

## COMPARING THE PERFORMANCE OF PUBLIC AND PRIVATE SECTOR AGRICULTURAL INSTITUTIONS IN THE ALGERIAN ECONOMY DURING THE PERIOD 1974-2021

## Abdelbaki Mohamed<sup>A</sup>, Chikhaoui Abdelaziz<sup>B</sup>

ISSN: 2525-3654

ACCESS

ARTICLE INFO	ABSTRACT
Article history:	<b>Objective:</b> The objective of this study is to investigate to assess and measure
Received: Aug, 21 <sup>st</sup> 2024	sectors, and to determine the agricultural sector's contribution to the Algerian
Accepted: Oct, 21st 2024	economy,
Keywords:	<b>Theoretical Framework:</b> The importance of the agricultural sector in achieving food security and economic diversification by encouraging growth in renewable resource sectors such as agriculture.
Agriculture; Production Calculation; Operation Calculation; Discriminant Analysis; Discriminant Function:	<b>Method:</b> The methodology adopted for this research comprises Conducting a statistical analysis of a set of economic variables related to the agricultural sector to understand the importance of this sector and its performance during the period from 1974 to 2021.
Principal Component Analysis.	<b>Results and Discussion:</b> - There are significant differences in favor of the private sector in all study variables, indicating a shift from public sector dominance to private sector dominance The public sector dominated from independence until 1990, after which the private sector emerged and participated alongside the public sector in all economic activities in Algeria.
OPEN DATA	<b>Research Implications:</b> The agricultural sector in Algeria helps to diversify the economy and gradually reduce dependence on the unstable hydrocarbon sector by relying on sectors with renewable resources.
	<b>Originality/Value:</b> This study contributes to the literature by Understanding the importance of the agricultural sector through its provision of food security, its contribution to the Algerian economy, and its role in reducing the import bill. All of this contributes to minimizing economic fluctuations that may affect Algeria, which is a goal pursued through economic diversification by encouraging both the public and private sectors in agriculture.
	Dais https://dai.org/10.26668/husingsgravious/2024.v0i11.5125

Doi: https://doi.org/10.26668/businessreview/2024.v9i11.5125

#### COMPARANDO O DESEMPENHO DAS INSTITUIÇÕES AGRÍCOLAS DO SETOR PÚBLICO E PRIVADO NA ECONOMIA ARGELINA DURANTE O PERÍODO DE 1974-2021.

#### RESUMO

**Objetivo:** O objetivo deste estudo é investigar, avaliar e medir o desempenho econômico no campo da agricultura, tanto no setor público quanto no privado, e determinar a contribuição do setor agrícola para a economia argelina. **Marco Teórico:** A importância do setor agrícola para alcançar a segurança alimentar e a diversificação econômica, incentivando o crescimento em setores com recursos renováveis, como a agricultura.

<sup>&</sup>lt;sup>B</sup> PhD in Economic & Statistics, Associate Professor. Economic Sciences Department, University of Djelfa, Algeria. E-mail: <u>a.chikhaoui@univ-djelfa.dz</u> Orcid: <u>https://orcid.org/0009-0006-5082-9935</u>



<sup>&</sup>lt;sup>A</sup> PhD in Management Sciences, Associate Professor. Management Sciences Department, University of Djelfa, Algeria. E-mail: <u>m.abdelbaki@univ-djelfa.dz</u> Orcid: <u>https://orcid.org/0009-0005-0165-4545</u>

**Método:** A metodologia adotada para esta pesquisa envolve a realização de uma análise estatística de um conjunto de variáveis econômicas relacionadas ao setor agrícola para compreender a importância desse setor e seu desempenho durante o período de 1974 a 2021.

**Resultados e Discussão:** Os resultados obtidos revelaram que: - Existem diferenças significativas a favor do setor privado em todas as variáveis estudadas, indicando uma mudança da dominância do setor público para a dominância do setor privado. - O setor público dominou desde a independência até 1990, após o qual o setor privado emergiu e participou ao lado do setor público em todas as atividades econômicas na Argélia.

**Implicações da Pesquisa:** O setor agrícola na Argélia ajuda a diversificar a economia e reduzir gradualmente a dependência do instável setor de hidrocarbonetos, por meio do aproveitamento de setores com recursos renováveis. **Originalidade/Valor:** Este estudo contribui para a literatura ao entender a importância do setor agrícola através de sua provisão de segurança alimentar, sua contribuição para a economia argelina e seu papel na redução da fatura de importação. Tudo isso contribui para minimizar as flutuações econômicas que podem afetar a Argélia, o que é um objetivo perseguido por meio da diversificação econômica, incentivando tanto os setores público quanto privado na agricultura.

**Palavras-chave:** Agricultura, Cálculo de Produção, Cálculo de Operação, Análise Discriminante, Função Discriminante, Análise de Componentes Principais, Análise de Agrupamento.

#### COMPARANDO EL DESEMPEÑO DE LAS INSTITUCIONES AGRÍCOLAS DEL SECTOR PÚBLICO Y PRIVADO EN LA ECONOMÍA ARGELINA DURANTE EL PERÍODO DE 1974-2021

#### RESUMEN

**Objetivo:** El objetivo de este estudio es investigar, evaluar y medir el desempeño económico en el campo de la agricultura, tanto en el sector público como en el privado, y determinar la contribución del sector agrícola a la economía argelina.

**Marco Teórico:** La importancia del sector agrícola para lograr la seguridad alimentaria y la diversificación económica al fomentar el crecimiento en sectores de recursos renovables, como la agricultura.

**Método:** La metodología adoptada para esta investigación implica realizar un análisis estadístico de un conjunto de variables económicas relacionadas con el sector agrícola para comprender la importancia de este sector y su desempeño durante el período de 1974 a 2021.

**Resultados y Discusión:** Los resultados obtenidos revelaron que: - Existen diferencias significativas a favor del sector privado en todas las variables estudiadas, lo que indica un cambio de la dominancia del sector público a la dominancia del sector privado. - El sector público dominó desde la independencia hasta 1990, después de lo cual el sector privado emergió y participó junto al sector público en todas las actividades económicas en Argelia.

**Implicaciones de la Investigación:** El sector agrícola en Argelia ayuda a diversificar la economía y reducir gradualmente la dependencia del inestable sector de hidrocarburos, aprovechando sectores con recursos renovables. **Originalidad/Valor:** Este estudio contribuye a la literatura al comprender la importancia del sector agrícola a través de su provisión de seguridad alimentaria, su contribución a la economía argelina y su papel en la reducción de la factura de importación. Todo esto ayuda a minimizar las fluctuaciones económicas que pueden afectar a Argelia, lo cual es un objetivo perseguido mediante la diversificación económica, fomentando tanto los sectores públicos como privado en la agricultura.

**Palabras clave:** Agricultura, Cálculo de Producción, Cálculo de Explotación, Análisis Discriminante, Función Discriminante, Análisis de Componentes Principales, Análisis de Agrupamiento.

## **1 INTRODUCTION**

The volatile conditions in Algerian politics along with the multiplicity of governments and political orientations, and then the conflict of economic ideas, caused instability in the activity under which the Algerian economy has operated since independence until today. The results of these fluctuations appeared on economic performance, as the private sector emerged alongside the public sector, and attempted to compete with it in the economic circle. Therefore, through this research, we will attempt to conduct a statistical analysis of a group of economic variables related to the agricultural sector to identify the importance of this sector and its performance during the period extending between 1974-2021.

