# The effects of the Russian-Ukrainian war on Algeria's oil exports

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**Summary:**

This study aims to show the impact of the Russian-Ukrainian war on Algeria's oil exports, due to its contribution to increasing production. The economic situation in Algeria before the war and during the war, in addition to an analytical measurement study using the ACP model, A period of one year was chosen for the study, 6 months before the war and 6 months during the war, where the study concluded that the Russian-Ukrainian war had a positive impact on increasing exports of Algerian oil.

**Keywords:** The Russian-Ukrainian war; Algerian oil exports; Algerian-Russian relations; Algerian-Ukrainian relations.

**Jel Classification Codes :** H56; H77; D51

**Résumé:**

Cette étude vise à montrer l'impact de la guerre russo-ukrainienne sur les exportations pétrolières de l'Algérie, en raison de sa contribution à l'augmentation de la production. La situation économique en Algérie avant et pendant la guerre, en plus d'une étude analytique mesure utilisant le modèle ACP, Une période d'un an a été choisie pour l'étude, 6 mois avant la guerre et 6 mois pendant la guerre. où l'étude a conclu que la guerre russo-ukrainienne avait eu un impact positif sur l'augmentation des exportations de pétrole algérien.

**MOTS CLÉS :** La guerre russo-ukrainienne; les exportations pétrolières algériennes; les relations algéro-russes; les relations algéro-ukrainiennes.

**Jel Classification Codes :** H56; H77; D51

## I- Introduction :

Algeria has suffered for years from a recession in its economy, which worsened after the emergence of the Corona pandemic, and with the beginning of recovery from the effects of this pandemic, the Ukrainian-Russian conflict hit the world's supply, energy and food chains. Which had a positive and important impact on Algeria through the rise in energy prices, as prices rose significantly and the price of a barrel of oil reached $117 in June 2022, which negatively affected most countries that import gas and oil, while it was positive for Algeria and Libya, which are considered the largest exporters. For gas and oil.

Energy experts expect Algeria to play a fundamental role in this conflict, by taking advantage of the current situation, as it possesses one of the largest energy reserves in the world, after ranking 10th in gas, and 16th in oil.

It is expected that the Russian-Ukrainian war will affect the Algerian economy positively. The continued rise in oil prices, which reached their highest levels in June 2022, will lead to improving its revenues from the sale of oil and gas, and thus this will inevitably affect its budget and the level of well-being of the Algerian citizen, especially since the Algerian economy depends Almost entirely dependent on the fuel sector.

From the above, the following problem can be raised:

**To what extent does the Russian-Ukrainian war affect Algeria's oil exports?**

**Objectives of the study**: This study aims to:

- Getting to know Algerian-Russian relations;

- Getting to know the Algerian-Ukrainian relations;

- Identifying the reality of Algerian economic before and during the Russian-Ukrainian war, especially in the field of oil during the period July 2021 - December 2022.

**Study hypotheses:**

-The Russian-Ukrainian war plays an important role in increasing Algerian oil production;

-The Russian-Ukrainian war affects the economy in Algeria by increasing oil exports.

**Study methodology:**

This study will rely on the descriptive approach, which aims to describe the phenomenon quantitatively and qualitatively. As for the study tools, the analysis will be mainly relied upon through the analytical study and its interpretation based on the collected theoretical information. The ACP statistical model will be used, using the XLSTAT program version 2016, in Analyzing the results of the study, testing hypotheses, and displaying various graphs.

## II– Algerian-Russian relations:

The Soviet Union was the first country in the world to establish diplomatic relations with independent Algeria, on March 3rd, 1962. Algeria also officially recognized the Russian Federation on December 26th, 1991, as Algeria enjoys strong relations with Russia, which can be explained as follows: (futureuae, 2022)

### II-1 Russian-Algerian strategic partnership:

Moscow is aware of the importance of Algeria in light of the political weight it enjoys in the Maghreb and North Africa region, which has prompted Moscow in recent years to develop its political and economic relations with the Algerian side, which has contributed to finding common interests between the two countries.

