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A descriptive and analytical study of economic performance indicators using the Principal Component Analysis (PCA) method - A case study of Algeria during the period (2000-2021)

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Abstract

This study aims to shed light on the Algerian economy by relying on indicators of economic performance during the period 2000-2021. This is accomplished first by introducing the selected ten indicators and delving into previous studies related to the current research. The descriptive and analytical statistical method was adopted, utilizing the Principal Component Analysis (PCA) to diagnose the strengths and weaknesses of economic performance indicators in Algeria.

This study concludes that the economic performance indicators in Algeria can be divided into notable improvements, particularly concerning Gross Domestic Product (GDP), per capita income, total expenditure, total reserves, inflation, and credit directed to the private sector. On the other hand, the weaker indicators, representing points of economic performance vulnerability, are associated with economic growth, broad monetary supply, and total external debt.

Keywords: Economic performance indicators; Principal Component Analysis (PCA); Algerian economy.

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1. INTRODUCTION

Economic performance indicators are essential and hold significant importance in various aspects, primarily measuring the performance of sectors within an economy. The purpose is to evaluate the economic situation, assess the strength of the economy, and exploit available opportunities while addressing weaknesses to counter potential threats. These indicators vary between internal and external measures. Governments consider them valuable tools for decision-making and for evaluating different countries, especially from an economic and investment perspective, where investment is often associated with these indicators. The presence of numerous national and international institutions, such as the World Bank and the International Monetary Fund, regularly publish reports expressing economic indicators further underscores their significance.

The Algerian economy, like others worldwide, is subject to various changes, which make economic performance indicators dependent on both local and global economic conditions.

To gain insight into Algeria's position concerning economic performance indicators, we raise the following primary question:

What is the status of the Algerian economy within economic performance indicators from 2000 to 2021?

1.1 Study Hypothesis: Diagnosing the economic performance indicators of Algeria from 2000 to 2021 allows us to classify them as representing strengths or weaknesses in the Algerian economy. It also helps determine the necessity of continuing the implementation of government action plans and measures regarding Gross Domestic Product (GDP), per capita GDP, population, government spending, total reserves, inflation, broad money supply, credit to the private sector, and total external debt. These measures are essential for enabling Algeria to face global challenges, navigate them safely, and put the country on a path of sustainable and inclusive growth for all.

1.2 Study Objectives: This study aims to achieve the following objectives:

- Understand the fundamental concepts of the study variables.
- Identify which economic indicators represent strengths and weaknesses in the Algerian economy and outline necessary measures to maintain the strength of the first category of indicators and enhance the performance of the second category.

1.3 Study Methodology: The study relies on a descriptive-analytical approach to define the study variables, as well as to describe and analyze the performance of the

most crucial economic indicators in Algeria. Additionally, a case study methodology is employed to uncover the strengths and weaknesses of the Algerian economic performance indicators using Principal Component Analysis (PCA).

1.4 Literature review:

- **Vadim Khramov and John Ridings, The Economic Performance Index (EPI): an Intuitive Indicator for Assessing a Country's Economic Performance Dynamics in an Historical Perspective.**

This study aims to propose a simple scale that represents the Economic Performance Index (EPI). The index combines data on inflation, unemployment, government deficits, and Gross Domestic Product (GDP) growth into a single indicator. The EPI employs a descriptive and straightforward grading system, along with Raw EPI, which assigns equal weights to its components. The program was applied to the United States from 1790 to 2012 and effectively captured economic recession and downturns. (Khramov & John , 2013)

- **Quality Measures for Economic Indicators, Working Papers and Studies, 2005.**

The goal of this study is to evaluate the quality of regularly compiled economic indicators by Eurostat, the statistical office of the European Union. Nineteen indicators were identified, referred to as the Principal European Economic Indicators (PEELS), which are of utmost importance in managing economic and monetary policies in the Eurozone. The study concluded that four indicators provided a clear overview of the quality of short-term European economic indicators and changes in recent and prospects. (Quality measures for economic indicators,, 2005)

2.The Study Variables "Economic Performance Indicators":

The economic performance of any country is determined through the study and analysis of economic indicators expressed through statistics and economic reports. These indicators are used to measure the performance of various sectors of the economy, evaluate the economic situation, assess the strength or weakness of the economy, and predict future economic conditions.

