is very high averaged 0.80 during 2000-2020, it is very close to one, which indicate that Algeria's exports dependence on a few number of products. This what the study has been found in the previous analysis, whereas The Algeria's exports structure dominated by the hydrocarbon sector which represent 95% of its total exports, where the improvement recorded in Algerian exports value is originally due to the increase of the oil exports, which in turn linked to the oil prices.

4. CONCLUSION

The main objective of this paper has been to analyse the Algerian foreign trade and its importance in economic growth. This study has mainly sought to find out how and to what extent foreign trade factors contributed to the economic growth of Algeria.

Accordingly, we have using some descriptive statistics to analyse of foreign trade structure of Algeria, then by using some indicators to investigate the importance of foreign trade in stimulating economic growth. Several conclusions were drawn and they are as follows:

- Algeria relies heavily on a single exportable commodity, (i.e. crude oil), as the main source of foreign exchange earnings, where the main exports products include petroleum and natural gas products, which represent nearly 95% of total exports, while the non-hydrocarbon exports represent only 5% of total exports. The dynamism of the hydrocarbon sector hides the poor export performance of the non-oil sector. The composition of Algeria's imports concentrated on four main groups, which are the industrial capital goods, semi-finished products, foodstuff and consumer goods. European countries are the main partners of Algeria's trade; China is also main important trading partners.
- The analysis of the indicators relating to the role of foreign trade in economic growth showed that exports and imports play a significant role in enhancing economic growth, and Algerian GDP growth is

greatly influenced by oil export revenues. An increase in oil export leads to an increase GDP growth. On the contrary, a decrease in oil export revenues leads to a contraction of growth.

- Very few bundles of commodities are found in the export sector, and their export share is insignificant compared to oil exports. Therefore, the values of both diversification index of exports and the products concentration index were high.

Based on our findings, several policy recommendation for Algeria will address them as follows:

- In light of the concentration of Algeria's exports on oil products, Algeria needs to diversify its export base away from oil and add value to its exports by emphasizing on non-oil production and exportation.
- diversification of production and more focus on non-oil exports products may help the economy to benefit from comparative advantage;
- Enhance and develop an information system to improve the performance of industry and agriculture sectors to reduce import dependency and expand exports;
- The Algerian government should strive to position herself more favorably in the oil market, conscious efforts must be made to revamp the commodity exports sector and harness the solid minerals for exports;
- The government should grant financial assistance (in the form of subsidies) to non-oil exporting firms, to encourage them exporting;
- The government should be directed at processing Algerian primary products into semi-finished and finished industrial products before they are exported as this would add value as well as enhance the competitiveness of these products in foreign markets;
- Enhance and develop an information system to improve the performance of industry and agriculture sectors to reduce import dependency and expand exports;
- Enhance and develop the agriculture sector to improve production and increasing crop yields to reduce food dependency.

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