Accordingly, we divided the work into three elements:

- 1. statistical analysis of the contribution of the agricultural sector;
- 2. testing the significance of the differences in performance between the two sectors and estimating the discrimination function;
- 3. searching for the factors that explain the importance of the sector.

For this analysis, we used a set of statistical tools and methods, represented by graphical shapes, central tendency and dispersion indicators, correlation coefficients, the discriminant factor analysis method...etc. Through the above, we would like to compare the performance of the public agriculture sector and the performance of the private agriculture sector in the Algerian economy for the period 1974-2021.

## 2 STATISTICAL ANALYSIS OF THE CONTRIBUTION OF THE AGRICULTURAL SECTOR

In this part, we will rely on the variables; (Chaoubi, 2007, pp. 151-155) of the production account and the exploitation account for nineteen (19) sectors representing the Algerian economy, during the period extending between the years 1974-2021. Accordingly, the values of eight variables shown in Table (3) were calculated for forty-eight (48) observations. They represent the years of study, which will help us in the analysis. The descriptive statistical values shown in Table (4), and we also relied on the accompanying graphical figures that illustrate the evolution of the values of these variables, as well as on the values of the correlation coefficients shown in Table (5), through which we notice the difference in the degree of correlations between the variables. Therefore, in the following paragraphs, we will examine the reason for this difference.

#### 2.1 DEVELOPMENT OF RAW PRODUCTION (RP)

We notice from Figure (1) that raw production in the public sector (RP Private) values range between the lowest value of 0.33 achieved in 2006 and the highest value of 33.95 achieved in 1976. It fluctuates over a range of up to 33.62, with an arithmetic average of 9.25. With a standard deviation of 12.20, that is, a coefficient of variation of 1.31 (Baillargeo, 1989), pp. 31-32), which indicates fluctuation in the values of the public sector variables. As for the private sector, it is clear from the same figure that raw production in the private sector (RP Private) had its lowest value of 66.05 in 1976; and its highest value of 99.67 in 2006. It ranges up to 32.062 with the same standard deviation, but with an arithmetic average of 90.74, that is, with a coefficient of variation of 0.13, which indicates great homogeneity in the values of the private sector variables. It is also evident from the results of the correlation matrix that these variables are strongly and positively related to most of the variables at a significance level of more than 0.01, with the exception of their association with the variable of fixed asset consumption CFFE. It was moderate and significant at 0.05.

#### 2.2 EVOLUTION OF INTERMEDIATE CONSUMPTION (IC)

It is clear from Figure (2) that intermediate consumption in the public sector (IC public) ranges between the lowest value of 0.8 achieved in 2007 and the highest value of 54.95 achieved in 1974, with a range of 54.15. It is with an arithmetic average of 14.98 and a standard deviation of 17.65. The coefficient has variation of 1.17, which indicates fluctuation in the values of the public sector variables. As for its counterpart in the private sector (ICPrivate), it ranges between the lowest value of 45.05 achieved in 1974 and the highest value of 99.20 achieved in 2007. It is with an arithmetic average of 85.01 and a standard deviation of 17.65. That is, a coefficient of variation of 0.20, which indicates the presence of homogeneity in the values of the private sector variables. It is also clear from the results of the correlation matrix that these variables are strongly and positively related to the rest of the variables, with the exception of their association with the variable of fixed asset consumption CFFE. It was weak with a significance level of more than 0.01.

#### 2.3 EVOLUTION OF VALUE ADDED (VA)

We notice in Figure (3) that the value added in the public sector VAP changes in the range of 30.02 between the lowest value of 0.08 recorded in 1992 and the highest value of 30.10 recorded in 1976. Its arithmetic average was 7.61 and its standard deviation was 10.44. Based on the coefficient Its difference reached 1.37, which indicates fluctuation in the values of the public sector variables. In contrast, the value added in the private sector (VAP) has the same range and the same standard deviation, which indicates the presence of great homogeneity in the values of the private sector variable. It is also clear from the results of the correlation matrix that these variables are strongly and positively related to the rest of the variables at a significance level of more than 0.01, and they did not have a strong relationship with the variable consumption of fixed assets CFFE.

## 2.4 EVOLUTION OF CONSUMPTION OF FIXED ASSETS (CFF)

It is clear from Figure (4) that the evolution of consumption of fixed assets in the public sector (ECF Public) changes in the range of 91.37. The lowest value was 0.92 recorded in 1992 and the highest value was 92.29 in 1997, with an arithmetic average of 59.27. A standard deviation of 21.59, i.e. a coefficient of variation of 0.36, which indicates fluctuation in the values of the public sector variables. On the contrary, the development of the consumption of fixed assets in the private sector (CFA Private) maintains the same range and the same standard deviation. Its minimum value was 7.71 in the year 1983, while its maximum value, which was 99.08, was recorded in the year 1997. In addition, its arithmetic average reached 40.72, and its coefficient of variation reached 0.53, which indicates fluctuation in the sector variable values. It is also clear from the results of the correlation matrix that this variable has a weak correlation with all variables except for its correlation with the net surplus of exploitation variable, NSEV.

#### 2.5 DEVELOPMENT OF INTERNAL INCOME (II)

We notice from Figure (5) that the internal income of the total public sector (TII Public) ranges between the lowest value of 0.01 recorded in 1998 and the highest value of 28.44 achieved in 1976. It ranges between 28.43, with an arithmetic average of 28.43. 6.92, with a standard deviation of 9.73. That is a coefficient of variation of 1.40, which indicates fluctuation in the

#### Mohamed, A., & Abdelaziz, C.(2024) COMPARING THE PERFORMANCE OF PUBLIC AND PRIVATE SECTOR AGRICULTURAL INSTITUTIONS IN THE ALGERIAN ECONOMY DURING THE PERIOD 1974-2021

values of the public sector variables. As for the private sector, it is clear from the same figure that the total internal income in the private sector (TII Private) had its lowest value of 71.56 in 1976 and its highest value of 99.99 in 1998. It ranges in the same range as its predecessor and with the same standard deviation, but with an arithmetic average of 93.07. That is, with a coefficient of variation of 0.10. Which indicates the presence of great homogeneity in the values of the private sector variables. It is also clear from the results of the correlation matrix that these variables are strongly related to all variables, except for their association with the variable of fixed asset consumption FAC. It was weak with a significance level of more than 0.01.

#### 2.6 DEVELOPMENT OF INDIRECT TAXES RELATED TO PRODUCTION (ILP)

As for Figure (6), it can be seen that indirect taxes related to production in the public sector (ITP Public) range between the lowest value of 1.03 recorded in 2003 and the highest value of 100 achieved in 1984, and it ranges in the range of up to 98.97. With an arithmetic average of 28.15 and a standard deviation of 27.75, i.e. a coefficient of variation of 0.98, which indicates fluctuation in the values of the public sector variables. As for the private sector, it is clear from the same figure that indirect taxes related to production from the total (ITPPrivate) reached its lowest value of 0.00 in 1984 and its highest value of 98.97 in 2003. It fluctuates in the same range as its predecessor and with the same standard deviation, however with an arithmetic average of 71.84. That is, with a coefficient of variation of 0.38, which indicates the heterogeneity of the values of the private sector variables. It is also clear from the results of the correlation matrix that these variables are strongly related to all variables, except for their association with the value-added variable VAV. It was weak with a significance level of more than 0.01.