Several indicators were examined in this study, including:

2.1. Total Reserves: These represent foreign currency-denominated assets controlled by monetary authorities and available for direct financing to address imbalances in payment sources. It also allows for the indirect regulation of these imbalances by intervening in foreign exchange markets to influence the exchange

rate of the national currency, among other purposes. Foreign exchange reserves encompass financial assets denominated in foreign currencies, including cash, Special Drawing Rights (SDRs), reserve position at the International Monetary Fund (IMF), foreign currency deposits, and other liabilities. (El-Shadly, 2014)

- **Gross Domestic Product (GDP)**: refers to the total market value of goods and services produced within a specific geographic area, typically a country, during a defined period, often a year. (Leamer, 2008) In theory, GDP can be understood from three different perspectives: (CALLEN, 2008)

- The production approach involves calculating the "value added" at each stage of production. Value added is determined by subtracting the value of intermediate inputs used in the production process from total sales. For instance, the flour used in making bread or an architect's services employed in constructing a building are considered intermediate inputs, while bread and the completed building are the final products.

- The expenditure approach sums up the value of purchases made by final users. This includes consumption expenditures by households on items such as food, televisions, and medical services, investments made by companies in machinery, and purchases of goods and services made by the government and foreign entities.

- The income approach tallies the incomes generated through production. This includes compensation received by employees and the operating surplus of companies, which is essentially sales revenue minus costs incurred in the production process.

2.2. Gross Domestic Product (GDP) Growth: The rate of GDP growth at constant prices is considered a vital indicator for measuring the economic performance of any country over time. It measures the percentage change in the value of GDP at constant prices between two time periods to assess the economic development achieved by a nation during a specified period.

An increase in the rate of GDP growth at constant prices signifies an improvement in the economic performance of the country, while a decrease indicates a decline in its economic performance. This indicator may record a negative value, signifying economic contraction, which means a decrease in its value between two time periods. (Magdi, 2021)

2.3. Total External Debt: It refers to the amounts borrowed by a national economy with a loan duration exceeding one year. These debts are payable to the lending party through payment in foreign currencies or by exporting goods and services to

them. The payment can be made either by the government, official bodies, or through independent entities, individuals, and private institutions, as long as the government and official bodies guarantee the obligations of these individuals and private institutions. (Latifa Bahlol, Taha bin Habib, & Awatif , 2020)

2.4. Broad Money Supply (M2): It is defined as the total local liquidity, which includes the monetary aggregate (M1) representing the sum of circulating means of payment within a specific economic environment over a certain period. It is also referred to as monetary assets held by various economic units (individuals and institutions) in the form of cash balances, viewed based on the primary function of money as a medium of exchange for goods and services. The narrow money supply (M1) includes circulating currency (outside the banking system) in addition to current account deposits (demand deposits) held by commercial banks and all accounts that can be drawn upon through checks. (Ramadan, Hicham , & Mohamed El Hadi , 2019) It also includes time deposits, short-term savings deposits at banks, and savings deposits held with savings institutions, which are less liquid than M1. (Belazzouz & Ben Ali, 2017)

2.5. Domestic credit to the private sector: pertains to financial funds extended to households and businesses by financial institutions, encompassing loans, non-equity security acquisitions, trade credits, and other outstanding receivables. Moreover, in certain nations, credit to the private sector might occasionally encompass credit granted to state-owned or partially state-owned enterprises. (Buyant, Tarkhuut, & Sun, 2014))

2.6. Per Capita Gross Domestic Product (GDP): Per Capita GDP refers to the average share of the GDP that each individual in a country receives. It is calculated by dividing the GDP of a particular country by its population. This measure serves as an economic tool to understand the extent to which individuals can access goods and services. It can also be considered as one of the indicators to measure the level of prosperity within societies, as an increase in per capita GDP signifies the individual's ability to purchase more goods and services and allocate more funds towards savings and investments. (Magdi, 2021)

2.7. Inflation: serves as an economic indicator, reflecting the escalation of prices for goods and services within the economy, thereby indicating a decrease in the purchasing power of the currency. It is typically measured as a percentage. (Chaluvadi, 2022)

Causes of inflation can be broadly categorized into three main groups: (Causes of Inflation, Reserve Bank of Australia,, s.d.)

