

Algerian agricultural security: measuring the impact of agricultural exports and imports on GDP



Abdelhakem Amina

Nour El Bachir University, Algeria, a.abdelhakem@cu-elbayadh.dz

Azzouz Amina

Nour El Bachir University, Algeria, a.azzouz@cu-elbayadh.dz

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Abstract:

Through this research paper, we attempt to shed light on the role of the agricultural sector in supporting the national economy in Algeria. Based on the theoretical framework, the agricultural sector plays a role as an intermediary tool for many economic sectors, and in achieving food security. The results of the econometric study using the vector error correction model indicate a positive relationship in the short run between agricultural exports and economic growth, and a negative relationship in the long run. Furthermore, there is a negative relationship in both the short and long runs between agricultural imports and economic growth in Algeria during the study period (1970-2022). The results are consistent with the reality of the Algerian economy, which relies on rentier revenues without paying attention to other sectors.

Keywords: Economy Growth; Agricultural Exports; Agricultural Imports; Agricultural Security; Vector Error Correction.

* Corresponding author: Abdelhakem Amina, a.abdelhakem@cu-elbayadh.dz.

Introduction:

For thousands of years, Agriculture has played a pivotal role in human life, in terms of meeting the basic food needs of citizens. Agriculture is believed by many researchers to have an impact on economic development by contributing to the Gross Domestic Product of various countries worldwide. Here, agricultural activity acts as a channel for absorbing unemployed labor and meeting food consumption needs, in addition to providing primary commodities used as inputs in many manufacturing industries.

In many developing countries, particularly Arab countries, the environmental situation is characterized by instability due to fluctuating climate factors and limited water resources, particularly scarce rainfall. This has a negative impact on the agricultural sector. Regarding the contribution of Agricultural Production to the Gross Domestic Product, it varies greatly between Arab countries, as the Agricultural Sector occupies an advanced position in the Economic Structure of a number of Arab countries.

The area of Arable land in Arab countries amounts to approximately 200 million hectares, of which only a third is used for agricultural purposes. This is due to the limited availability of water resources and the poor utilization of Arab land in some Arab countries, particularly Sudan, Egypt, and Iraq, due to technical and economic considerations. It is worth noting that the area of exploitable land, despite its limited size, is subject to degradation and loss of natural vegetation cover, increased soil vulnerability to water and air erosion, salinization and pollution of irrigated lands, in addition to urban sprawl and over-exploitation practices. The soil's properties deteriorate, productivity decreases, and biodiversity is lost due to this.

In Algeria, the agricultural sector is considered a strategic sector due to the essential role it plays in alleviating food dependency. It should be noted here that Algeria imports approximately 80% of its wheat needs, which is considered an essential commodity for citizens, while food exports do not exceed 25% at best. The Algerian Government's unclear agricultural strategy resulted in all of the above.

To understand the true impact of agricultural exports and imports on Algeria's GDP during the period under study (1970-2022), we considered agricultural exports and imports as variables that reflect the efficiency of the agricultural sector in Algeria in achieving agricultural security.

1. The theoretical framework of the variables under study:

In this section, we will explore the theoretical framework for agricultural exports, agricultural imports, and GDP, as viewed by some researchers in this field.

a. Agricultural Exports:

Agricultural Exports are defined as "one of the main means of economic growth and sustainable development of the countries. They are seen as a crucial means of acquiring currency, stimulating agricultural investment, increasing the employment rate, reducing the number of unemployment, and eliminating the poverty rate. Identifying the determinants of this latter category of exports is of great importance. This identification will help guide economic policies with the aim of strengthening agricultural exports» (Bakari, Khalfallah, & Zidi, 2020).

Rural households are expected to receive income from non-traditional agricultural exports, either through production or employment. Peasant farmers who produce fruit, vegetables, maize, and so on have all benefited in large numbers (Tjalling, 2001).

(Victor, 2015) noted that Nigeria's agricultural exports have played a significant role in economic development by providing foreign exchange earnings for other capital investment projects. Over 75% of annual commodity exports were derived from agricultural exports, and Nigeria was a top producer and exporter of major crops in the world during the 1940s and 1950s. Accordingly, Nigeria's earnings from major agricultural exports have contributed significantly to its GDP. The study also demonstrated a long-term relationship between agricultural exports and economic growth in Nigeria.