#### 2.7 DEVELOPMENT OF EMPLOYEE COMPENSATION (EC)

It is clear from Figure (7) that the development of employee compensation out of the total in the public sector (EC Public) changes in the range of 109.63. Its lowest value was achievedin 1990, which was 0.32, and the highest value was 109.95 in 1989, with an arithmetic average with an amount of 23.40 and a standard deviation of 29.88. I.e. a coefficient of variation of 1.27. It indicates the fluctuation in the values of the public sector variables. Conversely, the development of wage-earners' compensation from the total in the private sector (WC Private), although it maintained the same range and the same standard

deviation, its minimum value was -9.95 achieved in 1989, while its maximum value was 99.68 achieved in 1990, and its arithmetic average reached 76.59, and from there, its coefficient of variation reached 0.39. This indicates non-homogeneity of private sector variable values. It is also clear from the results of the correlation matrix that these variables are strongly related to all variables, except for their association with the value-added variable (VAV). It was weak with a significance level of more than 0.01.

#### 2.8 EVOLUTION OF THE NET SURPLUS FOR EXPLOITATION (ENSE)

We notice in Figure (8) that the curve of the net surplus for exploitation in the public sector (ENSE) changes in value in the range of 25.26, between the two minimum values - 5.98, which is a negative value recorded in 1985, and the maximum - 19.28, recorded in 1976, and that its average The arithmetic is 0.69. Its standard deviation is 4.10, that is, a coefficient of variation of 5.94, which is higher than any coefficient of variation recorded on all variables studied. This indicates the violent fluctuation in the values of the public sector variables. We also note that the curve of its counterpart in the private sector, ENEPrivate, behaves in the same way. As it recorded its lowest value of 80.72 in 1976, and its highest value of 105.98 in 1985, with an arithmetic average of 99.30, with the same range and standard deviation of this variable in the private sector, but with a coefficient of variation of 0.04, which indicates the presence of great homogeneity in the values of private sector variable.

## **3** TESTING THE SIGNIFICANCE OF DIFFERENCES IN PERFORMANCE BETWEEN THE PUBLIC AND PRIVATE SECTORS

For this purpose, we will use the hypothesis test of two linked averages, as the data used in this chapter are considered for the same variable under two different circumstances (public sector - private sector); That is, they are for compatible pairs of states. The decision is made as follows: Null hypothesis:  $Sig > \alpha = 0.05$ :  $H_0$ :  $\bar{X}_P = \bar{X}_E$  against the alternative hypothesis:  $Sig < \alpha = 0.05$ :  $H_1$ :  $\bar{X}_P \neq \bar{X}_E$ , where  $\bar{X}_E$  is the average of the public sector variable and  $\bar{X}_P$ is the average of the private sector variable.

Table (6) shows us the results of the treatment of comparing averages, accepting the alternative hypothesis that states that there are statistically significant differences between pairs of variables  $(H_1: \bar{X}_P \neq \bar{X}_E)$ , except for the comparison between the averages of the two

variables for  $Sig. = 0.090 > \alpha = 0.05$  (PBE-PBP),  $Sig. = 0.315 > \alpha = 0.05$  (RIE-RIP), and  $Sig. = 0.094 \phi \alpha = 0.05$  (ENEE-ENEP). Which indicates acceptance of the null hypothesis ( $H_0$ :  $\bar{X}_P = \bar{X}_E$ ) which states that there is no difference in the averages of these two variables. The results indicate that the significance of these differences, which reaches 80%, is in favor of the private sector in the case of the five variables.

Result: We conclude from the previous analysis that the private sector, compared to the public sector, uses, on average, greater intermediate consumption. And the volume of consumption of fixed assets and its contribution to indirect taxes linked to production is higher, and its compensation to employees is greater and it achieves higher raw production, with greater internal income, so the private sector. It contributes to achieving a high net surplus for exploitation, which indicates the large volume of labor employed within this sector. Lastly, it contributes to creating wealth in a way that exceeds what the public sector contributes. However, the public and private sectors share their contribution to the national economy in variable value added.

#### 3.1 RESULTS OF DISCRIMINANT FACTOR ANALYSIS (DFA)

The current results aim to determine the set of variables that explain the quantity that has the greatest ability among those proposed in the analysis. It is to achieve the differentiation that can be between the different types of the dependent variables (Chaoubi M. F., 1997, p. 38), by estimating the discrimination functions that are used in Classification of new observations into one of the categories of dependent variables. The DFA method relies on several assumptions, the most important of which is that the independent variables follow a normal distribution. From the results of Table (7) we note that the variables that follow a normal distribution are those that have  $Sig \neq 0.05$ , and therefore the variable of the Added Value (AV) follows a normal distribution, while the rest of the variables are the opposite because  $Sig = 0.000 \pi 0.05$  and  $Sig = 0.006 \pi 0.05$  for the two sectors. However, "discriminant analysis (DA) gives relatively accurate results in light of type I error." (Alaa, 2003, pp. 224-225).

## 3.1.1 Test of equality of averages:

Table (8) below shows whether there are statistically significant differences between the averages of the variables separately in the public and private sectors. The statistics of this table indicate that there are statistically significant differences between the averages of all study variables in the two groups.

#### 3.1.2 Box test for equality of covariance in society

The statistics of Table (9) indicate that there are statistically significant differences in the covariance matrix for the two subgroups - public sector, private sector - as follows: in the M of Box test.

The results of Table (10) are for the purpose for determining which of the subgroups whose covariance matrix differs from the rest of the other subgroups. The statistics of this table confirm the results obtained in Tables (7) and (8), which indicate homogeneity of covariance. In this table, we also find that all eight (08) variables are predictors.

#### **3.2 ESTIMATING THE DISCRIMINANT FUNCTION**

It is considered as the most important step in discriminant analysis, through which observations are separated between groups. There are different types of discriminant functions, the most widely used of which is the linear discriminant function that does not require special conditions for its application in discriminant analysis. The following steps explain the analysis:

#### 3.2.1 Determining the variables included and excluded from the distinction

At this stage we use a step-by-step method, where the following variables are included in order for the analysis:

Contribution to total surplus for exploitation (SE), contribution to total indirect taxes related to production (ITP), contribution to total income Internal (II), contribution to total raw production (RP), contribution to total intermediate consumption contribution (ICC), contribution to total compensation of employees (CE), then contribution to total consumption of fixed assets (FA), and the statistical significance reached the value that explains The high ability of these variables to discriminate and is clustered in the results of Table (10). The variable value added (VA) was excluded from the analysis.

#### 3.2.2 Testing the significance and strength of the relationship

**B-1** The data in Table (11) show that there is only one discriminating function. It is due to the presence of two subgroups (public sector and private sector). The amount of eigenvalue reached  $\lambda = 359.541$  and the relationshipbetween the discriminatory scores and the categories of the discriminating variables, expressed by the legal correlation, reached 0.999. In addition, this indicates the existence of a weak correlation, while the square of this correlation of 0.998 indicates the percentage of change in the dependent variable (public sector and private sector) that was distinguished by the independent variables (study variables) according to this analysis. As for the remainder of this percentage of 0.0019, it is interpreted as 0.19% of the discrepancy in values is due to differences between the two groups (Alaa, 2003, p. 232). The percentage of total variance attributed to the estimated discrimination function reached 100%.

