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The Impact of the Added Value of the Agricultural Sector on Economic Growth in Algeria: An Econometric Study for the Period (1993-2022)

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Abstract:

This research aims to evaluate the impact of agricultural output on the rate of GDP in Algeria for the period 1993 to 2022, using the EViews.8 program, and to achieve the objective of the analysis, we adopted a selection of independent variables related to value Additives for agriculture, forestry and fishing sector, volume of agricultural raw materials exports and imports of raw materials

The research found a positive correlation between the two variables evaluated, as an increase in the value-added of the agricultural sector by 1 unit leads to an increase in the level of GDP by 1.10^{12} units, so that the public authorities must implement active agricultural policies aimed at raising the level of non-oil revenues.

Keywords: agricultural policy, agricultural development, economic growth, Algeria

(JEL) Classification : **O13, C52, C32, C22**

1.Introduction:

Agricultural development is considered one of the main poles of economic development, through its contribution to enhancing levels of food security, which aims to achieve self-sufficiency by relying on local resources and capabilities in the production process. It also aims to reduce poverty and hunger rates that are increasing from year to year in some regions of the world. Therefore, these indicators are considered one of the Millennium Goals that governments seek to address, by directing agricultural economic policies towards raising food levels, as well as their contribution to providing the necessary materials in order to activate the manufacturing industries.

Algeria seeks, through its frequent economic programs, to develop the agricultural sector, given the resources it possesses in this field, from fertile agricultural lands, water resources, as well as important human resources that enable it to enhance the real breakthrough in the agricultural sector, which is considered one of the engines of the economic diversification strategy, in addition to both the industrial and service sectors, all of which aim to diversify sources of

public revenues, and transform the national economy from its rentier nature to a productive nature, based on raising productivity levels in non-hydrocarbon sectors. Where the World Bank report highlighted the importance of the agricultural sector for coordination between various other sectors, in order to increase economic growth rates, reduce poverty and achieve inter-sustainability. (World Bank, 2008)

Through this study, we try to clarify the importance of the agricultural sector as a promising sector for launching real development in Algeria on the one hand, as well as its effective role in revitalizing other sectors such as the industry and services sector with the aim of raising productivity levels, by encouraging the creation of small and medium enterprises in the agricultural field, within the framework of The success of the economic diversification strategy, which is an ideal mechanism for economies whose revenues depend on a single resource, as is the case in Algeria**.**

1.1The problem of the study:

From the above, the following main problem can be raised:

How can agricultural development policies in Algeria affect the level of GDP?

In order to answer the main question, we tried to raise some sub-questions that could provide an illustrative addition to the subject of the study, which can be presented in the following points:

- What is the importance of agricultural development? What is its role in the success of the policy of transforming the national economy from a rentier to a productive one?
- How can the agricultural sector contribute to the development of industry and other sectors that form the national economy?

•What are the challenges that impede the path of agricultural development in Algeria?

• How can an effective agricultural policy succeed in Algeria?

1.2 Study Hypotheses:

In this study, we relied on two main hypotheses:

1-The first hypothesis: The ideal agricultural policy is one of the pillars of successful economic development.

2-The second hypothesis: the increase in the levels of agricultural output has a positive effect on the levels of GDP in Algeria.

1.3 The importance of the study:

Through this research paper, we seek to achieve a number of objectives:

-Considering agriculture as one of the main pillars for achieving food security and eliminating extreme poverty among members of the same society.

-The need for the public authorities to pay attention to the agricultural sector because of its great effects on the levels of economic growth.

-Agricultural policy is considered one of the drivers of the economic diversification strategy, which can address the problem of economies dependent on a single revenue component.

-Agriculture is the reason for the launch of industrial and social development, through the provision of agricultural raw materials necessary for the operation of factories, as well as the creation of new jobs for the benefit of the unemployed.

- Agriculture for economic, social and even human development, as it provides the national economy with revenues outside the hydrocarbon sector.