Also, a research study by (Essotanam & Essossinam, 2022) discusses the economic literature on the relationship between agricultural exports, agricultural growth (output), and overall growth. The paper focuses on the hypothesis of export-led growth to explore the impact of agricultural exports on agricultural economic growth. According to the short-run Keynesian interpretation, known as the demand theory, agricultural exports contribute to agricultural income growth through the international trade multiplier. In addition, in line with trade and growth. Given the urgent need to increase agricultural income and foreign exchange earnings, a significant expansion of agricultural production for export is often a rational policy in developing countries, including the Economic Community of West African States ECOWAS. The study analyzed the effects of agricultural exports on agricultural growth and overall economic growth in the ECOWAS region from 1996 to 2018. It also explored the combined effect of agricultural exports and agricultural growth on economic growth. To control for endogeneity, an instrumental variables approach was used. The results indicated that agricultural exports significantly enhance agricultural growth and overall economic growth. Moreover, there is a significant difference in the effect between the agricultural growth equation and the economic growth equation. It was discovered that agricultural exports and agricultural growth do not have a complementary or substitutive effect on economic growth. The design and implementation of

agricultural development policies in ECOWAS countries has important policy implications due to these findings.

b. Agricultural Imports:

(Sayed, 2015) believes that agricultural imports create real productivity in any economy, as is the case when importing cheap inputs that are later used in agricultural processes, which leads to an increase in agricultural productivity. The country's agricultural exports are also supported by this increase, which has a positive impact on exports and economic growth.

In the view of (Robert, 1967), any import is welcome as long as it does not conflict with the good market mechanisms through which each country tries to achieve the income targets for its producers that it has set for itself.

Both of (Mwangi, Chen, & Njoroge, 2020) argue that the demand deficits are met by imports, which are becoming more challenging to finance because of the increasing international food commodity prices and poor performance of exports in the recent past. For example, between 2000 and 2010, Africa accounted for only about 2.8 percent of the world's exports. Between 1998 and 2013, the value of Africa's agricultural imports grew fivefold, whereas the value of agricultural exports tripled, leading to increased trade deficits. According to (Mwangi, Chen, & Njoroge, 2020) over the period 2007–2011, 37 African countries were net importers of food, whereas 22 countries were net importers of agricultural raw materials. Furthermore, for the period 1960–2007, Africa in general was a net importer of food and other agricultural products despite its agricultural production potential (FAO, 2011). In SSA, the value of agricultural exports exceeded the value of imports for the period 1961–2005, indicating a favorable balance of agricultural trade. However, during the period 2005–2017, the region was a net importer of agricultural products.

c. The impact of exports and imports agricultural on economic growth:

Most economic studies confirm that exports and imports are important because together they form a country's balance of trade, which can impact an economy's overall health. In a healthy economy, both imports and exports experience continual growth. This usually represents a sustainable and strong economy. Unbalanced exports and imports can result in either a trade surplus or a trade deficit (agro, 2026).

In Algeria, based on (agro, 2026), which addressed the topic of "Agriculture in Algeria," it is clear that Agricultural Exports did not exceed 552 million US dollars, which confirms the failure to achieve self-sufficiency in most major Agricultural crops, with the exception of dates.

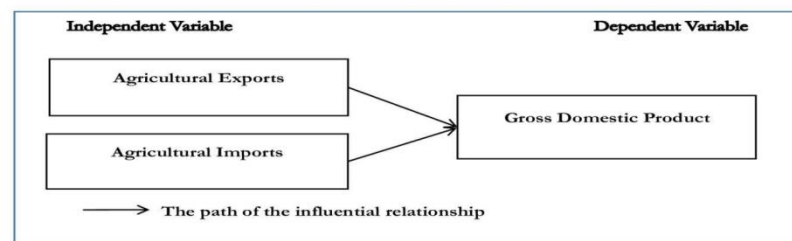
According to the main agricultural website in Algeria, the agricultural trade balance in 2021 amounted to 0.5 billion US dollars in agricultural exports compared

to 9.4 billion US dollars in agricultural imports, i.e. a deficit of -8.9 billion US dollars. For example, Algeria's exports of agricultural products to France were estimated at 54.1 million euros in 2021, while France exports agricultural products to Algeria, such as soft wheat, amounting to 500 million euros in 2021. The gap between agricultural exports and agricultural imports in Algeria can be attributed to several factors, most notably to insufficient production capacity and a lack of infrastructure. Low investment levels, weak farm machinery, and deficiencies in agricultural practices are still affecting the Algerian agricultural sector.