On the other hand, Russia is a major source of armament for the Algerian forces to develop their military capabilities, as Algeria is the largest importer of Russian weapons on the African continent. In 2006, the latter signed a deal to purchase Russian weapons for $7.5 billion.

Algeria alone purchased about 200 aircraft parts from Russia from 2000 to 2019, ranging from transport helicopters to combat helicopters and combat ground fighters. Various models of surface-to-air air defense systems were ordered, in addition to missiles of other types, and more than 500 tanks were ordered in total during the same period. Estimates indicate that Russian weapons represent about 69% of the total Algerian weapons.

### II-2 Russian-Algerian investments:

Algeria has strengthened its capabilities to export natural gas through cooperation with Russia. The Algerian company “Sonatrach” has signed a contract to search for and exploit gas in the “Honey Field” region in the Algerian Sahara. It is expected that this project will enter production during the year 2025, and Sonatrach owns 51% of While the Russian company Gazprom owns 49%, Algeria is unlikely to abandon its relations with Moscow in order to ensure European energy security away from Russian influence.

### II-3 A Russian-Algerian meeting:

The Russian capital, Moscow, witnessed the seventh meeting between the two presidents in 2008. The Algerian president at the time indicated that the presence of Russian companies in Algeria had achieved positive results, especially in the fields of exploration and production. He called on Russian companies to invest and partner in the oil, gas, transportation, mining, and health sectors, noting what Russia enjoys. From experience in these fields. (KELAA, 2017, P120)

### II-4 Russian-Algerian economic relations in general:

In general, we find that Algerian-Russian economic relations are developing, but at a slow pace compared to other levels of relations, due to the obstacles and tensions that surround them, the most prominent of which are exaggerated European fears that Algerian-Russian cooperation in the field of energy will turn into a threat to its energy security, and the Russian economic presence It threatens the economic interests of some European countries in the Algerian market. (MERROUK, 2021, P1262)

## III– Algerian- Ukrainian relations:

Ukraine depends on its fertile soil to produce agricultural crops. It is primarily an agricultural country, in addition to some important industries such as energy, fuel, ferrous and non-ferrous materials. Ukraine has turned to a market economy of "economic openness" after the collapse of the Soviet Union, in which Ukraine was the second largest country economically. in it, (BELLOUCHA & BOUCHENFA, 2021, P488)

Algeria is Ukraine's second largest economic and trade partner in Africa after Egypt, as Algeria enjoys strong relations with Ukraine, which can be explained as follows: (ukrpress, 2021)

 The volume of trade exchange between the two countries declined to 360 million dollars in 2020 after reaching 620 million dollars in 2019;

 Ukraine exported $273 million worth of metal products to Algeria in 2019, which represents about 45% of the total Ukrainian-Algerian trade during that year and in 2020, due to the Covid-19 pandemic, Ukraine's exports of ferrous metals to Algeria amounted to about $100 million US dollars. This represents more than 25% of the total volume of trade exchanged during that year;

 Ukraine purchased the first batch of Algerian Sahara Blend oil with a volume of about 80 thousand tons in 2021;

 Ukraine participated in the First International Food Industries Salon in Algeria in December 2020, represented by a group of Ukrainian national companies specialized in the field of food industries, such as the production of sweets, meat, dairy, natural juices, honey and coffee;

 Algeria has become one of the main destinations for Ukrainian grain exports, as data revealed that Ukrainian grain exports from seaports amounted to 1.14 million tons during the last week of January 2020, and wheat exports rose to 201 thousand tons from 69 thousand tons, while corn shipments decreased to 931 thousand tons from 1050 thousand tons. The data confirms that most of the Ukrainian grain exports were towards China, Spain and Algeria, and that grain exports jumped to about 35.5 million tons during the 2019/2020 season from 23.9 million tons during the same period, the 2018/2019 season.