1.4 Methodology and study period:

In this study, we relied on the analytical descriptive approach, whose features appear on the theoretical side, by highlighting the role and importance of agricultural policy in the development and development of the national economy, by raising the levels of agricultural production, which has positive effects on the gross domestic product. We also adopted the standard approach, by using the EVIEWS program, in measuring the impact of the relationship between the added value of the agricultural sector, which is also formed from forests and the fishing sector on the one hand, with the GDP rates in Algeria, in addition to a number of other explanatory variables, in the period from 1993 to 2022

1.5 Previous studies:

There are several studies that dealt with the subject matter of the study, we mention some of them as follows:

a- A study by: K.Matsuy Ama, which was published in 1992, and its subject was »:Agricultural productivity, competitive advantage and economic growth «Where the researcher showed the role of agricultural productivity in economic growth, in the long term, in countries, especially those that enjoy a comparative advantage in the agricultural sector and at an early stage of development, as they

can accelerate their levels of growth and structural transformation by encouraging agricultural investment. The researcher concluded that there is a negative relationship between agricultural productivity and economic growth in the case of an open economy.

b A study by: Nkamleu Guy-Blaise, which centered on: "the technique of la croissance de la productivité agricole en Afrique francophone"

Where the researcher tried to study the problem of the productivity of the agricultural sector in the French-speaking African countries, by selecting eight countries to analyze the performance of the agricultural sector in the period from 1970 to 2000, using the panel data, where the study concluded that there is an inverse relationship in the countries of the study for weak levels of productivity, which he attributed It is caused by the poor level of technical progress used in the agricultural sector, and the study highlighted the determinants of growth in the agricultural sector in order to raise the levels of productivity of factors of production and rely on modern technologies in the production process.

2. Agricultural policy in Algeria:

The development of the agricultural sector and the provision of food security is one of the goals of the economic and social development strategy in Algeria, and it is also considered one of the real challenges, as a result of the rise in food prices in global markets. According to the World Food Organization, food prices will rise beyond their record prices recorded during the global food crisis. (Badr Othman Mal Allah, 2015). In its report on agriculture for development, the World Bank considered that agriculture is a vital tool for achieving development goals related to reducing extreme poverty and hunger. This report also contributed to guiding governments and the international community on developing and implementing agriculture for development programs that can improve lives. Hundreds of millions of poor people in rural areas. (World Bank, 2007).

Algeria seeks to develop the agricultural sector by addressing the challenges facing the food and agricultural systems, related to providing the necessary food products as well as other agricultural products to meet the basic needs of food for citizens, and the following table highlights the development of grain production in Algeria, according to the National Statistics Office and the Ministry of Agriculture and Rural Development in The period from 2007 to 2017.

Table (01): The evolution of cereal production in Algeria

Unit: million quintals

	2008/2007	2010/2015	*2017/2019	2019*/2021
durum wheat	**8138**	**19275**	**19376,17**	**19909.5**
Soft wheat	**2972**	**6275**	**5024,79**	**4455,4**
barley	**3959**	**11042**	**9199,06**	**9696,9**

Source:*ONS, (2021), **"**Agricol production" Bultin N°937 , Ministry of Agriculture and Rural Development (2007-2011)

The table shows that the levels of durum wheat exceed 19 million quintals annually, unlike other types of cereals, as they do not exceed 9 million quintals for soft wheat, and do not exceed 14 million quintals for barley (ONS, 2020). The reason for the decline in production levels is due to these agricultural divisions. To the technical means used for the production process that do not rise to the level of the available capabilities, as well as to climate changes that affect the levels of agricultural productivity, as it is expected that the rise in average temperatures and changes in precipitation will negatively affect the production of crops and livestock (FAO and United Nations Agriculture, 2018).