Poor human resource efficiency in this field, especially in relation to the use of agricultural technology. As discussed, Algeria, in view of the obstacles it faces in achieving development in the agricultural sector, has sought to adopt an agricultural strategy aimed at improving food security and reducing the import bill. The strategy focuses on various sectors, such as cereals, major seeds, corn, livestock, and dairy production. Here, developing desert agriculture could meet between 30 % and 50 % of national needs by creating large-scale irrigated areas that tap into significant groundwater reserves. Algerian hydrologists believe this is possible in certain conditions. The Office for the Development of Industrial Agriculture in Desert Lands ODAS was also established to stimulate investment by facilitating access to land and providing a comprehensive center for investors to support the development of agricultural crops (agro, 2026).

Based on the above-mentioned theoretical framework and previous studies on the subject, we will present the theoretical model of the study in the following form:

Figure 1 - The theoretical model of the study



Source: It is built based on the theoretical framework and previous studies on the subject.

2. Applied study:

In the second section of the research paper, we examine the impact of agricultural exports and agricultural imports on Algeria's GDP from a quantitative perspective.

a. Data description:

Through this econometric study, we attempted to examine the impact of both agricultural exports and agricultural imports on GDP from a practical perspective. The applied analysis is based on an annual data series for the Algerian economy **1970-2022**, i.e., on **52** observations. The variables of our econometric study are given as follows:

AE: Agricultural Exports;

AI: Agricultural imports;

GDP: Gross Domestic Product.

Eviews. V.13 software was used to obtain the results. The mathematical model for our study should be based on the following:

$$X_t = A(L)X_{t-1} + B(L)Z_{t-1} + \varepsilon_t \dots \quad (1)$$

Where it represents:

X_t : the vector of dependent variables in the model;

Z_t : the vector of independent variables in the model;

ε_t : Random error term in the model (satisfies the following properties: median = 0 and variance is constant);

A(L) and **B(L)** represent the model parameter matrix. According to the above, the theoretical model of our study extracted from the statistical program Eviews takes the following form:

Estimation Proc:

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LS 1 1 AE AI GDP

VAR Model:

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$$AE = C(1,1)*AE(-1) + C(1,2)*AI(-1) + C(1,3)*GDP(-1) + C(1,4)$$

$$AI = C(2,1)*AE(-1) + C(2,2)*AI(-1) + C(2,3)*GDP(-1) + C(2,4)$$

$$GDP = C(3,1)*AE(-1) + C(3,2)*AI(-1) + C(3,3)*GDP(-1) + C(3,4) \dots \quad (2)$$

The equation No. 2, which explains the effect of both agricultural exports and agricultural imports on the gross domestic product.

b. Stationarity test of time series & cointegration test between the variables under study:

b.1 Stationarity test of time series:

The time series used in our study must be stationary according to regression theory, especially in the analysis of macroeconomic conditions (such as the variables used here). We will begin by testing the stationarity of the time series of the economic analysis variables, using both the **extended Dickey-Fuller** test and the Schwartz criterion. The number of lags is calculated based on the smallest value taken from the **Akaike-Schwartz** coefficient. The unit root integral of the time series of the variables under study is tested to determine whether the variables are stationary. In this study, we will rely on the extended **Dickey-Fuller ADF** test and test the null hypothesis, which is the presence of a unit root (i.e., the non-stationarity of the time series), avoiding spurious results due to non-stationarity. This is done through statistical comparison (the calculated **t** is greater than the tabulated **t** at a statistical significance level :1%, 5%, or 10%. Here, we reject the null hypothesis, and thus the series is stationary. Accepting the null hypothesis requires repeating the test for the first and second teams. The following table 1 shows the stationarity test for the time series under study:

Table 1 - Stationarity test of time series

Variables	AE		AI		GDP	
Test	Stationarity at the level					
	Estimated Value	Critical Value	Estimated Value	Critical Value	Estimated Value	Critical Value
Individual intercept	/0.281773/ (0.9731)	/-2.967767/ (0.0005)***	/1.589486/ (0.9991)	/-2.967767/ (0.0005)***	/-1.511975/ (0.5135)	/-2.967767/ (0.0005)***
Individual intercept & trend	/-1.838668/ (0.6596)	/-3.574244/ (0.0005)***	/-0.494424/ (0.9780)	/-3.557759/ (0.0005)***	/-1.033024/ (0.9233)	/-3.574244/ (0.0005)***
None	/2.327034/ (0.9756)	/-1.952910/ (0.0005)***	/2.641736/ (0.99971)	/-1.952910/ (0.0005)***	/-1.053430/ (0.2567)	/-1.952910/ (0.0005)***
Test	Stationarity at 1 st difference					
	Estimated Value	Critical Value	Estimated Value	Critical Value	Estimated Value	Critical Value
Individual intercept	/-7.038631/ (0.0000)***	/-2.971853/ (0.0005)***	/-3.922498/ (0.0057)**	/-2.971853/ (0.0005)***	/-4.617551/ (0.0010)**	/-2.967767/ (0.0005)***
Individual intercept & trend	/-7.388805/ (0.0000)***	/-3.580622/ (0.0005)***	/-5.054956/ (0.0018)**	/-3.580622/ (0.0005)***	/-5.292953/ (0.0010)**	/-3.580622/ (0.0005)***
None	/-4.361464/ (0.0001)***	/-1.953381/ (0.0005)***	/-3.075741/ (0.0034)**	/-1.953381/ (0.0005)***	/-4.711864/ (0.0000)***	/-1.953381/ (0.0005)***

Source: Output of Eviews.V. 13.

*The estimated, tabulated, and extracted values from the statistical program Eviews are taken in absolute values.

From the table above, we notice that all the series are stable in their first differences, this is done by comparing the estimated t-value with the critical t-value at a significance level of 5%. The first differences for each variable represent a stationary time series, so the model is first-order integrated. This requires a cointegration test between the variables under study.

b.2. Cointegration test

After ensuring the stationarity of the time series, it is necessary to ensure the presence of cointegration between these series in the presence of the null hypothesis and no cointegration between the variables. Here we can say that cointegration refers to a method of obtaining a balance for the long-run relationship between non-stationary variables or that it means the existence of an adjustment method that prevents the increase in the error of the long-run relationship. There are several methodologies for testing whether or not time series are cointegrated, the most important of which are:

b.2.1. The first method: Johansen and Juselius test

To determine several **co-integration vectors**, **Johansen 1988 - 1991** and **Juselius 1990** suggested conducting two tests, which are considered better than the **Engel-Granger** test because they are suitable for small-sized samples as well as for the presence of more than two variables and allow for the mutual influence between the variables under study.

b.2.1.1. Trace test (λ_{trace})

The hypothesis that there are at most **q** cointegrating vectors is tested against the generalized unconstrained model ($r=q$).

b.2.1.2. Maximum full value test (λ_{max})

Which tests the null hypothesis that there is (**r**) a vector of non-cointegration, and the alternative hypothesis (**r+1**) a vector of cointegration. The results of this test, extracted from **Eviews V.13** are shown in the following table:

Table 2 - Cointegration test

λ_{trace}			
The null hypothesis	The alternative hypothesis	<i>With a trend</i>	
		Estimated Value	<i>level %0.5 Value at</i>
$r=0$	$r \geq 1$	31.36588	29.79707
$r < 1$	$r \geq 2$	19.33509	15.49471
$r < 2$	$r \geq 3$	11.00095	3.841465
λ_{max}			
$r=0$	$r=1^{**}$	23.50741	21.13162
$r \leq 1$	$r=2$	19.33413	14.26460
$r \leq 2$	$r=3$	0.000959	3.841465

Source: Output of Eviews.V. 13.

From the table above it is clear that the estimated values for each of (λ_{trace} _ λ_{max}) are greater than the critical values at a significance level of 5%, and this forces us not to accept the null hypothesis, i.e. the existence of a joint

integration relationship, this confirms the existence of a long-term equilibrium relationship between the variables under study.