- Demand-pull inflation: This type of inflation results from developments on the demand side of the economy, where an increase in overall demand outpaces the economy's ability to supply goods and services, leading to price rises.

- Cost-push inflation: On the other hand, cost-push inflation is triggered by higher input costs on the supply side of the economy. When factors like increased production costs or raw material prices occur, businesses pass these costs onto consumers through higher prices.

- Inflation expectations: Inflation can also arise from inflation expectations, meaning that what households and businesses anticipate will happen to future prices can influence and impact actual prices in the future.

Each of these factors plays a significant role in shaping the inflationary trends within an economy.

2.8. Government Spending: It refers to the amounts disbursed by the government to provide services to citizens, purchase goods required for service provision, assist specific segments of society, or initiate various economic and social projects. In essence, government spending encompasses the actions carried out by public authorities to achieve the public good. (Jalouli & Mohamed Amin)

3. Introduction to the statistical study

3.1. The concept of data analysis:

This method was first introduced by "Karl Pearson" in 1901 and was later incorporated into mathematical statistics by "Harold Hotelling" in 1933. The Principal Component Analysis (PCA) method involves a descriptive analysis of data and therefore does not rely on probabilities or assumptions. Instead, it is a geometric approach that uses tables containing quantitative variables and entities, whether they be years or countries, for comparison. (El-Din, 2018)

3.2. The significance of analysis into fundamental compounds:

- The importance of Principal Component Analysis (PCA) lies in the following aspects: (Mohammed, 2019)
- Interpreting economic and social phenomena by summarizing data in the form of principal components.
- Principal components represent a set of linearly uncorrelated factors or variables.
- Identifying the significance of relationships among the studied variables and extracting points of strength and weakness.

3.3. Tests in data analysis:

Several tests indicate the presence or absence of correlations between study variables, including: (Ouassila, 2021)

• Bartlett's test: We examine the correlation matrix and test the hypothesis of non-correlation.

• KMO criterion: This test indicates that the partial correlations between variables are weak, and the value of this criterion is restricted between 0.3 and 0.7.

4. Presenting the data:

The study sample consists of 10 selected indicators from Algeria's economic performance indicators for the period (2000-2021). These indicators are Total Reserves, Annual GDP Growth (%), Gross Domestic Product (GDP), Population, Inflation, Total External Debt, Broad Money Supply Growth (%), Total National Expenditure, Domestic Credit to the Private Sector, and Per Capita GDP. (Refer to Appendix 1 for the detailed data).

After applying Principal Component Analysis (PCA) to the data presented in Appendix 1 using the software "Stat19 - XL," we obtained the following results:

4.1. Means and standard deviations.

Table 1. Means and Standard Deviations of Economic Performance Indicators for the period (2000-2021)

The Variables	The Mean	The Standard Deviation
Total Reserves	104525251025,993	62676745784,307
Annual GDP Growth (%)	2,918	2,359
Gross Domestic Product (GDP)	142163314938,607	51788800831,526
Population	36727721,727	4264763,092
Total External Debt	10426797591,173	7672522909,737
Broad Money Supply Growth (%)	13,454	11,081
Domestic Credit to the Private Sector	16,708	6,523
Per Capita GDP	3857,020	324,066
Inflation	4,014	2,021
Total National Expenditure	12751378849113,600	4281175274865,720

Source: Prepared by the researcher based on: "STAT.19- XL" program outputs.

The inflation variable is responsible for the concentration of the variables as it has the smallest standard deviation (2.021). On the other hand, the total national expenditure variable is responsible for their dispersion as it has the largest standard

deviation (4281175274865,720).