**B-2** While the data in Table (12) indicate a value of the Wilks'Lambda'scoefficient of 0.003, as established in the previous paragraph. This indicator expresses the amount of unexplained dispersion in the discriminatory scores, and the proportionality is inversely between the value of this coefficient and the quality of the analysis results (Al-Jadha, 2005, p. 442). As for the value of the calculated statistics  $\chi^2_{cal} = 532.828$ , it is greater than the value of the tabulated statistics  $\chi^2_{tab} = \chi^2_{(0.05,6)} = 0.000$ , and it is statistically significant, meaning that there is the possibility of distinguishing between the two sectors in the six variables extracted from among those proposed.

**B-3** The data in Table (13) show the standard coefficients of the estimated discrimination function. These coefficients are useful in the estimation process and determining the effect of each variable on this discrimination. We note that three variables have negative coefficients, and the expression of the estimated discrimination function is as follows:

 $Z_1 = -18.687PB + 5.840CI + 0.285CFF + 15.128RI - 1.378ILP - 0.996RS + 0.394ENE...$  (1)

**B-4** The data in Table (14) indicate the coefficients of the estimated canonical discriminant function. This function is used for prediction when new observations appear, and its predictive model is formulated as follows:

 $Z_2 = -18.975 - 1.532PB + 0.331CI + 0.013CFF + 1.554RI - 0.050ILP - 0.033RS + 0.096ENE...$  (2)

**B-5** Table (15) shows us the matrix of correlation coefficients between the predictor variables and a discriminating function within the group. These correlations make it possible to find explanations for each discriminating function, and then label each function with the variables that are most strongly associated with it. We clearly see the retention of seven independent variables among those proposed, where the variables excluded from the distinction are marked with the letter a.

**B-6** Based on the results of Table (16), we notice that the two groups are centered on a specific point called the group's center of gravity, which represents the average discriminatory scores for each category of the discriminating variable. The results confirm that the two categories are located on opposite sides of each other, because the interval of the center of gravity of the first group (the public sector) on the global axis is: (-18.763). Whereas, the interval of the center of gravity of the second group (the private sector) on the global axis is: (18.763). The distance between the two groups is estimated by the sum of the two values, i.e. 37.526, which is the center of gravity of the legal discriminant function.

#### **3.2.3 Classification statistics**

The previous analysis enabled us to find legal and standard discrimination functions. Therefore, it is of great importance to seek the opportunity to extract classification functions in each of the classification groups (public sector - private sector). These functions are called Fisher's linear discrimination functions, through which the variables used in the classification are reclassified. Discrimination in one of the two groups is based on the largest value between the two groups to be classified into. Table (17) shows the coefficients of the variables of the two estimated classification functions, where:

 $Z_3 = -5.600 - 2.309PB + 0.787CI + 0.148CFF + 1.764RI - 0.020ILP - 0.042RS - 0.051ENE...$  (3)

 $Z_4 = -717.65 - 59.784PB + 13.20CI + 0.643CFF + 60.08RI - 1.88ILP - 1.29RS + 3.55ENE...$ (4)

#### 3.2.4 Quality of classification

The data in Table (18) indicate the results of the classification as well as the quality of prediction of the classification of views of the two categories using discriminant analysis. The total number of views (96) were classified correctly with a rate of 100%, as all members of the first group (public sector), numbering (49) views, were classified correctly with a rate of 100%, and the same applies to the members of the second group (private sector). The result of this test shows the goodness of the classification based on this algorithm, and therefore the results can be used to estimate the goodness of the classification using all observations if a new sample is to be chosen. (Alaa, 2003, pp. 234-235)

#### 3.2.5 Discriminatory values for each category

- if the standard legal discriminant function is useful in achieving the estimation goal, then the legal discriminant function is useful in achieving the prediction goal. For the purpose of prediction, we use the equation shown above  $(\acute{e}q3)$ , and the decision is made by looking at the location of the new viewing degree from the two fields shown in Table (19) OLAP Cubesa as follows:
- the new observation is classified within the public sector group if the estimated score is: Score ∈ [-21.72509; -14.62672];
- a new observation is classified within the private sector group if the estimated score is:Score ∈ [14.62672; 21.72509].

# 4 SEARCHING FOR THE FACTORS THAT EXPLAIN THE IMPORTANCE OF THE SECTOR

In the previous paragraphs, it was concluded that the private sector contributes, on average, to a greater extent in forming the variables of the production account and the exploitation account. In this part, it is sought to identify the variety of variables that make up the global axes on the one hand, and on the other hand, an attempt to understand the development of the behavior of this contribution for each sector during the study period. The method of factor analysis was put into practice with principal components. 4.1 TESTING THE HYPOTHESES OF FACTOR ANALYSIS INTO BASIC COMPONENTS: THIS METHOD RELIES ON A NUMBER OF HYPOTHESES, INCLUDING

A- The first hypothesis: focuses on the difference of the correlation coefficients matrix from zero, and it is verified in the results of Table (20) of the correlation coefficients matrix, where: Determinant = 1.90E-10, which indicates the integrity of the data.

B - The second hypothesis: Table (21) shows the results of the Kaiser-Meyer-Olkin (K-M-O) test. It indicates the extent to which the second hypothesis of this analysis has been achieved. Which is that the sample is accepted for analysis and this is achieved, as the value of the index reached 0.710, as the percentage exceeded 50%. Which indicates on the adequacy of the sample subject of the study.

C- Third hypothesis: The same table shows the statistically significant result of Bartlett's test. This is an indicator that the correlation matrix differs from the unit matrix. Meaning that there are common variances between the variables of the study that constitute the set of hidden factors. Which is the sought objective to reveal.

D- The fourth hypothesis: shown in the matrix of Table (22), it is useful in verifying the hypothesis of sample adequacy for each of the variables in the study. If we follow the numbers marked by the letter (a) in the main diagonal of the matrix of imaginary coefficients, We find that 87.5% of the variables have a formal correlation coefficient of no less than 0.50, which indicates that this percentage of variables fulfill the sample adequacy hypothesis.

From the above, the results of the factor analysis can be trusted using the basic components method (BCM).

#### 4.2 QUALITY OF REPRESENTATION OF VARIABLES

The BCM method aims to find a minimum number of variables that represent all the proposed initial variables, and here we look for the quality of representation of these variables. Table (23) shows the quality of representation of all study variables.

#### **4.3 EXTRACTING EIGENVALUES**

Eigenvalue refers to the amount of variance explained in variables by the factor with which they are associated. The following Table (24) shows the eigenvalues and dispersion ratios. Three main factors have been identified, based on one of the trends related to the value of the correlation that should be taken into account. In addition (Abdel Wahab Daden, 2008, pp. 196-197), given the characteristics of the sample subject of the study, we will rely in determining the factors on a value of no less than 0.85 as a percentage of accepting the correlation of the variable with the explanatory axis. These percentages are distributed among three factors that explain 84.438% of the phenomenon under study, as follows: - The first factor explains 71.822% of the total dispersion, and corresponds to the highest eigenvalue, which is  $\lambda_1 = 5.746$ ; -The second factor explains 12.616% of the total dispersion, and corresponds directly to the second eigenvalue, which is  $\lambda_2 = 1.009$ .