3.Concept and objectives of agricultural policy:

Agricultural policy is considered one of the most important tools of economic policy, along with both industrial and service policy. Economic policy is defined as those plans and programs that are structured according to a specific plan that targets a set of goals in a specific period of time. (Ali Abd al-Qadir Ali, 2003), where the objectives of any agricultural policy are related to achieving food security, provided that the material, social and even economic capabilities are available to obtain sufficient, healthy and nutritious food that meets the nutritional needs of the members of society and suits their tastes to enjoy a better life. and appropriate food hygiene (FAO, 2008). The term food security also appeared in the mid-seventies of the last century, during the World Conference on Food Security in 1974, where it was defined as the ability to provide communities with commodities at all times to support food consumption while controlling price

fluctuations (FAO, 2006) Where does this report focus on the three main dimensions of achieving food security, which are:

- affordability of food;
- availability of food;
- Food quality and safety.

The following table shows the contribution of the agricultural sector to the level of GDP in Algeria, according to the statistics of the Arab Monetary Fund for the period from 2000 to 2017.

Table(02): Levels of agricultural output in Algeria

	2000	2006	2009	2015	2017
Agricultural output million dollars	**4,6**	**8.805**	**12,77**	**19.262**	**20.89**
The share of agriculture in the gross domestic	**8.4**	**7.5**	**8.03**	**11.6**	**12.3**

Source: Arab Monetary Fund (2010 and 2018), Unified Arab Economic Report, data.

The above table shows the importance of the agricultural sector in raising the levels of economic growth in Algeria, as the percentage of agriculture's contribution to the GDP levels increased from 4.8% in 2000 to more than 12% in 2017, thus exceeding the levels of agricultural output in 2017. Approximately $21 million, and these rates remain weak compared to the size of the potential available to the agricultural sector in Algeria, which has not been optimally exploited due to the absence of agricultural development plans, and in order for agricultural policies to contribute to promoting agricultural growth, four basic elements must be available, which include (the World Bank, 2008):

- agricultural producers through the provision of basic public commodities;

Improving the climate for private investment;

-Building effective institutions that contribute to the promotion of agricultural production;

-Ensure the sustainable use of natural resources.

4. **How to transfer agricultural resources towards industr**y?

Agricultural transformation is based on structural factors affecting demand, and improving agricultural productivity that allows for a reduction in agricultural production costs, which is translated through lower relative prices for agricultural materials. According to Angel's law, the income elasticity of demand for agricultural products is less than one, so improving agricultural productivity It benefits the industry (Pierre Berthelier, 2005), so the successful economic transformation is that transformation that contributes to the continuous flow of agricultural resources towards industry, and this structural transformation is linked to the structural factors that form demand, the marginal productivity of labor, and the technical progress used in the process Productivity. The following table highlights the added value of manufacturing industries from 1995 to 2017 in the three Maghreb countries.

Table(03): The added value of the manufacturing industries of some Maghreb countries Unit: million dollars (current prices)

	1995	2000	2009	2015	2016	2017
Algeria	**3.57**	**2.81**	**5.8**	**7.205**	**7.01**	**7.339**
Tunisia	**3.42**	**3.53**	**7.74**	**6.127**	**6.00**	**5.421**
Morocco	**6.09**	**6.01**	**11.2**	**16.32**	**16.2**	**17.26**

Source: prepared by the researcher, based on the data of the Food and Agriculture Organization of the United Nations for the years 2010 and 2018.

The table shows the importance of the manufacturing industries that are sourced from agricultural products in the three Maghreb countries, where Morocco enjoys a significant agricultural and transformational advantage compared to Algeria and Tunisia, as its added value increased from less than 6.1 million dollars in 1995 to more than 17 million dollars in 2017. As for Algeria, it is in a better position than Tunisia, as the added value of the manufacturing industries increased from less than 3.6 million dollars in 1995 to less than 8 million dollars in 2017.