3. Error correction form_VECM (1,1)

This test is applied after the success of the Johansen Cointegration test. It measures the short-term and long-term relationship between the variables under study. The equations appear according to the **Eviews. V. 13** statistical model is as follows:

EC 1 1 AE AI GDP

VAR Model:

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$$D(AE) = A(1,1) * (B(1,1) * AE(-1) + B(1,2) * AI(-1) + B(1,3) * GDP(-1) + B(1,4)) + C(1,1) * D(AE(-1)) + C(1,2) * D(AI(-1)) + C(1,3) * D(GDP(-1)) + C(1,4).$$

$$D(AI) = A(2,1) * (B(1,1) * AE(-1) + B(1,2) * AI(-1) + B(1,3) * GDP(-1) + B(1,4)) + C(2,1) * D(AE(-1)) + C(2,2) * D(AI(-1)) + C(2,3) * D(GDP(-1)) + C(2,4).$$

$$D(GDP) = A(3,1) * (B(1,1) * AE(-1) + B(1,2) * AI(-1) + B(1,3) * GDP(-1) + B(1,4)) + C(3,1) * D(AE(-1)) + C(3,2) * D(AI(-1)) + C(3,3) * D(GDP(-1)) + C(3,4) \dots$$

(3)

Before starting to estimate the **(VECM (1,1))** model, we must test the validity of the model statistically. There are many and varied tests in this regard, and we will limit ourselves to three of them:

a. Model stability testing

For a model to be generally stable, it is necessary that its variables form a stable dynamic system. Therefore, the unit roots and all coefficients must be less than one, which means that the model does not suffer from the problem of correlation errors or non-stationarity of variance. The results for this test are extracted from **Eviews. V. 13** and are shown in the following table and figure.

Table 3 - Model stability testing

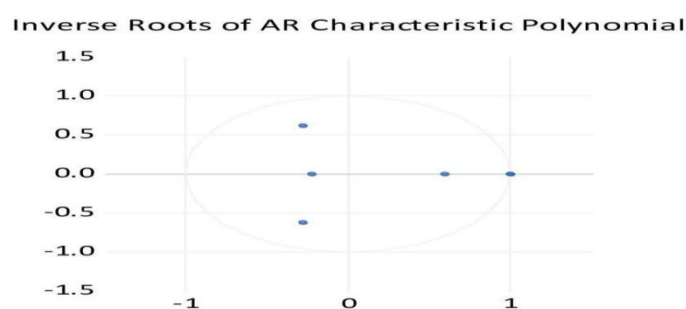
Roots of Characteristic Polynomial
Endogenous variables: AE AI GDP
Exogenous variables:-
Lag specification: 1 1

Date: 04/26/25 Time: 00:31	
Root	Modulus
1.000000	1.000000
1.000000	1.000000
-0.273870 - 0.620636i	0.678376
-0.273870 + 0.620636i	0.678376
0.597051	0.597051
-0.219095	0.219095
VEC specification imposes 2 unit root(s).	

Source: Output of Eviews.V. 13.

From the data in the table above, we notice that most of the unit roots and coefficients are less than one. This means that the model does not suffer from the problem of error correlation. This is clearly evident from the following figure.

Figure 2 - Model stability test



Source: Output of Eviews.V. 13.

Since most of the polynomials lie inside the circle, this confirms the stability of the model.

b. Normality Test

It is related to the tests of the normal distribution of **J** the model's residuals, and aims to verify whether the series of residuals exhibits the characteristics of the normal distribution. The most important of these tests are the following:

b.1. Skewness & Kurtosis Testing

In this test, we say that the residuals of the model follow a normal distribution if and only if: there is symmetry and normal flatness (we accept the null hypothesis), where we compare the calculated value with its corresponding tabulated value $\chi^2(1-\alpha)(df)$. Where the α coefficient indicates a 95% confidence interval in this study, and **(df)** refers to the degree of freedom. If the table value is greater than the calculated value, we accept your hypothesis of symmetry and natural flatness, and vice versa, knowing that:

$$\chi^2(1 - 0.95)(3) = 7.81$$

$$\chi^2(1 - 0.95)(2) = 5.99$$

$$\chi^2(1 - 0.95)(1) = 3.84.$$

b.2. Jaque-Berra Testing

Through this test, we also compare the calculated value (χ^2) with its corresponding table at a 5% confidence interval. The results obtained are summarized in the following table:

Table 4 - A residue screening test

	J.Berra	Kurtoses	Skewness
1	3.445101	3.793779	1.250416
2	0.472900	3.134054	-0.305530
3	0.083696	2.741902	-0.025744

Source: Output of Eviews.V. 13.