4.2. The correlation matrix.

Table 2. Correlation matrix between variables
(Algerian economic performance indicators for the period 2000-2021)

Variables	Total Reserves	Economic growth.	GPD	Population	Inflation	Total External Debt.	Money Supply Growth	Total National Expenditure	Domestic Credit to the Private Sector	Per Capita GDP
Total Reserves	1	-0.081	0.847	0,275	0,445	-0,723	-0,294	0,509	0,145	0,666
Economic growth.	-0.081	1	-0.333	-0,583	0,005	0,533	0,182	-0,496	-0,617	-0,324
GPD	0.847	-0.333	1	0,698	0,460	-0,892	-0,444	0,838	0,559	0,882
Population	0,275	-0,583	0,698	1	0,355	-0,731	-0,541	0,955	0,965	0,789
Inflation	0,445	0,005	0,460	0,355	1	-0,407	-0,093	0,426	0,262	0,443
Total External Debt.	-0,723	0,533	-0,892	-0,731	-0,407	1	0,440	-0,824	-0,662	-0,891
Money Supply Growth.	-0,294	0,182	-0,444	-0,541	-0,093	0,440	1	-0,593	-0,569	-0,631
Total National Expenditure	0,509	-0,496	0,838	0,955	0,426	-0,824	-0,593	1	0,898	0,905
Domestic Credit to the Private Sector	0,145	-0,617	0,559	0,965	0,262	-0,662	-0,569	0,898	1	0,737
Per Capita GDP	0,666	-0,324	0,882	0,789	0,443	-0,891	-0,631	0,905	0,737	1

Source: Prepared by the researcher based on: "STAT.19- XL" program outputs.

Table 3. Bartlett's test results (Algerian economic performance indicators for the period 2000-2021)

Khi^2 (Valeur observée)	**Khi^2 (Valeur critique)**	**DDL**	**P–Value**	**Alpha**
304.926	**61.656**	**45**	**<0.0001**	**0.05**

Source: Prepared by the researcher based on: "STAT.19- XL" program outputs.

Where:

• **Null Hypothesis H0**: There is no significant correlation different from zero between the studied variables.

• **Alternative Hypothesis H1:** There is at least one significant correlation different from zero between the studied variables.

It is observed that the calculated Chi-square value (304.926) is greater than the critical value (61.656), leading to the rejection of the null hypothesis H0 and acceptance of the alternative hypothesis H1. Therefore, there is a significant correlation among the studied variables at 45 degrees of freedom and a significance level of 0.05%.

Table 4: KMO Test.

Total Reserves	**0,419**
Economic growth.	**0,590**
GPD	**0,607**
Population	**0,543**
Inflation	**0,465**
Total External Debt.	**0,694**
Money Supply Growth.	**0,661**
Total National Expenditure	**0,696**
Domestic Credit to the Private Sector	**0, 662**
Per Capita GDP	**0,590**
KMO	**0,599**

Source: Prepared by the researcher based on: "STAT.19- XL" program outputs.

Since **KMO = 0.599,** which falls within the range of 0.3 and 0.7, it indicates that the partial correlations between the variables are weak.

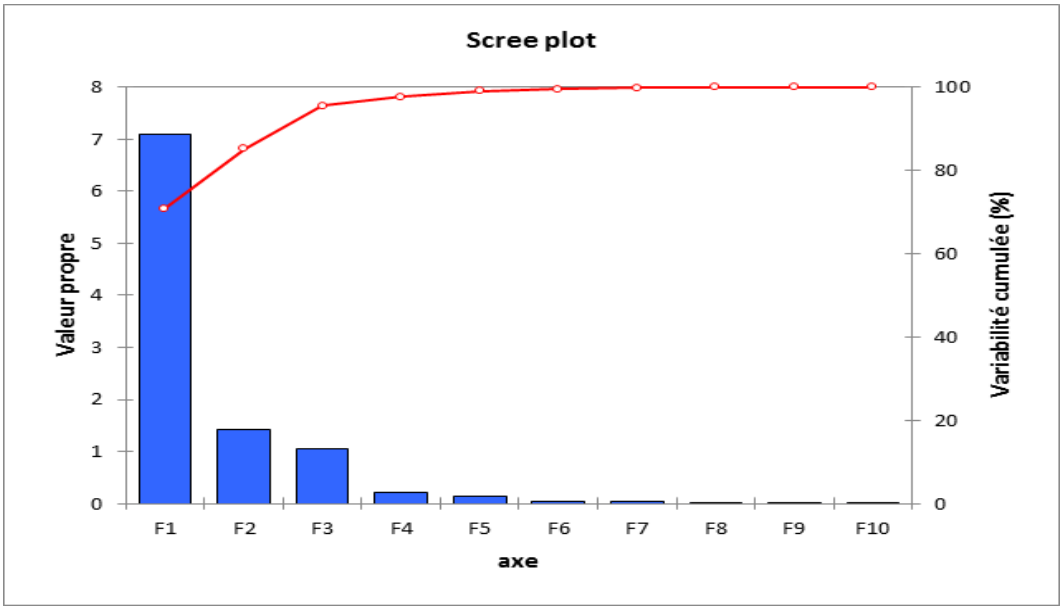
5. Eigenvalues and Proportion of Variance.