## IV– The Algerian economy before the Russian-Ukrainian war:

Algeria's almost total dependence on oil has led to profound imbalances in financial and monetary balances, as the oil markets have witnessed, since the second half of 2014, a decline in state revenues by more than 50%, while public spending continues to be very large, which has made the state budget record An unprecedented deficit, which led Algeria to adopt non-traditional financing in 2017, but at the beginning of 2020, cash issuance to finance the state budget was effectively stopped, and the repercussions of the crisis continued in light of the spread of the Covid-19 virus and the sharp decline in fuel prices in international markets before the start of the Russian-Ukrainian war in February 2022. The following table shows the most important quantitative indicators in the Algerian economy during the period 2000-2022:

**Table (1) : Quantitative indicators in the Algerian economy during the period 2000-2022**

| The years | International reserves ($ billion) | The exchange rate of the dinar against the dollar | External debt (billion dollars) | Balance of payments balance ($ billion) | General budget balance (billion DZD) | Inflation rate % | GDP growth rate % | Gross domestic product (billion DZD) |
|---|---|---|---|---|---|---|---|---|
| 2000 | **13.55** | 75.25 | **25.26** | 7.57 | 400.00 | **0.3** | 2.2 | **4123.51** |
| 2001 | 19.62 | 77.26 | 22.57 | 6.19 | 184.50 | 4.2 | 2.6 | 4227.11 |
| 2002 | 25.15 | 79.68 | 22.64 | 3.66 | 52.6 | 1.4 | 4.7 | 4522.8 |
| 2003 | 36.45 | 77.39 | 23.35 | 7.47 | 284.2 | 4.3 | 6.9 | 5252.32 |
| 2004 | 45.69 | 72.06 | 21.82 | 9.25 | 337.9 | 4 | 5.2 | 6149.11 |
| 2005 | 59.16 | 73.35 | 17.19 | 16.94 | 1095.8 | 1.4 | 5.1 | 7561.98 |
| 2006 | 81.46 | 72.64 | 5.61 | 17.73 | **1186.8** | 2.3 | 2.0 | 8514.83 |
| 2007 | 114.97 | **69.37** | 5.60 | 29.55 | 579.3 | 3.7 | 3.0 | 9366.6 |
| 2008 | 148.09 | 71.18 | 5.58 | **36.99** | 999.5 | 4.9 | 2.4 | 11077.1 |
| 2009 | 155.11 | 72.73 | 5.41 | 3.86 | 1113.7 - | 5.7 | 1.6 | 9968.0 |
| 2010 | 170.46 | 74.39 | 5.56 | 15.58 | 1496.5 - | 3.9 | 3.4 | 11991.6 |
| 2011 | 188.8 | 76.05 | 4.40 | 20.14 | 2468.8 - | 4.5 | 2.4 | 14636.7 |
| 2012 | **190.7** | 78.10 | 3.68 | 12.06 | 3264.2 - | 8.9 | 3.3 | 16256.2 |
| 2013 | 194 | 78.15 | 3.40 | 0.13 | 2205.9 - | 3.3 | 2.7 | 16679.2 |
| 2014 | 187.2 | 87.90 | 3.73 | 5.88 - | 9.3 - | 2.9 | 4.1 | 17235.6 |
| 2015 | 150.5 | 107.13 | **3.02** | **27.54 -** | 3103.8 - | 4.8 | 3.0 | 16712.7 |
| 2016 | 120.7 | 110.52 | 3.84 | 26.03 - | 2285.9 - | 6.4 | 4.8 | 17514.6 |
| 2017 | 104.8 | 114.93 | 3.98 | 21.76 - | 1234.7 - | 5.6 | 7.8 | 18876.2 |
| 2018 | 87.3 | 118.29 | 4.04 | 15.82 - | 1913.7 - | 4.3 | 7.3 | 20259.0 |
| 2019 | 71.8 | 119.15 | 3.83 | 16.93 - | 559.6 - | 2.0 | 0.1 | **20284.2** |
| 2020 | 62 | 132.30 | 3.99 | 8.5 - | 2435.6- | 3.5 | 4.9- | 18300 |
| 2021 | 44.7 | 138.82 | 3.9 | 3.6- | 2784.8- | 9.5 | 6 | 19400 |
| 2022 | 38 | **147.01** | / | 5.3- | **4175.2-** | **11.7** | 7.6- | 18119.6 |