#### **4.4 NAMING THE EXTRACTED FACTORS**

We can make an attempt to describe the factors extracted from this analysis based on the factor matrix after rotating the axes, as they explain the importance of the private agricultural sector, where:

- the first factor captures all variables except for the two variables: the contribution to the consumption of fixed assets CCFA and the net surplus for exploitation variable NSE, its variables represent the input and output expenses of the production process;
- the second factor is explained only by the contribution of fixed asset consumption (CFAC). Its variables represent the obligatory expenses provided for each production process. In addition, the variable of the net surplus for exploitation (NSE) represents the raw revenues of the production process. Therefore, it can be stated that the importance of the sector of private agriculture appears through its contribution to production and production factors and its contribution to the financial resources resulting from the production process.

#### 4.5 USING CLUSTER ANALYSIS TO CLASSIFY THE YEARS OF STUDY

At this stage, we try to find an explanation for the behavior of the years of study (1974-2021). As we summarize the years in a limited number of partial groups, and the goal of this is to identify a group of similar years given the behavior of the study variables. We resort to analysis using the hierarchical cluster analysis method, to understand the behavior of the years of study. This method gives us the distribution shown in Figure (9), the members of the groups, and drawing a dendrogram. Looking at the dendrogram, we conclude that the years of study can be divided into two groups: a first group that includes 28 years, from 1994 to 2021, where the behavior was different from the behavior of the rest of the school years.

When comparing the classification of the behavior of the years, we find that the private sector of agriculture has stable behavior for the period 1994-2021, representing 58% of the years of study. This stage was characterized by the emergence of the private sector alongside the public sector, after it had dominated this sector since independence until the reform stage. The second stage took the rest of the years of study (20 years), representing 42% of the years of study, and was characterized by several fluctuations in the policy adopted by governments in managing this sector.

#### **5 CONCLUSION**

The statistical analysis of the study variables reveals the following:

- there is homogeneity in the values of the coefficients of variation for the private sector variables, compared to the public sector, where fluctuations were known during the study period;
- 2. there are significant differences in favor of the private sector in all variables of the study, which indicates the shift of dominance of the public sector over the private sector;
- 3. the dominance of the public sector since independence until 1990, when the private sector emerged, which participated with the public sector in all activities of the Algerian economy;
- 4. despite the long study period from 1974 to 2021, the behavior and performance of the private sector in Algeria is constantly improving and contributes to the activities of the other sectors.

#### REFERENCES

- Abdel Wahab Daden, M. F. (2008, December 2-3). Analysis of the economic behavior of small and medium-sized industrial enterprises in during the period 1990-2006. Introduction to analysis into basic components. Algeria.
- Alaa, R. M. (2003). *Statistical Analysis of Data Using SPSS Program*. Egypt: Universities Publishing House.
- Al-Dasht, N. h. (2021, 4 12). The impact of organizational power inachieving organizational development from the point of view of non-supervisory job occupants. Faculty of Economics and Administrative Sciences, Gaza Islamic University.
- Al-Dasht, N. H.-F. (2021, 3 2). *The impact of organizational power in achieving organizational development from the point of view of non supervisory job occupants.* Master's thesis, Faculty of Economics and Administrative Sciences, Gaza Islamic University.
- Al-Jadha, K. b. (2005). *Decision-Making Techniques, Computer Applications*. Saudi Arabia: Dar Al-Ashab for Publishing and Distribution.

Mohamed, A., & Abdelaziz, C.(2024) COMPARING THE PERFORMANCE OF PUBLIC AND PRIVATE SECTOR AGRICULTURAL INSTITUTIONS IN THE ALGERIAN ECONOMY DURING THE PERIOD 1974-2021

## **APPENDICES**

## Table 1

Percentage Contribution of the Public Sector to Agriculture Total %

Année	PBE	CIE	VAE	CFFE	RIE	ILPE	RSE	ENEE	Année	PBE	CIE	VAE	CFFE	RIE	ILPE	RSE	ENEE
1974	33,74	54,95	25,32	61,18	22,48	66,90	53,75	1,20	1998	0,72	2,70	0,28	85,72	0,01	15,18	0,88	-0,14
1975	29,33	43,01	24,29	59,92	22,29	58,41	55,04	11,21	1999	1,03	3,78	0,40	91,43	0,05	25,29	1,20	-0,16
1976	33,95	45,17	30,10	60,60	28,44	69,47	60,25	19,28	2000	1,07	3,79	0,45	88,58	0,09	27,41	1,24	-0,15
1977	28,68	42,33	23,72	60,13	21,49	68,09	59,73	7,96	2001	0,92	3,25	0,40	62,78	0,33	2,73	1,64	0,09
1978	30,59	43,37	26,20	59,19	24,47	69,22	54,01	10,83	2002	0,69	2,39	0,31	56,18	0,26	2,37	1,22	0,09
1979	27,25	36,82	24,33	60,59	22,63	67,40	50,61	7,45	2003	0,52	1,74	0,24	48,16	0,20	1,03	1,03	0,07
1980	26,09	42,62	21,17	53,94	19,87	73,38	53,96	-1,87	2004	0,35	1,18	0,16	38,45	0,14	1,55	0,68	0,05
1981	23,52	39,20	19,35	51,27	18,12	73,39	51,16	-2,09	2005	0,36	1,20	0,16	39,22	0,13	1,05	0,65	0,05
1982	20,62	34,61	17,12	47,07	16,02	74,51	42,59	-0,56	2006	0,33	1,08	0,16	36,90	0,13	1,03	0,61	0,05
1983	20,42	34,95	16,38	45,43	15,35	73,34	45,30	-0,24	2007	0,52	0,80	0,45	44,88	0,41	1,76	3,25	-0,03
1984	27,77	36,74	25,02	55,52	23,86	100,00	72,05	-2,29	2008	0,59	0,98	0,49	54,78	0,43	10,89	2,88	-0,05
1985	23,47	32,37	20,47	65,67	17,87	24,74	75,94	-5,98	2009	0,47	1,78	0,15	35,69	0,12	2,05	2,75	-0,26
1986	26,97	35,31	24,12	58,02	22,37	59,32	77,61	-3,56	2010	1,07	2,20	0,79	80,08	0,60	12,03	4,84	-0,10
1987	25,73	36,29	22,39	58,28	20,69	53,50	64,64	-3,14	2011	0,87	1,72	0,66	69,54	0,56	10,31	4,77	-0,03
1988	19,49	35,70	15,80	52,37	14,27	15,15	74,41	-2,50	2012	0,96	2,01	0,70	77,20	0,58	4,31	6,02	0,00
1989	15,97	32,99	12,64	47,39	11,47	45,24	109,95	-1,37	2013	1,21	2,84	0,84	88,30	0,01	14,30	6,24	-0,12
1990	0,57	2,26	0,24	1,35	0,20	18,71	0,32	0,11	2014	1,08	2,36	0,78	86,02	0,57	10,27	5,68	-0,09
1991	0,77	3,16	0,30	1,14	0,26	14,76	0,91	0,14	2015	1,00	2,32	0,69	86,93	0,45	8,19	33,39	-0,15
1992	0,40	2,38	0,08	0,92	0,05	2,82	0,56	-0,01	2016	0,95	2,04	0,70	88,14	0,44	5,16	4,67	-0,20
1993	2,15	7,79	0,99	49,98	0,75	14,03	3,21	0,38	2017	1,05	2,23	0,79	79,43	0,63	12,30	4,91	-0,05
1994	2,10	7,19	0,90	64,30	0,57	26,71	3,18	0,11	2018	0,98	2,17	0,73	68,60	0,06	8,22	4,47	0,01
1995	2,07	8,29	0,69	72,83	0,43	26,72	3,69	-0,13	2019	0,98	2,10	0,73	63,89	0,64	8,93	4,43	0,01
1996	1,29	4,92	0,34	75,97	0,11	27,92	2,19	-0,21	2020	1,03	2,16	0,78	64,15	0,68	6,44	4,60	0,02
1997	1,63	5,80	0,65	92,29	0,13	28,71	1,57	-0,19	2021	1,06	2,06	0,84	54,84	0,74	6,43	4,64 /	0,09

Source: Calculated based on data:

1-Statistical Collections, Series E: Economic Statistics, No.356.