Table 5. Eigenvalues and Proportion of Variance (Algerian economic performance indicators for the period 2000-2021).

	F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
Valeur propr	6,292	1,547	0,843	0,760	0,329	0,131	0,045	0,040	0,012	0,002
Variabilité (%	62,917	15,465	8,426	7,604	3,291	1,309	0,449	0,396	0,118	0,024
% cumulé	62,917	78,383	86,809	94,413	97,704	99,013	99,462	99,858	99,976	100,000

Source: The "STAT.19- XL" program outputs**.**

Fig.1. The graphical representation of Eigenvalues (Algerian economic performance indicators for the period 2000-2021).



Source: The "STAT.19- XL" program outputs.

- Factor F_1 represents 62.917% of the total variance.
- Factor F_2 represents 15.465% of the total variance.

Thus, the representation proportion on the first factor with two axes (F_1F_2) is 78.383% of the total variance, which is a good and sufficient proportion to provide a clear picture of the data cloud on this factor. Therefore, we suffice with representing the variables on a two-dimensional orthogonal and homogeneous factor (F_1F_2).

5.1. Analysis of the correlation between variables and principal components:

In this section, we will delve into clarifying and analyzing the correlations between the fundamental variables representing Algerian economic performance indicators (10 indicators) and the principal components represented by Factor F_1 and Factor F_2. The subsequent table illustrates these correlations.

Table 6. Correlation between variables and principal components

(Algerian economic performance indicators for the period 2000-2021)

Variables	F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
Total Reserves	0,634	0,683	0,024	-0,317	-0,070	0,1112	-0,091	-0,074	-0,004	0,013
Economic growth.	-0,526	0,554	-0,486	0,286	0,307	-0,034	0,024	-0,049	-0,001	-0,002
GPD	0,901	0,333	0,047	-0,173	0, 112	0,127	0,096	0,071	-0,044	-0,016
Population	0,901	-0,342	0,035	0,189	0,142	0,092	0,067	-0,021	0;008	0,085
Inflation	0,472	0,484	0,257	0,647	-0,243	-0,011	0,008	0,008	-0,002	-0,002
Total External Debt.	-0,919	-0,139	-0,159	0,216	0,006	0,224	-0,086	0,081	-0,020	0,006
Money Supply Growth.	-0,617	0,163	0,698	0,028	0,321	-0,021	-0,034	0,004	-0,001	0,001
Total National Expenditure	0,970	-0,115	-0,028	0,100	0,131	0,098	-0,050	0,009	0,076	-0,020
Domestic Credit to the Private Sector	0,839	-0,484	-0,013	0,194	0,090	-0,016	-0,072	-0,080	-0,060	-0,014
Per Capita GDP	0,947	0,136	-0,152	-0,013	0,098	-0,179	-0,081	0,115	-0,007	0,012

Source: Prepared by the researcher based on: "STAT.19- XL" program outputs.