**The source** : Prepared by the researcher based on reports from the Bank of Algeria www.bank-of-algeria.dz
And reports of the National Bureau of Statistics https://www.ons.dz
And reports of the General Directorate of Budget http://mfdgb.gov.dz/wp-content
And Trading economics website https://ar.tradingeconomics.com/algeria/indicators

We note from the previous table that the gross domestic product reached its highest levels in 2019, reaching 20,284.2 billion dinars, at a rate of 0.1% compared to the previous year, as it began to decline after it had been continuously increasing until the year 2019, and the inflation rate reached 11.7% in 2022, where it represented The highest percentage over the previous years after reaching 3.5% in 2020, and this is due to the negative effects left by the Covid 19 pandemic. As for the balance of the general budget, we notice that it declined significantly until it reached -4175.2 billion DZD in 2022, and we also notice a continuous decline in both external debt. International reserves are offset by a continuous rise in the exchange rate of the Algerian dinar against the dollar. As for the balance of payments balance, it reached its highest value in 2008, reaching $36.99 billion. This is due to the significant rise in oil prices. It also declined to reach its lowest value in 2015, when it reached -27.54 billion dollars. This is also due to the sharp decline in oil prices during the second semester of 2014, and the following table shows the development of Algeria's tax revenues during the period 2000-2021, that is, before the Russian-Ukrainian war:

**Table (2) : Development of Algeria's tax revenues during the period 2000-2021**

| The years | Budget revenues (billion DZD) | Petroleum collection (billion DZD) | Petroleum collection percentage of total revenues | Regular collection (billion dinars) | Non-tax revenues |
|---|---|---|---|---|---|
| 2000 | 1578.1 | 1213.2 | 76.87 | **349.5** | **15.4** |
| 2001 | **1505.5** | **1001.4** | 66.51 | 398.2 | 90.3 |
| 2002 | 1603.2 | 1007.9 | 62.86 | 483 | 112.4 |
| 2003 | 1974.4 | 1350.0 | 68.37 | 524.9 | 99.4 |
| 2004 | 2229.7 | 1570.7 | 70.44 | 580,4 | 72.1 |
| 2005 | 3082.5 | 2352.7 | 76.32 | 640.3 | 83.8 |
| 2006 | 3639.8 | 2799.0 | 76.90 | 720.8 | 119.7 |
| 2007 | 3687.8 | 2796.8 | 75.83 | 766.8 | 116.2 |
| 2008 | 5190.5 | 4088.5 | 78.76 | 965.2 | 136.3 |
| 2009 | 3676.0 | 2412.7 | 65.63 | 1146.6 | 115.8 |
| 2010 | 4379.6 | 2905 | 66.33 | 1298 | 189.8 |
| 2011 | 5790.1 | 3979.7 | 68.73 | 1527.1 | 283.3 |
| 2012 | 6339.3 | **4184.3** | 66,01 | 1908.6 | 246.4 |
| 2013 | 5957.5 | 3678.1 | 61.73 | 2031 | 248.4 |
| 2014 | 5738.4 | 3388.4 | 59.04 | 2091.4 | 258.5 |
| 2015 | 5103.1 | 2373.5 | 46.51 | 2354.7 | 374.9 |
| 2016 | 4747 .4 | 1682.5 | 35.44 | 2722.6 | 342.3 |
| 2017 | 5635.5 | 2200.1 | 39.03 | 3035.4 | 400 |
| 2018 | **6714.2** | 2776.1 | 41,35 | 3033.1 | **905** |
| 2019 | 6507.9 | 2714.4 | 41.70 | 3793.4 | 600 |
| 2020 | 6289.7 | 2200.3 | 34.98 | **4089.3** | 833 |
| 2021 | 5328.1 | 1919.2 | 36.02 | 3408.9 | 565 |

**The source** : (SARRI, 2022, PP 184–185)

We note from the previous table that the percentage of petroleum collections out of total revenues reached its highest value in 2008, reaching 78.76%. This is due to the significant rise in oil prices at that time, and after that it began to decline until it reached 39.03% in 2017, then it increased relatively in the years 2018 and 2019 and after that, and because The negative effects of the Covid-19 pandemic have declined since 2020.