2- RETROSPECTIVE OF ECONOMIC ACCOUNTS FROM 1963 TO 2021, ONS, Algiers, November 2022 3-http://www.ons.dz/-Compte-de-production-et-compte-d-.html?debut\_articles=10#pagination\_articles

Année	PBE	CIE	VAE	CFFE	RIE	ILPE	RSE	ENEE	Année	PBE	CIE	VAE	CFFE	RIE	ILPE	RSE	ENEE
1974	66,26	45,05	74,68	38,82	77,52	33,10	46,25	98,80	1998	99,28	97,30	99,72	14,28	99,99	84,82	99,12	100,14
1975	70,67	56,99	75,71	40,08	77,71	41,59	44,96	88,79	1999	98,97	96,22	99,60	8,57	99,95	74,71	98,80	100,16
1976	66,05	54,83	69,90	39,40	71,56	30,53	39,75	80,72	2000	98,93	96,21	99,55	11,42	99,91	72,59	98,76	100,15
1977	71,32	57,67	76,28	39,87	78,51	31,91	40,27	92,04	2001	99,08	96,75	99,60	37,22	99,67	97,27	98,36	99,91
1978	69,41	56,63	73,80	40,81	75,53	30,78	45,99	89,17	2002	99,31	97,61	99,69	43,82	99,74	97,63	98,78	99,91
1979	72,75	63,18	75,67	39,41	77,37	32,60	49,39	92,55	2003	99,48	98,26	99,76	51,84	99,80	98,97	98,97	99,93
1980	73,91	57,38	78,83	46,06	80,13	26,62	46,04	101,87	2004	99,65	98,82	99,84	61,55	99,86	98,45	99,32	99,95
1981	76,48	60,80	80,65	48,73	81,88	26,61	48,84	102,09	2005	99,64	98,80	99,84	60,78	99,87	98,95	99,35	99,95
1982	79,38	65,39	82,88	52,93	83,98	25,49	57,41	100,56	2006	99,67	98,92	99,84	63,10	99,87	98,97	99,39	99,95
1983	79,58	65,05	83,62	54,57	84,65	26,66	54,70	100,24	2007	99,48	99,20	99,55	55,12	99,59	98,24	96,75	100,03
1984	72,23	63,26	74,98	44,48	76,14	0,00	27,95	102,29	2008	99,41	99,02	99,51	45,22	99,57	89,11	97,12	100,05
1985	76,53	67,63	79,53	34,33	82,13	75,26	24,06	105,98	2009	99,53	98,22	99,85	64,31	99,88	97,95	97,25	100,26
1986	73,03	64,69	75,88	41,98	77,63	40,68	22,39	103,56	2010	98,93	97,80	99,21	19,92	99,40	87,97	95,16	100,10
1987	74,27	63,71	77,61	41,72	79,31	46,50	35,36	103,14	2011	99,13	98,28	99,34	30,46	99,44	89,69	95,23	100,03
1988	80,51	64,30	84,20	47,63	85,73	84,85	25,59	102,50	2012	99,04	97,99	99,30	22,80	99,42	95,69	93,98	100,00
1989	84,03	67,01	87,36	52,61	88,53	54,76	-9,95	101,37	2013	98,79	97,16	99,16	11,70	99,99	85,70	93,76	100,12
1990	99,43	97,74	99,76	98,65	99,80	81,29	99,68	99,89	2014	98,92	97,64	99,22	13,98	99,43	89,73	94,32	100,09
1991	99,23	96,84	99,70	98,86	99,74	85,24	99,09	99,86	2015	99,00	97,68	99,31	13,07	99,55	91,81	66,61	100,15
1992	99,60	97,62	99,92	99,08	99,95	97,18	99,44	100,01	2016	99,05	97,96	99,30	11,86	99,56	94,84	95,33	100,20
1993	97,85	92,21	99,01	50,02	99,25	85,97	96,79	99,62	2017	98,95	97,77	99,21	20,57	99,37	87,70	95,09	100,05
1994	97,90	92,81	99,10	35,70	99,43	73,29	96,82	99,89	2018	99,02	97,83	99,27	31,40	99,94	91,78	95,53	99,99
1995	97,93	91,71	99,31	27,17	99,57	73,28	96,31	100,13	2019	99,02	97,90	99,27	36,11	99,36	91,07	95,57	99,99
1996	98,71	95,08	99,66	24,03	99,89	72,08	97,81	100,21	2020	98,97	97,84	99,22	35,85	99,32	93,56	95,40	99,98
1997	98,37	94,20	99,35	7,71	99,87	71,29	98,43	100,19	2021	98,94	97,94	99,16	45,16	99,26	93,57	95,36	99,91

Total Percentage Contribution of the Private Sector to Agriculture (%)

Source: Calculated based on data:

1- Statistical Collections, Series E: Economic Statistics, No. 356.

2- RETROSPECTIVE OF ECONOMIC ACCOUNTS FROM 1963 TO 2021, ONS, Algiers, November 2022.

3- http://www.ons.dz/-Compte-de-production-et-compte-d-.html?debut\_articles=10#pagination\_articles

## Table 3

Study Variables

PBP	Total Gross Production of the Private Sector	PBE	Total Gross Production of the Public Sector
CIP	Total Intermediate Consumption of the	CIF	"Total Intermediate Consumption of the
	Private Sector	CIE	Public Sector"
VAP	Total Value Added of the Private Sector	VAE	Total Value Added of the Public Sector
CFFP	Total Consumption of Fixed Assets of the	CEFE	Total Consumption of Fixed Assets of the
	Private Sector	CFFE	Public Sector
RSP	Total Compensation of Employees in the	DSE	Total Compensation of Employees in the
	Private Sector	NSE	Public Sector"
ILPP	Total Indirect Taxes Related to Production	пре	Total Indirect Taxes Related to Production in
	in the Private Sector	ILFE	the Public Sector
RIP	Total Internal Income of the Private Sector	RIE	Total Internal Income of the Public Sector
ENEP	Total Operating Surplus of the Private		
	Sector		