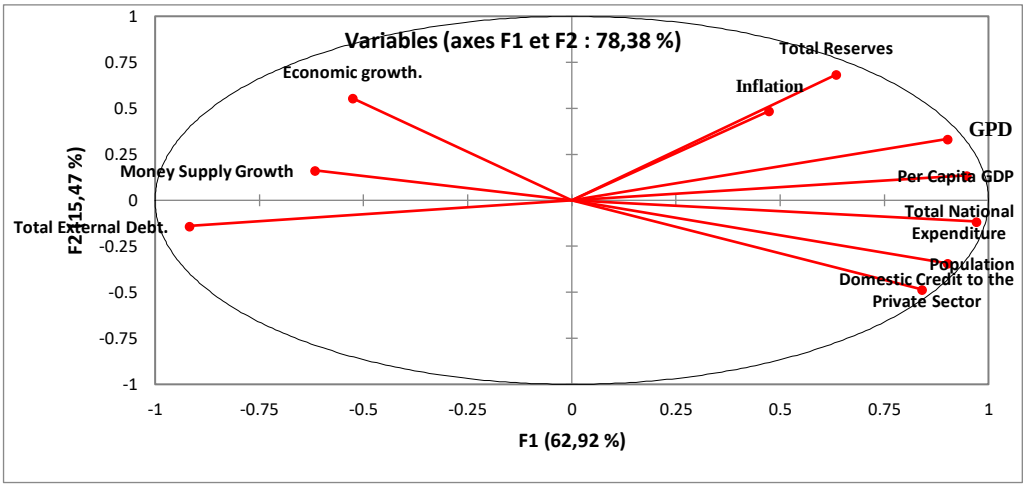
From Table (6), we observe that the first principal component is strongly

positively correlated with the following indicators: Reserves (0.643), Gross Domestic Product (GDP) (0.901), Population (0.901), Total Expenditure (0.970), Domestic Credit to the Private Sector (0.839), and Per Capita GDP (0.974). It has a strong negative correlation with Economic Growth (-0.526), Total External Debt (-0.919), Broad Money Supply Growth (-0.617), and a weak negative correlation with Inflation only (0.472). As for the second principal component, it is strongly positively correlated with Reserves (0.683) and Economic Growth (0.554), and weakly positively correlated with Gross Domestic Product (GDP) (0.333) and Inflation (0.484), Broad Money Supply Growth (0.163), and Per Capita GDP (0.136). The rest of the indicators show a weak negative correlation with the second principal component (F_2).

5.2. The Strengths and Weaknesses of Algeria based on the selected indicators for the period (2000-2021):

We can deduce the strengths and weaknesses of the Algerian economy based on the correlations between the variables as shown in the following Figure:

Fig.2. Correlation circle between variables (Algerian economic performance indicators for the period 2000-2021)



Source: The "STAT.19- XL" program outputs**.**

5.2.1. Strengths of Algeria based on economic performance indicators during the period (2000-2021):

Through the correlation diagram, we can infer the strengths of Algeria based on the study's indicators, which can be elucidated individually as follows:

- **Local Credit to the Private Sector:** Considering this indicator as one of the strengths yielded by the model does not contradict the Algerian reality. The national economy has witnessed openness to the private sector through its participation in joint investments with the public sector on one hand and independent projects on the other. Many private companies have monopolized several local markets, such as food products, cement, transportation, construction, and others. Due to the financial ties between business politicians, the private sector has benefited, and certain entrepreneurs have obtained substantial funds through high-value loans, thereby presenting a positive indicator for the percentage of local credit granted to the private sector as a proportion of the GDP.

- **Population:** The correlation diagram indicates that the population count is considered a strength of the Algerian economy. It is an important indicator used in various areas, such as labor force size and foreign direct investment, which inherently focuses on the population count as an indicator of market size.

- **Total national expenditure:** The local expenditure in Algeria is deemed a strength of its economy, with public expenditures exceeding public revenues. As is known in the Algerian economy, the value of expenditure is closely related to petroleum revenues, and during the study period (2000-2021), there were fluctuations in oil prices, followed by fluctuations in the value of local expenditure.

- **Gross Domestic Product (GDP) and per capita share:** The Gross Domestic Product (GDP) indicates the country's income and is considered a strength of the Algerian economy due to its significant local production in North Africa, according to World Bank statistics. The per capita share is also a strength, as per official estimates from the World Bank, each Algerian citizen had a share of approximately 3,310.4 dollars per person in 2020.

- **Total reserves:** The studied model indicates that total reserves are a point of strength due to their correlation with state revenues from petroleum revenues, which are affected by fluctuations in international oil prices. During the study period, there were periods of rising oil prices, particularly at the beginning of the 2000s and also during the recent period following the Russo-Ukrainian War.