5. Challenges of effective agricultural policy in Algeria:

By effective agricultural policy, we mean those effective development plans in the agricultural field that would contribute to the development of the national

economy, through the mediating role that agriculture plays between the industry and service sectors, in addition to contributing to creating job positions for the benefit of the unemployed by encouraging them to create institutions. a small and medium-sized enterprise in the agricultural field, which contributes to the revitalization of the labor market, and the following table highlights the development of the labor force in the agricultural sector in Tunisia, Algeria and Morocco.

Table(04): Total employment and the agricultural labor force in the three Maghreb countries Unit: thousand workers

	total employment			agricultural labor force			
	2000	2014	2016	2000	2005	2014	*2016
Algeria	10.3	11.64	11.9	2.5	1.38	3.40	2.78
Tunisia	2.55	4.063	4.08	502	564	822	779
Morocco	11.7	12.19	12.5	4.2	4.85	2.88	2.80

Source: Food and Agriculture Organization of the United Nations, 2018 database

* Arab Organization for Agricultural Development, Agriculture, Livestock and Fisheries Sector in the Arab World 2008

It is clear from the table that agricultural labor in Algeria exceeds that of Tunisia and Morocco, where more than 3.4 million people were recorded in 2014. However, this number decreased in 2016, to less than 3 million people working in the agricultural sector. To a number of obstacles that led employment to refrain from agricultural activity, linked to low wages as well as the absence of social and credit protection in the agricultural sector, which led young people to search for other jobs outside the agricultural sector. This affects the productivity of the agricultural sector, which faces several challenges, perhaps the most prominent of which are (FAO, 2018):

*Providing the necessary foodstuffs as well as other agricultural products to meet the needs of local demand;

•Reducing hunger and poverty within the framework of securing food security policy;

•Enhancing agricultural productivity and maintaining the optimal use of available natural resources;

• Adapting to the effects of climate change and moving towards climate-smart agricultural systems.

6- Econometric study of the impact of agricultural output on economic growth in Algeria:

In the applied side of this study, we try to examine and measure the effect of the equilibrium relationship between the agricultural output represented by the added value of the agricultural sector as well as the gross domestic product in Algeria. Relying on the multiple linear regression model, and using the standard program EViews.

6.1Data sources:

This study relies on collecting data represented in the study variables and extracted from the human development indicators issued by the World Bank and updated until 10/02/2019, as this data is updated from time to time and is downloadable on the website (www.worldbank.org)

6.2 Study population:

The study population consists of some time series, which includes observations in the period from 1993-2022, and the data of the studied statistical series are shown in Appendix No. 01. To achieve the objectives of the study, the following must be taken into account:

-The studied time series, which represents a variable of the Algerian macroeconomic indicators, must be continuous during the study period;

- Availability of all data and information indicated for the studied variable during the study period.

6.3 Variables and Study Model:

In order to test the hypotheses of the study and reach the goal related to knowing the extent of the impact of agricultural output on the gross domestic product in Algeria, the following variables have been identified:

-**The dependent variable**: represented by the Gross Domestic Product series, denoted by **GDP** and expressed in current prices of the national currency.

Independent variables: In order to build a good standard model for our study, the following independent variables have been introduced:

- The dependent variable: represented by the Gross Domestic Product series, denoted by **GDP** and expressed in current prices of the national currency.
Independent variables: In order to build a good standard model for our study, the following independent variables have been introduced:

* The added value of the agricultural, forestry and fishing sectors: It is symbolized by the symbol **VAGR** and expressed in current prices of the national currency.

*Exports of primary agricultural materials: It is symbolized by the symbol **EX** and expressed as a percentage of commodity exports.

* Imports of agricultural raw materials: They are symbolized by the symbol **IMP** and expressed as a percentage of commodity imports.