From the table above, we notice that most of the calculated values (χ^2) are smaller than the tabulated values (χ^2) for the model residuals. This leads us to accept the null hypothesis in all three tests, and therefore the residuals of the model follow a normal distribution.

b.3. White Testing (Test of homogeneity of variance for the residuals of the model)

Through this test, we ensure the homogeneity or lack of difference in the variance of the model's residuals, This is done through the White test. Accepting

the null hypothesis through this test means the presence of homogeneity, and this is when the tabulated (X^2) values are greater than the calculated (X^2) values and vice versa.

Table 5 - test of homogeneity of variance for the residuals

$X^2_c(6)$	
res1*res1	12.95717
res2*res2	4.720358
res3*res3	2.234949
res2*res1	13.20392
res3*res1	14.92467
res3*res2	6.862372

Source: Output of Eviews.V. 13.

4. Discussion

All the results were extracted and obtained from the **Eviews. V. 13** program appears through the following equations:

VAR Model - Substituted Coefficients:

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$$D(AE) = - 0.0645928012289*(AE(-1) - 17.7774270577*AI(-1) - 39807.4848667*GDP(-1) - 13374.6951551) - 0.28533814762*D(AE(-1)) + 7.12820906529*D(AI(-1)) + 2149.60145148*D(GDP(-1)) + 26859.8602757.$$

$$D(AI) = 0.0356018064642*(AE(-1) - 17.7774270577*AI(-1) - 39807.4848667*GDP(-1) - 13374.6951551) - 0.0387161060027*D(AE(-1)) + 0.267769452889*D(AI(-1)) + 590.992347536*D(GDP(-1)) + 2547.00373555.$$

$$D(GDP) = 7.37739163767e-06*(AE(-1) - 17.7774270577*AI(-1) - 39807.4848667*GDP(-1) - 13374.6951551) + 5.93650674437e-06*D(AE(-1)) - 7.57303824582e-05*D(AI(-1)) - 0.161037933215*D(GDP(-1)) + 0.162251565451...$$

(4)

The results of the **VECM** model for our study are shown in Equation (4), as follows:

In the short term, Algerian Agricultural Exports have a positive impact on **GDP** by an amount of **7.37739163767e-06**. The positive impact relationship between Agricultural Exports **AE** and Gross Domestic Product **GDP** in the short term is consistent with a number of previous studies, including (Victor, 2015). Algerian Agricultural Exports have played a major role in achieving Economic Development by contributing to capital investments based on foreign exchange coming from the Agricultural Sector. The positive short-term outcome between the variables under study (between Agricultural Exports **AE** and **GDP** is also fully consistent with (Bennouma, 2022), as the development of the agricultural sector in Algeria between **1970** and **2022** reflects the country's efforts to enhance food security, promote economic diversification, and reduce dependence on hydrocarbons. Agriculture has consistently played an important role in Algeria's **GDP**, contributing an average of 10% over the past two decades. Agriculture, which was a marginal sector in the **1970s**, has evolved into a more dynamic player in the national economy. Its share of **GDP** increased from 5.5% in **2008** to 12.8% in **2020**, reaching 13.2% in **2023**. Investments in programs such as the National Agricultural and Rural Development Program PNDAR and the Agricultural Renewal Program have boosted the productivity and structure of Algerian agriculture, with a focus on irrigation, mechanization, and yield improvements in major crops such as wheat. These investments have contributed to the stability of agricultural production despite short-term climate fluctuations. In the long term, it has a negative impact **5.93650674437e-06**. This is consistent with a study by (Bellabaci, 2024), which reveals that despite the vast natural and human resources available to the agricultural sector in Algeria, and despite the financial, material, and moral support it has received in recent years, the agricultural sector's contribution to **GDP** remains modest. This disparity persists despite the sector's potential and the significant support it has received in recent years. The weak per capita agricultural output can be attributed to: low agricultural productivity, due to unstable employment and uncompetitive wages; weak management of agricultural enterprises, which limits their growth; frequent reforms in the sector, which hinders its stability; and high costs of agricultural production inputs, especially fertilizers and agricultural equipment.