- **Inflation:** The model shows that inflation rates are strengths of the Algerian economy during the period (2000-2021), especially when compared to neighboring countries and European nations where inflation rates exceed 10%. This explains the improvement in individuals' living standards during the same period while waiting for the potential increase in the production outcome of the Algerian economy, which ensures greater price stability and consequently, inflation rates.

5.2.2. Weaknesses of Algeria based on economic performance indicators for the period (2000-2021):

Through the correlation diagram, we deduce the weaknesses of Algeria based on the studied indicators, and each point can be clarified individually as follows:

- **Economic Growth:** The correlation diagram reveals that economic growth is a weakness for the Algerian economy. This negative result can be attributed to the country's weak productive base, combined with the rentier nature of the Algerian

economy.

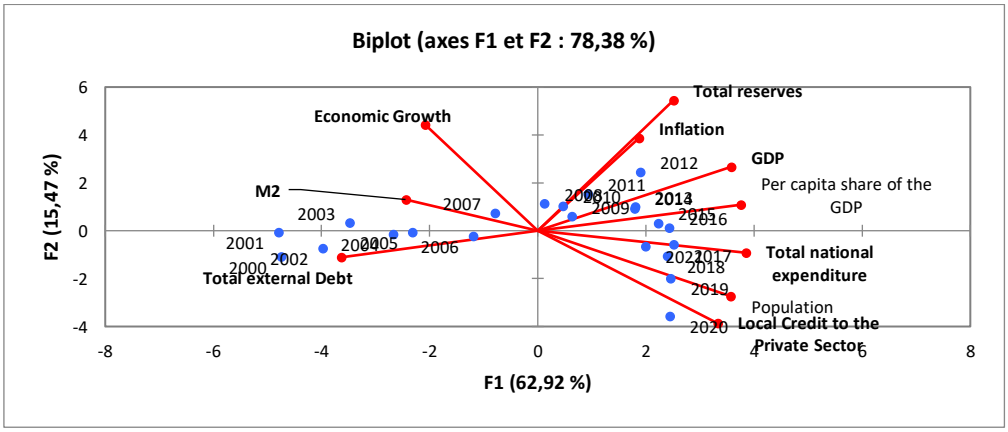
- **Total external Debt:** The model presents a contradiction between economic theory and the actual economic situation. It considers the prepayment policy of debts to have potentially positive effects on Algeria's status, leading to an escape from economic dependency on international financial institutions. However, this contradiction can be explained by the fact that if those funds were invested in real investments, the outcome would have been better.

- **Money supply growth (M2):** During the study period, M2 increased to high levels due to the expansionary monetary policy driven by significant oil revenues. The model identifies this as a point of strength, considering that this increase is directed toward production rather than consumption.

6. The Development of Economic Performance Indicators and Other Indicators in Algeria during the Period (2000-2021)

This section will cover the development of Algeria's economic performance indicators during the period (2000-2021), analyzing their progress or setbacks over the years. The indicators will be divided into two stages:

Fig.3. The Development of Economic Performance Indicators and Other Indicators in Algeria during the Period (2000-2021)



Source: The "STAT.19- XL" program outputs**.**

- **Stage 1: (2000-2007):** From the figure above, we observe some improvement during this stage, as indicated by certain indicators that were previously considered weaknesses, such as the External Debt indicator. This period marked a new phase for the national economy after two decades of economic weakness, imbalanced scales, and political and security instability. It coincided with the implementation of the Economic Revival Program and the Complementary Program for Growth Support, both of which involved substantial funding aimed primarily at improving living conditions rather than solely focusing on economic performance indicators.

- **Stage 2: (2008-2021):** According to the figure above, we notice an improvement in the indicators that were considered strengths of Algeria. This improvement can be attributed to the statistical annexes providing further insights. This stage coincided with the launch of the Growth Consolidation Program for the periods 2010-2014 and 2015-2019, aimed at achieving previous objectives and creating an attractive climate for foreign investors. Consequently, Algeria's economic performance indicators showed progress during this stage, indicating a genuine desire to enhance economic performance.