6.4 Description of the study model:

The study form is written in the following linear form, according to the following mathematical equation:

$$\mathbf{GDP = C0 + C_1 .VAGR + C_2 .EX + C_3 .IMP + \varepsilon}$$

Where: C_1, C_2, C_3: the estimated model parameters. C0: hard

ε: expresses the value of the random error resulting from errors in measurement, or the miscalculation of the standard model by neglecting some external variables that we cannot measure sometimes, especially with regard to qualitative variables (such as good governance, business climate, democracy and other variables that can explain estimated model).

First: Determine the delay or slowdown period:

the table below shows the slowing down period for the studied time series, and according to the Akaike and Schwarz criteria, the slowing down period is one period, i.e. lag = 1

Table (05): Determine the delay period

VAR Lag Order Selection Criteria
Endogenous variables: GDP
Exogenous variables: C VAGR EX
IMP
Date: 22/04/23 Time: 24:10
Sample: 1993 2022
Included observations: 30

Lag	LogL	LR	AIC	SC	HQ
0	**-840.2**	**NA**	**60.30**	**60.49**	**60.33**
1	**-802.5**	**62.07***	**57.67***	**57.91***	**57.755***
2	**-802.4**	**0.122**	**57.74**	**58.03**	**57.83**

Source: Prepared by researchers based on Eviews

Second: Studying the stability of time series:

we use the Dickey-Fuller test to test the stability of time series, and the table below shows the effect of this test on the three studied formulas (with the presence of the constant, with the presence of the constant and the time vector, and without the presence of the constant and the time vector).

Table (06): Stability of series according to the developed Dickey-Fuller test

	At level			At 1st difference			Degree stationnarité
	intercept	Trend and intercept	None	intercept	Trend and intercept	None	
GDP	**0.99**	**0.83**	**1**	**0.00**	**0.007**	**0.02**	**I(1)**
VAGR	**0.55**	**0.28**	**0.65**	**0.00**	**0.002**	**0.00**	**I(1)**
EX	**0.04**	**0.07**	**0.22**	**0.00**	**0.484**	**0.00**	**I(1)**
IMP	**0.18**	**0.00**	**0.00**	**0.00**	**0.005**	**0.005**	**I(1)**

Source: Prepared by researcher, based on EViews.

It is clear from the table that the probability of error for all studied time series at the level is greater than the critical values (1%, 5% and 10%) in all three studied formulas, and this is what makes them unstable at the level according to the developed Dickey-Fuller test. But when making the first difference for these time series, it was noticed that the accompanying probability is less than the critical values at the level of 5%, which makes it stable at the same degree, which is the first degree I (1).

The graphic method shown in Appendix No. 2 also proves the instability of the time series at the level where the time series takes an increasing shape over time (Figure No. 01), but when making the first difference, it was noticed that all the studied forms of time series oscillate around the zero region, which makes them stable At the first degree as proven by the developed Dickey-Fuller test.

Third: Estimating the parameters of the model:

We use the method of least squares to estimate the linear relationship between the levels of domestic product and the added value of the agricultural sector in Algeria and various other independent variables, and through the standard program used, we reached the estimates shown in the table below.

Table (07): Estimation of the linear relationship

Dependent Variable: GDP
Method: Least Squares

Date: 20/04/23 Time: 14:26
Sample: 1993 2022
Included observations: 30

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.17E+13	3.55E+12	3.302308	0.0028
VAGR	1.00E+12	3.17E+11	3.163171	0.0039
EX	-5.08E+13	2.38E+13	-2.131637	0.0427
IMP	-4.82E+12	6.25E+11	-7.712713	0.0000

R-squared	0.803088	Mean dependent var	8.00E+12
Adjusted R-squared	0.780367	S.D. dependent var	6.55E+12
S.E. of regression	3.07E+12	Akaike info criterion	60.46696

Sum squared resid	**2.45E+26**	**Schwarz criterion**	**60.65378**
Log likelihood	**-903.0043**	**Hannan-Quinn criter.**	**60.52672**
F-statistic	**35.34620**	**Durbin-Watson stat**	**0.707241**
Prob(F-statistic)	**0.000000**		