Source: Prepared by the researchers

Statistical Characteristics of Study Variables

	N=48	Ran	Min	Max	Moy	E-typ	CV%		N=48	Ran	Min	Max	Moy	E-typ	CV%
	PBP	33.62	66.05	99.67	90.74	12.20	0.13		PBE	33.62	0.33	33.95	9.25	12.20	1.31
or	CIP	54,15	45.05	99.20	85.01	17.65	0.20		CIE	54,15	0.80	54.95	14.98	17.65	1.17
ecte	VAP	30.02	69.90	99.92	92.38	10.44	0.11	ector	VAE	30.02	0.08	30.10	7.61	10.44	1.37
te S	CFFP	91.37	7.71	99.08	40.72	21.59	0.53	ic S	CFFE	91.37	0.92	92.29	59.27	21.59	0.36
riva	RIP	28.43	71.56	99.99	93.07	9.73	0.10	ldu	RIE	28.43	0.01	28.44	6.92	9.73	1.40
P	ILPP	98.97	0.00	98.97	71.84	27.75	0.38	1	ILPE	98.97	1.03	100	28.15	27.75	0.98
	RSP	109.63	-9.95	99.69	76.59	29.88	0.39		RSE	109.6	0.32	109.95	23.40	29.88	1.27
	ENEP	25.26	80.72	105.98	99.30	4.10	0.04		ENEE	25.26	-5.98	19.28	0.69	4.10	5.87

Source: SPSS Output (Adapted)

## Table 5

**Correlation Matrix** 

N=48	PBE	CIE	VAE	CFFE	RIE	ILPE	RSE	ENEE
PBE	1							
CIE	0,988	1						
VAE	0,998	0,977	1					
CFFE	-0.63	-0.07	-0.64	1				
RIE	0,996	0,974	0.999	-0.07	1			
ILPE	0,891	0,893	0,887	-0.00	0,891	1		
RSE	0,882	0,892	0,883	0.50	0,879	0,752	1	
ENEE	0,386	0,339	0,394	0,10	0,401	0,317	0,141	1

Source: SPSS Output (Adapted)

## Figure 1



Source: A decree using an Excel program based on data from tatables (1) (2).

#### Figure 2



Source: A decree using an Excel program based on data from tatables (1) (2).

#### Mohamed, A., & Abdelaziz, C.(2024) COMPARING THE PERFORMANCE OF PUBLIC AND PRIVATE SECTOR AGRICULTURAL INSTITUTIONS IN THE ALGERIAN ECONOMY DURING THE PERIOD 1974-2021

#### Figure 3



Source: A decree using an Excel program based on data from tatables (1) and (2).

#### Figure 4



Source: A decree using an Excel program based on data from tatables (1) and (2).

#### Figure 5



Source: A decree using an Excel program based on data from tatables (1) and (2).

#### Figure 6



Source: A decree using an Excel program based on data from tatables (1) and (2).

#### Mohamed, A., & Abdelaziz, C.(2024) COMPARING THE PERFORMANCE OF PUBLIC AND PRIVATE SECTOR AGRICULTURAL INSTITUTIONS IN **THE ALGERIAN ECONOMY DURING THE PERIOD 1974-2021**

#### Figure 7



Source: A decree using an Excel program based on data from tatables (1) and (2).

#### Figure 8



Source: A decree using an ExExcel program based on data from tatables (1) and (2).

#### Table 6

Paired Samples Test

Test échantillons appariés										
		Dif	férences app	pariées		t	ddl	Sig.		
	Moyenne	Ecart-type	Erreur standard	Intervalle d 95% de la	Intervalle de confiance 95% de la différence			(bilatérale)		
			moyenne	Inférieure	Supérieure					
Pbe - PBp	-24,239	97,058	14,009	-52,422	3,943	-1,730	47	,090		
Cie - Cip	-87,38	21,873	3,157	-93,734	-81,031	-27,677	47	,000,		
Vae - <u>Vap</u>	558,742	360,552	52,041	454,051	663,439	10,737	47	,000,		
CFFe - CFFp	-93,947	19,974	2,883	-99,747	-88,146	-32,585	47	,000,		
Rie - Rip	4684,600	31928,345	4608,459	-4586,425	13955,625	1,017	47	,315		
ILPe - ILPp	-97,949	21,513	3,105	-104,195	-91,702	-31,544	47	,000,		
Rse - RSp	-76,595	33,269	4,801	-86,25	-66,935	-15,951	47	,000,		
ENEe - ENER	-9905,454	40092,293	5786,824	-21547,043	1736,133	-1,712	47	,094		

Source: Calculated based on tables (1) and (2) using the SPSS program, with modifications.

Tests of Equality of Group Means

Те	Tests of Equality of Group Means										
	Wilks'										
	Lambda	F	df1	df2	Sig.						
Pb	,081	1070,427	1	94	,000						
Ci	,199	377,870	1	94	,000						
Va	,056	1579,860	1	94	,000						
CFF	,841	17,709	1	94	,000						
Ri	,048	1879,506	1	94	,000						
ILP	,613	59,429	1	94	,000						
Rs	,553	76,063	1	94	,000,						
ENE	007	13842 597	1	94	000						

Source: Calculated based on tables (1) and (2) using the SPSS program, with modifications.

## Table 8

Test of Equality of Means

		Pbe	Cie	Vae	CEEe	Rie	ILPe	Rse	ENEe
N		48	48	48	48	48	48	48	48
Decemètres	Moyenne	35,79	4,22	327,28	,943	2390,21	-1,05	9,61	-4904,81
Parametres	Ecart type	49.04	5.97	183.82	134	15964 48	3.04	14.68	20045,6
tionilaux	Lean-type	45,04	5,57	105,02	1,34	13304,40	3,04	14,00	23
Différences	Absolue	,390	,363	,142	,355	,468	,428	,415	,247
les plus	Positive	,390	,363	,083	,355	,468	,213	,415	,154
extrêmes	Négative	-,233	-,240	-,142	-,242	-,419	-,428	-,256	-,247
Z de Kolmogo	rov-Smirnov	2,705	2,515	,986	2,46	3,240	2,96	2,875	1,708
Significationasymptotique		000	000	285	000	000	000	000	006
(bilatérale)		,000	,000	,200	,000	,000	,000	,000	,000

a. La distribution à tester est gaussienne.

b. Calculée à partir des données.

Source: Calculated based on tables (1) and (2) using the SPSS program, with modifications.

## Table 9

Box's Test for Equality of Covariance in the Population

Test Results								
Box's M	Box's M							
F	Approx.	,000						
	df1	28						
	df2	30789,691						
	Sig.	1,000						

Source: Calculated based on tables (1) and (2) using the SPSS program, with modifications.

Variables Included and Excluded from the Analysis

					Will	ks' Lambda					
			df			Exact F					
Step	Entered	Statistic	1	df2	df3	Statistic	df1	df2	Sig.		
1	ENE	,007	1	1	94,000	13842,597	1	94,000	,000,		
2	ILP	,006	2	1	94,000	7330,181	2	93,000	,000		
3	Ri	,005	3	1	94,000	5618,628	3	92,000	,000,		
4	Pb	,003	4	1	94,000	6487,820	4	91,000	,000		
5	Ci	,003	5	1	94,000	5608,340	5	90,000	,000		
6	Rs	,003	6	1	94,000	4988,346	6	89,000	,000		
7	CFF	,003	7	1	94,000	4519,940	7	88,000	,000		
At ea	At each step, the variable that minimizes the overall Wilks' I ambda is entered										

a. Maximum number of steps is 16 b. Maximum significance of F to enter is 6

c. Minimum significance of F to remove is .10.

d. F level, tolerance, or VIN insufficient for further computation.