## V– The Algerian economy during the Russian-Ukrainian war:

The Russian war on Ukraine began on February 24th, 2022. The campaign began with a long military buildup, followed by the entry of the Russian armed forces into eastern Ukraine. The Russian-Ukrainian conflict had a number of repercussions, which made it necessary for many low- and middle-income economies to regain their foothold in the country. In addition to the rise in the prices of basic commodities, on the contrary, some countries benefited from the effects of the war, especially the oil ones, such as Algeria and Libya. Given Algeria’s dependence on its exports of energy and natural gas as sources of national income for the country, the rise in global oil prices will provide additional revenues for Algeria that can be exploited to fill Its needs for wheat, which it imported from Russia, which exported about 363.5 thousand tons of wheat to Algeria in January

2022, and the following table shows oil production during the period extending from July 2021 to December 2022:

**Table (3) : Crude oil production in Algeria during the period July 2021-December 2022**

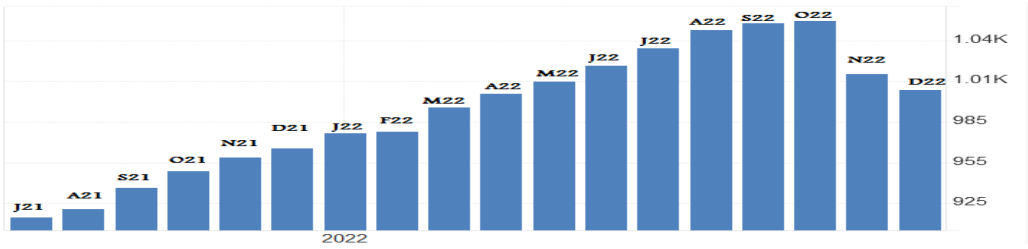
| The month | Production volume (thousand barrels per day) | selling price |
|---|---|---|
| July 2021 | 915 | $ 73.53 |
| Aug 2021 | 921 | $ 70.33 |
| Sept 2021 | 937 | $ 73.88 |
| Oct 2021 | 949 | $ 82.11 |
| Nov 2021 | 959 | $ 80.37 |
| Dec 2021 | 966 | $ 74.38 |
| Jan 2022 | 977 | $ 85.24 |
| Feb 2022 | 978 | $ 93.95 |
| Mar 2022 | 996 | $ 113.48 |
| Apr 2022 | 1006 | $ 105.64 |
| May 2022 | 1015 | $ 113.82 |
| Jun 2022 | 1027 | **$ 129.87** |
| July 2022 | 1038 | $ 128.23 |
| Aug 2022 | 1050 | $ 117.77 |
| Sept 2022 | 1062 | $ 108.55 |
| Oct 2022 | **1065** | $ 101.11 |
| Nov 2022 | 1020 | $ 94.63 |
| Dec 2022 | 1012 | $ 83.76 |

**The source** : OPEC website https://momr.opec.org/pdf-download/

And Trading economics website https://ar.tradingeconomics.com/algeria/crude-oil-production

From the previous table, we notice that the volume of production has been increasing continuously since July 2021, and this is due to the increase in demand for oil and its derivatives, especially during the current war between Russia and Ukraine. As for the price, we note that it is unstable, as before the war, oil prices ranged between 70 and 85 dollars per barrel. At the beginning of the war, the price of one barrel reached $93.95 in February, and the price of oil witnessed its highest value in June 2022, when it reached $129.87 per barrel. The following figure shows the change in the volume of oil production in Algeria for the period extending from July 2021 to December 2022:

**Figure (1): The volume of oil production in Algeria for the period from July 2021 to December 2022**




**The source** : Trading economics website https://ar.tradingeconomics.com/algeria/crude-oil-production

## VI - the analytical measurement study for the period from July 2021 to July 2022 using the ACP principal components analysis model:

A period of one year was chosen for the study, 6 months before the war and 6 months during the war. We will conduct the analytical measurement study using the ACP for the period from July 2021 to July 2022 through the following tables and graphs:

Through Table No. 03, which represents the change in the selling price with the change in daily production volume for each month during the period July 2021 - July 2022, where:

**X** : Daily production volume

**Y**: Selling price

After reserving the results of Table No. 03 within the program and performing the reconciliation process, the following results appear to us:

**Table (4) : Averages and standard deviations for the period July 2021 - July 2022**

| Variables | observations | Averages | Standard deviations |
|---|---|---|---|
| Daily production volume | 13 | 975.846 | 39.694 |
| Selling price | 13 | 91.773 | 17.778 |

**The source** : Prepared by the researcher based on Program outputs XLSTAT V2016

From the results of Table No. 04, we note that the variable (selling price) is responsible for the concentration of the study population because this variable is characterized by the smallest standard deviation (17.778). Conversely, the variable responsible for the dispersion of the study population is (daily production volume) because it is characterized by the smallest standard deviation, The largest (39,694).

**Table (5) : Correlation matrix for the period July 2021 - July 2022**

| Variables | Daily production volume | Selling price |
|---|---|---|
| Daily production volume | 1 | 0.912 |
| Selling price | 0.912 | 1 |

**The source** : Prepared by the researcher based on Program outputs XLSTAT V2016

Through the results of the correlation matrix shown in Table No. 05, we note that there is a positive and strong correlation between the two variables, as the higher the selling price, the corresponding increase in the volume of daily oil production, which is one of the positives of the Russian-Ukrainian war on Algerian oil exports.

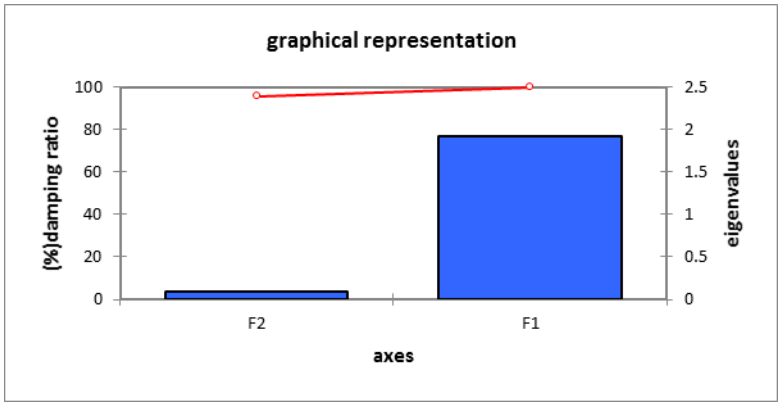
**Table (6) : Eigenvalues and representation ratios on the axes for the period July 2021 - July 2022**

| | F1 | F2 |
|---|---|---|
| **Eigenvalues** | 1.912 | **0.088** |
| **Volatility ratio (%)** | 95.615 | **4.385** |
| **Cumulative percentage (%)** | 95.615 | **100** |

**The source** : Prepared by the researcher based on Program outputs XLSTAT V2016

We note in Table No. 06 the eigenvalues and representation percentages on the axes for the period July 2021 - July 2022, and by projecting the results of the table we obtain the following graphical representation:

**Figure (2): Eigenvalues and representation ratios on the axes for the period July 2021 – July 2022**




**The source** : Prepared by the researcher based on Program outputs XLSTAT V2016

The first global axis, F1, or the first fundamental component, represents 95.615% of the inertia value, while the second axis, F2, represents 4.385%. In total, the first and second axes represent 100%, and from this we conclude that these two axes give the best representation of the diagram, and therefore we suffice with representing the variables on a parameter. One orthogonal and homogeneous in two dimensions (F1, F2).