Source: Prepared by researcher based on EViews

Through the table, the linear relationship that links the dependent variable representing the levels of domestic product and the various independent variables can be written as follows:

$$\mathbf{GDP = 1{,}17 .10^{13} + 1.\ 10^{12}\ VAGR - 5{,}08 .10^{13}\ EX - 4\ ,82.10^{12} IMP\ + \varepsilon}$$

Fourth: The statistical and economic study of the model

a- Statistical study:

• The significance of the model: The significance of the model is studied through the coefficient of determination R^2 as well as the coefficient of Fisher, through the coefficient of determination which is equal to **0.803**, meaning that the explanatory variables related to the added value of agriculture, the volume of exports of primary agricultural materials, and imports of agricultural raw materials explain a percentage of **80.3 %** of GDP in the study period. Likewise, the probability accompanying Fisher's statistic is less than the critical values at **5%**, and this means that the independent variables are significant and explain well the dependent variable.

***Significance of the parameters**:

we use Student statistics to study the significance of the parameters. Through the outputs of the program, it is found that the probability accompanying Student is less than the critical values at 5%, and this is for the value-added parameters of agriculture, forestry and marine fishing, the parameter of exports of raw agricultural materials and imports of agricultural raw materials Here, we can say that these three independent variables have statistical significance and contribute to explaining the estimated model.

Even the constant has statistical significance in the studied model, because the probability of error for the accompanying Student statistic is less than the critical value, i.e. less than 5%.

B- Economic Study:

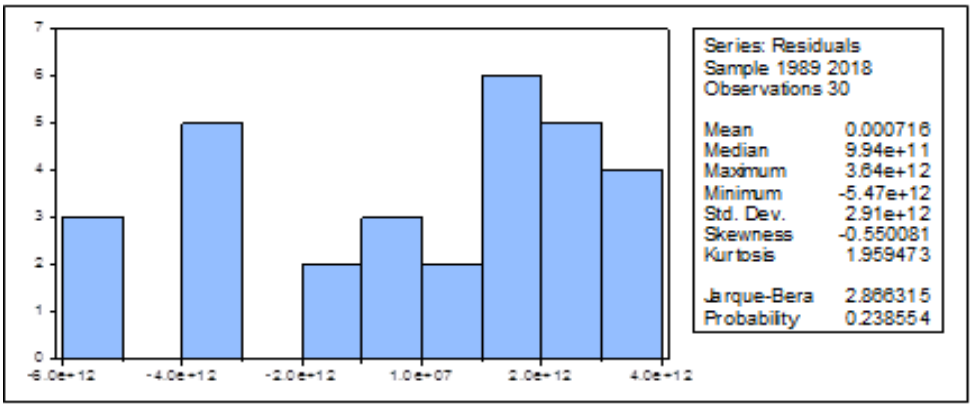
* There is a positive direct relationship between the added value of the agriculture, forestry and fishing sectors and the levels of GDP in the period from 1989 to 2018. The higher the value added of the agriculture, forestry and fishing sectors by one unit, this leads to a rise in the levels of GDP by 1.10^{12}. unit, and this is consistent with the economic theory regarding the positive relationship between the levels of domestic product and the added value of agriculture, forestry and fishing.

* There is an inverse relationship between the level of exports and the level of domestic product, as an increase in exports by one unit leads to a decrease in the levels of domestic product by 5.08. 10^{13} calculated units, which is not consistent with economic theory, because exports have positive effects on levels of economic growth.

* The standard model also showed the inverse relationship between imports and the level of domestic product, as an increase in imports by one unit leads to a decrease in the levels of domestic product by $4.82.10^{12}$ calculated units, which is consistent with economic theory. Because imports negatively affect the levels of economic growth.

c) Testing the quality of the model: It consists of conducting three tests: the normal distribution test, the correlation test, and Heteroskedasticity Test.