Agricultural Imports **AI** in Algeria negatively impacts **GDP** in the short run by an amount of **-17.7774270577**, and here we note the declining contribution of Agricultural Imports to **GDP** during the study period. The negative relationship between Agricultural Imports **AI** and **GDP** in the short run is consistent with a number of previous studies, most notably a study conducted in Bangladesh. Given that the Algerian Agricultural sector is similar in characteristics to that of Bangladesh, its contribution to the economy is very weak. Agriculture is the least contributor compared to other sectors, given that its share of **GDP** contribution and the percentage of the labor force employed in the Agricultural Sector are declining day by day. Algeria is still considered a developing country, given its

wealth of natural resources. However, the proper use of our natural resources is impossible due to a lack of cash and technology. Therefore, we depend on international trade for our survival. It is the process of establishing trade relations with other countries. Exports can be an effective weapon to boost the Algerian economy and alleviate poverty. The expansion of the economy is inversely related to its exports. Nothing can hinder the prosperity of an economy if export growth exceeds import growth. Increased exports will support economic expansion. Agricultural production in Algeria has long been chaotic, and intermediaries are involved in transporting agricultural goods from one place to another. Furthermore, the food processing industry in Algeria remains immature and unable to meet the demand for manufactured goods. In the long run, and through error correction model estimation, it also has a negative impact of $-7.57303824582e-05$. This is what was indicated by a study by (Selt, 2025). Despite the Algerian government's efforts to support the agricultural sector, create added value in the economy, and eliminate food dependency, this sector still suffers from numerous problems that hinder the production of sufficient basic agricultural products for the population. The negative relationship between agricultural imports and **GDP**, based on the outputs of the **VECM** model, reflects the weakness of the Algerian government's agricultural policy. The Algerian Agricultural sector suffers from a lack of basic infrastructure, a persistent decline in foreign investment in agriculture, and deficiencies in agricultural practices related to technology (Hasan, Hossain, & Afsar, 2022).

Agricultural Exports **AE** negatively impacts Algeria's **GDP** in the long term. Agricultural Exports **AE** negatively impact Algeria's **GDP** over the long term. In Algeria specifically, agricultural exports did not exceed \$552 million due to the country's failure to achieve self-sufficiency in most agricultural crops, with the exception of a few, such as dates. The period from 1970 to 2022 witnessed a very slight increase in agricultural exports, but they remained much lower than total agricultural imports during the same period, which led to a deficit in the trade balance and a drain on the public treasury.

Agricultural imports **AI** negatively impacts Algeria's **GDP** in the short and long term. Despite the massive agricultural policies adopted by the Algerian state, starting with the Rural Renewal Policy of 2009, which the state injected funds into and launched through important programs, most notably the Neighborhood Development Programs that targeted the plains, hills, and mountainous regions, we conclude that there is an inverse relationship between the growth of the gross domestic product **GDP** and the agricultural value-added ratio of **GDP**. This inverse relationship demonstrates that when the **GDP** increases, the contribution of agriculture to **GDP** declines. This can be observed for the years 2012, 2015, and 2016. When compared to the years before 2020, this means that the growth of **GDP** is primarily driven by hydrocarbons, not agriculture. The decline in oil revenues after 2014 led to a decline in **GDP**, leaving room for the contribution of

agriculture to **GDP** to increase. Therefore, the relationship is mathematical, not economic.

Conclusion:

In Algeria, the results of the standard study between the variables under study are completely consistent with the digital reading of the variables from **1970** to **2022**. The Agricultural Coverage rate in Algeria between **1994-1990** reached approximately **2.63**, and here the average propensity to export reached 1.31 and the average propensity to import **6.84**, and accordingly the rate of food dependency on the outside was estimated at **49.38**. In the same numerical context, the agricultural coverage rate for the period between **2000** and **2004** reached **4.06**. Here, the average export propensity was estimated at **2.31**. Also, the average import propensity for the period reached **42.86**, and accordingly, the food dependency rate reached **56.89**. Also, for the period between **2015** and **2019**, the agricultural coverage rate in Algeria was estimated at **4.28**, where the average export propensity rate was estimated at **2.53**, while the average import propensity rate was estimated at **55.49**. Accordingly, food dependency for the period was estimated at **59**. Accordingly, we note during the study period **1970 - 2022**, that the agricultural trade balance in Algeria witnessed a large deficit that can be attributed to many reasons, the most prominent of which are: the continuous increase in demand for agricultural products in contrast to a severe shortage in agricultural productivity - reliance on imports, which contributes to the procrastination in finding solutions for local agricultural alternatives with low costs.

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