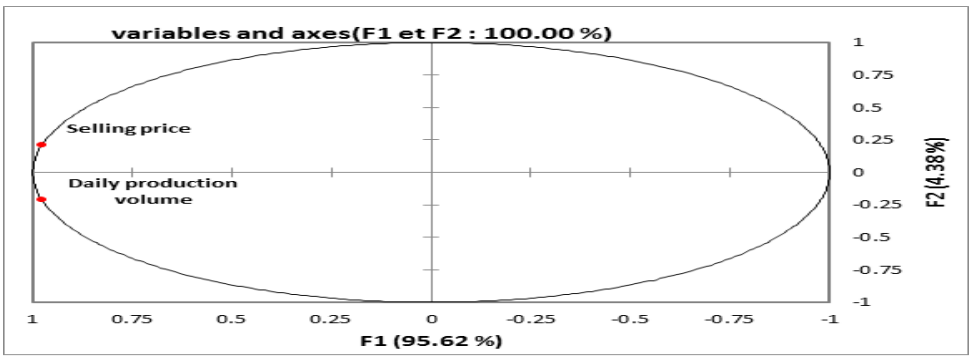
**Table (7) : Correlation between variables and factors for the period July 2021 - July 2022**

| | Eigenvectors | | Variable coordinates | | Correlation between variables and factors | |
|---|---|---|---|---|---|---|
| | F1 | F2 | F1 | F2 | F1 | F2 |
| **(Selling price)Var 1** | 0.707 | 0.707 | 0.978 | 0.209 | 0.978 | **0.209** |
| **Daily production ) Var 2 (volume** | 0.707 | -0.707 | 0.978 | -0.209 | 0.978 | **-0.209** |

**The source** : Prepared by the researcher based on Program outputs XLSTAT V2016

We notice through Table No. 07 the correlation between variables and factors for the period July 2021 - July 2022, and by projecting the results of the table we obtain the following graphical representation:

**Figure (3): Graphical representation of variables for the period July 2021 – July 2022**




**The source** : Prepared by the researcher based on Program outputs XLSTAT V2016

The previous figure represents the graphical representation of the variables on the circle of correlations. Through this representation we notice that all the variables are far from the center and close to the periphery, which means that they are of good quality and acceptable in the study. We also notice that the Euclidean distance between the two variables is weak and this indicates that there is a strong and positive correlation. Between them, as we previously mentioned.

**Table (8) : Contributions of variables for the period July 2021-July 2022**

| | Contributions of variables (%) | | *The square cosine of the variables* | |
|---|---|---|---|---|
| | **F1** | **F2** | **F1** | **F2** |
| **(Selling price)Var 1** | 50 | 50 | **0.956** | **0.044** |
| **Daily production ) Var 2 (volume** | 50 | 50 | **0.956** | **0.044** |

**The source** : Prepared by the researcher based on Program outputs XLSTAT V2016

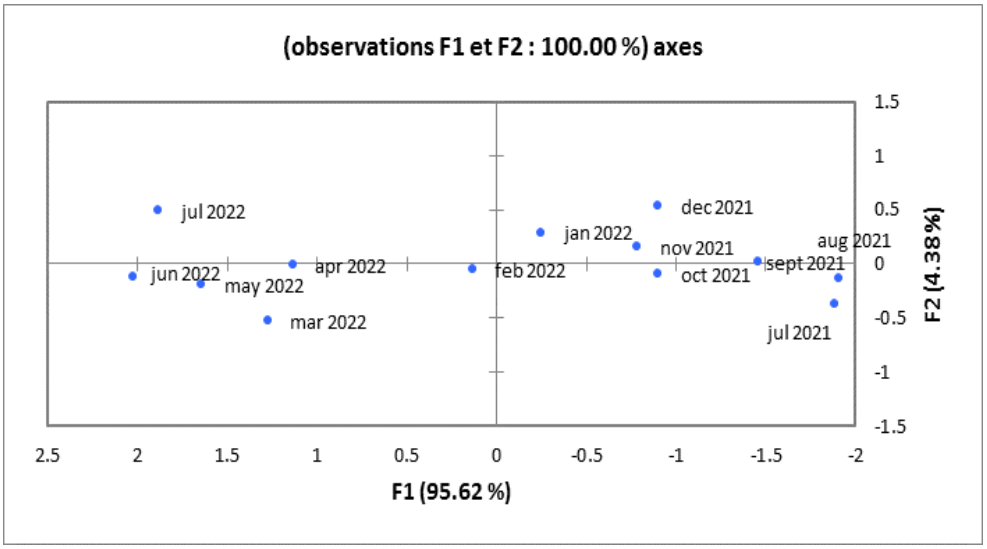
**Table (9) : Contributions of variables for the period July 2021-July 2022**