Figure (01): Test for normal distribution of residuals



Source: Prepared by the researcher based on the outputs of the standard program

It can be seen from the above figure that the probability of error distribution is equal to 0.23, which is greater than the critical value at the 5% level, which confirms that the errors follow the normal distribution law.

- **linear correlation test for residuals**

Through the Breusch-Godfrey Serial Correlation LM Test, it is found that the probability associated with Fisher's statistic as well as the coefficient of determination is greater than the critical value at 5 %, and this proves that there is no correlation between errors. It is shown in the table below.

Table (08): Linear correlation test for residuals

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	**1.774620**	**Prob. F(2,24)**	**0.1590**
Obs*R-squared	**4.044893**	**Prob. Chi-Square(2)**	**0.1198**

Source: Prepared by the researcher based on the outputs of the standard program.

* **d) Test for heterogeneity of errors**

Through the **ARCH** test shown in the table below, it is found that the probability associated with Fisher and the coefficient of determination are greater than the critical value at %5, which makes the errors non-variable.

Table (09): Test homogeneity of errors

Heteroskedasticity Test: ARCH

F-statistic	**0.136176**	**Prob. F(1,27)**	**0.7150**
Obs*R-squared	**0.145529**	**Prob. Chi-Square(1)**	**0.7028**

Source: Prepared by the researcher based on the outputs of the standard program.

7. Analyze the results:

Through the standard model, it is shown that there is a positive direct relationship between the added value formed by the agricultural sector, forestry and marine fishing, with the levels of gross domestic product, i. Raising the levels of agricultural productivity, which in turn contributes to raising the levels of total

productivity, due to the effects of all sectors forming the national economy, which contributes to achieving comprehensive economic development.

* The study also showed the inverse relationship between the volume of exports of primary agricultural materials and the levels of domestic product on the one hand, which requires the public authorities to revitalize the process of exporting agricultural products in excess of domestic demand and directing them to global markets, and we must not neglect the importance of the policy of spending on the agricultural sector. Because of its positive effects on revitalizing the export promotion policy, and this can only be achieved through financing investment projects and contributing to directing and accompanying youth programs in the agricultural sector, through training and training young people in the field of the agricultural sector, with the need to direct institutes and universities to open specializations for the benefit of young people. Those wishing to engage in studies related to the agricultural sector.

* The study also concluded that there is an inverse relationship between imports of agricultural raw materials and the level of economic growth during the study period. The import policy directs towards importing the technical factor related to the various machines and chemical fertilizers that raise the levels of agricultural output.

8.Conclusion:

The standard study showed the importance of the agricultural sector in achieving economic development, as there is a direct positive relationship between the levels of domestic product and the added value of the agricultural sector, which consists of the agriculture sector, forestry sector and the fishing sector in the study period extending from 1989 to 2018, where agricultural development is considered one of the most important drivers of development It is not possible to achieve the objectives of this type of development unless effective policies are adopted related to the effective management of the various available resources and their best utilization, in order to achieve high levels of agricultural productivity, which requires drawing up strategic and forward-looking plans to accompany the agricultural sector in Algeria, From encouraging the unemployed to create their own mini-enterprises active in the agricultural field on the one hand, as well as recruiting agricultural training and research in institutes and universities in order

to achieve the goals of comprehensive agricultural development, which is considered one of the ingredients for food security as well as one of the strategies to combat poverty and extreme hunger.

The completed study reached the following results:

• The validity of the first hypothesis, which is related to the necessity of developing the agricultural sector, which inevitably leads to raising the levels of total productivity, which contributes to achieving economic growth and economic development alike.

• The validity of the second hypothesis, where the standard study showed that an increase in the level of agricultural productivity by one unit inevitably leads to an increase in the level of domestic product by more than 1.10^{12} calculated units. This is done by encouraging agricultural investment by motivating young people to create small and medium enterprises active in the field agricultural.