Source: Calculated based on tables (1) and (2) using the SPSS program,

## Table 11

Eigenvalues

#### Eigenvalues

Eunction	Eigenvalue	% of Variance	Cumulative %	Canonical Correlation					
1	359,541ª	100,0	100,0	,999					
a. First 1 canonical discriminant functions were used in the analysis.									

Source: Calculated based on tables (1) and (2) using the SPSS program,

#### Table 12

Index of Unexplained Dispersion

Wilks' Lambda				
Test of Function(s)	<u>Wilks</u> ' Lambda	Chi-square	df	Sig.
1	,003	532,828	7	,000

Source: Calculated based on tables (1) and (2) using the SPSS program,

## Table 13

#### Standardized Coefficients of the Estimated Discriminant Function

Standardized	Canonical	Discriminan	t
	ounomou	Discriminan	1

Eunction 1 Coefficients			
Pb	-18,687		
Ci	5,840		
CFF	,285		
Ri	15,128		
ILP	-1,378		
Ra	-,996		
ENE	,394		

Source: Calculated based on tables (1) and (2) using the SPSS program,

Estimated Discrimination Function Coefficients

#### Canonical Discriminant

Function '	1 Coefficients	
Pb	-1,532	
Ci	,331	
CFF	,013	
Ri	1,554	
ILP	-,050	
Rs.	-,033	
ENE	,096	
(Constant)	-18,975	
Upstandardized as officiants		

Source: Calculated based on tables (1) and (2) using the SPSS program,

## Table 15

**Composition Matrix** 

Structure Matrix		
	Function1	
ENE	,640	
Ri	,236	
Vaa	,218	
Pb	,178	
Ci	,106	
Ra	,047	
ILP	,042	
CFF	-,023	

Pooled within-groups discriminating variables and standardized canonical discriminant functions Variables ordered by absolute size of correlation within function.

a. This variable not used in the analysis.

Source: Calculated based on tables (1) and (2) using the SPSS program,

## Table 16

Average Discriminatory Scores

Function 1 at						
	Group Centroids					
Public sector	القطباع العام	-18,763				
Private Sector	للقطاع الخاص	18,763				
	Unstandard	lized cano	nical discriminant			
	functions evaluated at group means					

Source: Calculated based on tables (1) and (2) using the SPSS program,

## Table 17

Classification of Discriminant Function Coefficients

	<b>Public Sector</b>	Private Sector
Pb	-2,309	-59,784
Ci	,787	13,202
CFF	,148	,643
Ri	1,764	60,082

	Public Sector	Private Sector	
ILP	-,020	-1,883	
Rs	-,042	-1,293	
ENE	-,051	3,551	
(Constant)	-5,600	-717,656	
Fonctions discr. linéaires de Fisher			

Source: SPSS program outputs based on the data from Tables (1) and (2)

## Table 18

Classification Results a,b,c

			Intended assignment class(es)			
		disc	Public sector	Private Sector	Total	
	Tffact;f	1	48	0	48	
Oniginal	Lifectii	2	0	48	48	
Original	0/	1	100,0	,0	100,0	
,	70	2	,0	100,0	100,0	
	Effort;f	1	48	0	48	
Validé-croisé	Lifectii	2	0	48	48	
(a) %	0/	1	100,0	,0	100,0	
	70	2	,0	100,0	100,0	
a. Cross-validation is performed only for the observations in the analysis. In cross-validation, each observation is classified by the functions derived from all other observations						
b. 100.0% of the original observations correctly classified.						
c. 100.0% of the cross-validated observations correctly classified.						

Source: SPSS program outputs based on the data from Tables (1) and (2)

## Table 19

OLAP Cubesa

Predicted Group for Analysis 1: Total	Mean	Minimum	Maximum
Discriminant Scores from Function 1 for Analysis 1	-900,62413	-21,72509	-14,62672
a. disc $= 1$			
Predicted Group for			
Predicted Group for Analysis 1: Total	Mean	Minimum	Maximum
Predicted Group for Analysis 1: Total Discriminant Scores from Function 1 for Analysis 1	<b>Mean</b> 18,7630026	<b>Minimum</b> 14,62672	<b>Maximum</b> 21,72509

Source: SPSS program outputs based on the data from Tables (1) and (2)

## Table 20

KMO Index and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0,747
	Approximate Chi-square	575,469
Bartlett's Test of Sphericity	df (Ddl)	28
	Bartlett's Sig	0,000

Source: SPSS program outputs based on the data from Tables (1) and (2)

K-M-O and Bartlett Index

Indice KMO et test de Bartle	ett	
Mesure de précision de l'échantillonnage de Kaiser-Meyer- <u>Olkin</u>		,710
	Khi daux annrovimá	973,
Test de sphéricité de Bartlett	Kin-deax approxime	620
	ddl	28
	Signification de Bartlett	,000

Source: SPSS program outputs based on the data from Tables (1) and (2)

## Table 22

Matrix of Imaginary Coefficients

		PBP	CIP	VAP	CFFP	RIP	ILPP	RSP	ENEP
Anti-image	PBP	,859ª	-,850	-,243	-,017	,066	-,009	,023	-,008
Correlation	CIP	-,850	,847ª	,129	,045	,012	,020	-,249	-,109
	VAP	-,243	,129	,735ª	-,591	-,979	-,384	-,236	,259
	CFFP	-,017	,045	-,591	,684ª	,634	,531	-,301	-,146
	RIP	,066	,012	-,979	,634	,726ª	,411	,184	-,296
	ILPP	-,009	,020	-,384	,531	,411	,811ª	-,398	-,167
	RSP	,023	-,249	-,236	-,301	,184	-,398	,912ª	,218
	ENEP	-,008	-,109	,259	-,146	-,296	-,167	,218	,299ª

a. Measures of Sampling Adequacy (MSA)

Source: Calculated based on tables (1) and (2) using the SPSS program,

## Table 23

Quality of Variable Representation

Qualité de représentation					
	Extraction				
Pbe	1,000	,990			
Cie	1,000	,973			
Vae	1,000	,987			
CEEe	1,000	,920			
Rie	1,000	,987			
IL.Re	1,000	,838			
Rse	1,000	,809			
ENEe 1,000 ,249					
Méthode d'extraction :					
Analyse en composantes					

principales.

Source: Calculated based on tables (1) and (2) using the SPSS program,

## Table 24

Extraction	of Eigenval	ues
------------	-------------	-----

Composante	Valeurs propres initiales			Extraction Sommes des carrés des facteurs retenus			
	Total	% de la variance	% cumulés	Total	% de la variance	% cumulés	
1	5,746	71,822	71,822	5,746	71,822	71,822	
2	1,009	12,616	84,438	1,009	12,616	84,438	
3	,902	11,272	95,710				
4	,227	2,838	98,548				
5	,086	1,077	99,625				
6	,029	,366	99,991				
7	,001	,008	99,999				
8	9,821E-005	,001	100,000				

Méthode d'extraction : Analyse en composantes principales.

Source: Calculated based on tables (1) and (2) using the SPSS program,

#### Mohamed, A., & Abdelaziz, C.(2024) COMPARING THE PERFORMANCE OF PUBLIC AND PRIVATE SECTOR AGRICULTURAL INSTITUTIONS IN THE ALGERIAN ECONOMY DURING THE PERIOD 1974-2021

## Figure 9



Source: Calculated based on tables (1) and (2) using the SPSS program,





Source: Calculated based on tables (1) and (2) using the SPSS program.