7. CONCLUSION

Through this study, we have deduced the significant importance of economic performance indicators, as they act as a reflective mirror for the Algerian economy, exposing both its strengths and weaknesses. Nowadays, decision-making relies heavily on reports and statistics that represent economic performance indicators. Additionally, countries are classified based on their development status, whether advanced, developing, or emerging.

The analysis of economic performance indicators using Principal Component Analysis (PCA) revealed two sets of strengths and weaknesses. While the Algerian

economy showed improvement during the past three years according to reports from the International Monetary Fund, its economic growth rates remained a weakness throughout the study period from 2000 to 2021.

However, there have been positive developments, such as an increase in productive capacity and the initiation of efforts to move away from a rent-based economy, particularly during the last three years. The Algerian government has been proactive in raising its spending alongside the rise in petroleum revenues.

Notably, Algeria possesses the highest domestic production in North Africa, with a per capita income of approximately 3,310.4 dollars per person in 2020.

8. Bibliography List:

1-Belazzouz, & Ben Ali. (2017). *Lectures on Monetary Theories and Policies.* (4. edition, Ed.) Algeria: University Publications Office.

2-Buyant, E., Tarkhuut, K., & Sun, T. (2014)). *Data show rise in domestic credit in developing countries.* worldbank. Retrieved from : HTTPS://BLOGS.WORLDBANK.ORG/OPENDATA/DATA-SHOW-RISE-DOMESTIC-CREDIT-DEVELOPING-COUNTRIES

3-CALLEN, T. (2008). *Back to Basics: What is Gross Domestic Product?* FMI, Finance and development . Retrieved from https://www.imf.org/external/pubs/ft/fandd/2008/12/pdf/basics.pdf

4-Causes of Inflation, Reserve Bank of Australia,. (n.d.). Retrieved from https://www.rba.gov.au/education/resources/explainers/pdf/causes-of-inflation.pdf

5-Chaluvadi, S. (2022). *Inflation Meaning*. Retrieved from https://scripbox.com/pf/inflation

6-El-Din, S. S. (2018). *Analysis of Data.* Algeria: Dar Huma for Publishing and Distribution.

7-El-Shadly, A. S. (2014). *Methods of Formation and Management of Foreign Reserves - Experiences of Some Arab and Foreign Countries* . - https://www.amf.org.ae/sites/default/files/p: Economic Studies," Arab Monetary Fund, available at the following .

8-Jalouli, M., & Mohamed Amin , B. (n.d.). Good Governance and Government Spending: A Comparative Study on African Countries. *Journal of Economic Growth and Entrepreneurship, Volume 3*(Issue 1), p. p 42.

9-Khramov, V., & John , R. (2013). *The Economic Performance Indx (EPI: an Intuitive Indicator for Assessing a Country's Economic Performance), Dynamics in an Historical Perspective.*

10-Latifa Bahlol, Taha bin Habib, b., & Awatif , M. (2020). The Impact of External Debt on Economic Development: A Comparative Study of Some Arab Countries During (2000-2016).,. (A. N. Econom, Ed.) *New Economics Journal, 15*(1).

11-Leamer, E. (2008). *Macroeconomic Patterns and Stories.* Berlin, Germany: Springer Science & Business Media.

12-Magdi, N. (2021). *"Basic Economic Concepts: Gross Domestic Product" Explanatory Booklet Series,.* Arab Monetary Fund. Retrieved from https://www.amf.org.ae/sites/default/files/publications/2021-12/basic-economic-co

13- Mohammed, G. (2019). *Lectures on Data Analysis.* Saida, First Year Master's Degree, Business Administration Major: University of Moulai Al-Tahar.

14- Ouassila, C. (2021). *The role of the agricultural sector in fulfilling the requirements of the food industries in Algeria during the period (2000-2017).* Blida2 University: . Doctoral thesis in Economic Sciences, specializing in Macroeconomics and International Financespecializing in Macroeconomics and International Finance.

15- (2005). *Quality measures for economic indicators,.* working papers and Studies.

16- Ramadan, W., Hicham , L., & Mohamed El Hadi , D. (2019). The Impact of Money Supply on Economic Growth Indicators in Algeria during the Period 1990-2018, . . *Noor Journal of Economic Studies, Volume 5*(Issue 02), p. p. 114.