*The standard study also concluded that encouraging foreign trade in the field of encouraging the export of agricultural products in particular, as an increase in the export of products by one unit inevitably leads to a decrease in the level of domestic product by more than $5.8\ 10^{13}$ units, and this confirms the weakness of agricultural exports. And its lack of effective contribution to stimulating economic growth in Algeria during the study period, and perhaps the reason for this is the heavy dependence on oil revenues without taking into account the productivity and effectiveness of other sectors that form the national economy.

***Recommendations and suggestions:**

The agricultural sector is considered the alternative sector to hydrocarbons in Algeria. despite the natural and human capabilities that Algeria possesses in the agricultural field, the levels of agricultural productivity are still weak compared to the available capabilities and resources. Therefore, the public authorities must take into account the following for the success of an effective agricultural policy:

• Adopting the strategy of economic diversification as an alternative strategy to the rentier economy.

• Providing decent work conditions in the agricultural field, by improving employee salaries and providing social and credit protection.

• The necessity of directing public spending towards the agricultural sector, by modernizing the technical means used in the production process, and working to

promote research in the agricultural field, by opening majors for the benefit of students at the level of universities and specialized institutes.

Encouraging the agricultural transformation strategy, by providing the products needed by the industry, especially in the field of food, clothing and others.

• Encouraging exports of agricultural products, by providing conditions for exporting agricultural products to world markets.

• Providing financial and credit facilities to encourage young people to open small and medium enterprises in the agricultural field.

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10- Appendices:

Statistical Appendix No. 01: The studied time series data

	EX	GDP	VAGR	IMP
1993	0,00232968	1,17E+12	4.87653421	3,69957865
1994	0,02256842	1,49E+12	5.05436754	3,3372422
1995	0,05560377	1,99E+12	6.87659087	3,17690298
1996	0,0673808	2,57E+12	6.99087654	2,98138524
1997	0,04975726	2,78E+12	8.96598576	3,12371822
1998	0,10952245	2,83E+12	10.8765774	2,62514523
1999	0,03846487	3.2382E+12	11.1080312	2,58909539
2000	0,04992616	4.1235E+12	8.39575202	2,59421936
2001	0,0549608	4.2271E+12	9.74897023	2,35754072
2002	0,01564167	4.5228E+12	9.22442864	2,11548188
2003	0,02402746	5.2523E+12	9.81090053	2,41188969
2004	0,01006321	6.1491E+12	9.44038029	1,90973586
2005	0,0043558	7.562E+12	7.69110293	1,69774806
2006	0,00696535	8.5016E+12	7.54325421	2,08070084
2007	0,0055703	9.3529E+12	7.57092488	2,25715946
2008	0,00659643	1.1044E+13	6.58655859	1,60935202
2009	0,00735596	9.968E+12	9.34287356	1,46272721
2010	0,01578786	1.1992E+13	8.46678556	1,60733735
2011	0,02453751	1.4589E+13	8.11023671	1,51536675
2012	0,00978563	1.621E+13	8.77068636	1,48085311
2013	0,01208599	1.6648E+13	9.85111713	1,44271417
2014	0,01838977	1.7229E+13	10.2863972	1,56270789
2015	0,02811673	1.6702E+13	11.5787075	1,44070031
2016	0,03506659	1.7407E+13	12.2127914	1,40353134
2017	0,07250853	1,86E+13	12.2721644	1,03577226
2018	0.023769864	2,10E+13	12.4321855	1.01156987
2019	0,00968794	4,23E+11	10.5432782	4,90641562
2020	0,00326699	5,56E+11	9.01438737	4,71836024
2021	0,00986536	8,45E+11	7.98534523	3,1775065
2022	0,00855792	1,05E+12	5.04539854	2,90725177

Source: Prepared by researchers based on updated World Bank data on October 02, 2022