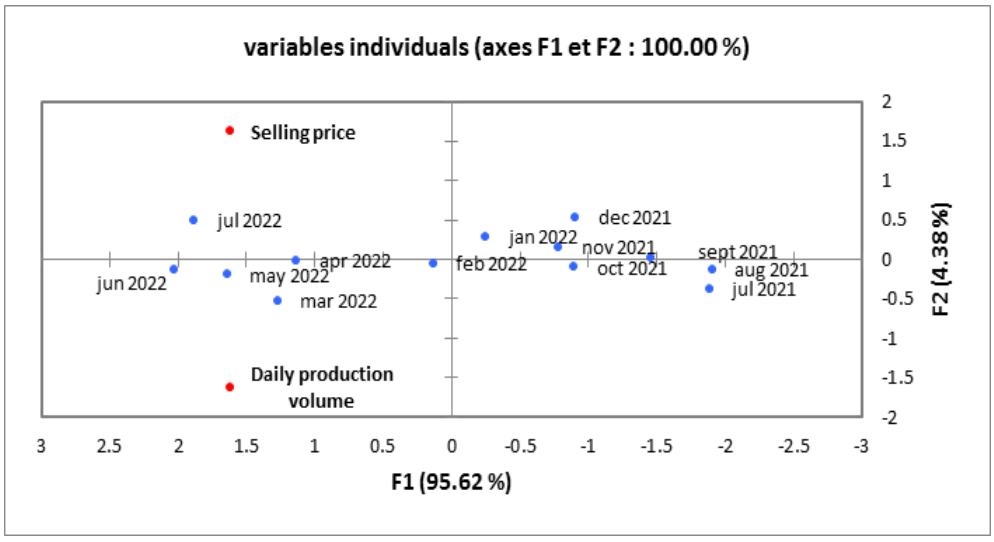
| | observations coordinates | | Contributions of observations (%) | | The square cosine of the observations | |
|---|---|---|---|---|---|---|
| | **F1** | **F2** | **F1** | **F2** | **F1** | **F2** |
| July 2021 | -1.883 | -0.373 | 14.269 | 12.198 | **0.962** | **0.038** |
| Aug 2021 | -1.905 | -0.129 | 14.592 | 1.464 | **0.995** | **0.005** |
| Sept 2021 | -1.461 | 0.021 | 8.586 | 0.037 | **1.000** | **0.000** |
| Oct 2021 | -0.898 | -0.098 | 3.242 | 0.838 | **0.988** | **0.012** |
| Nov 2021 | -0.784 | 0.161 | 2.475 | 2.238 | **0.960** | **0.040** |
| Dec 2021 | -0.903 | 0.537 | 3.277 | 25.340 | **0.783** | **0.262** |
| Jan 2022 | -0.249 | 0.292 | 0.250 | 7.471 | 0.421 | **0.579** |
| Feb 2022 | 0.130 | -0.050 | 0.068 | 0.221 | **0.870** | **0.130** |
| Mar 2022 | 1.272 | -0.525 | 6.512 | 24.173 | **0.855** | **0.145** |
| Apr 2022 | 1.133 | -0.015 | 5.165 | 0.020 | **1.000** | **0.000** |
| May 2022 | 1.641 | -0.189 | 10.829 | 3.128 | **0.987** | **0.013** |
| Jun 2022 | 2.023 | -0.126 | 16.456 | 1.386 | **0.996** | **0.004** |
| July 2022 | 1.884 | 0.495 | 14.278 | 21.487 | **0.935** | **0.065** |

**The source** : Prepared by the researcher based on Program outputs XLSTAT V2016

We note in Table No. 08 the contributions of the variables for the period July 2021 - July 2022. We also note in Table No. 09 the contributions of observations and their correlation (months of the study) for the period July 2021 - July 2022. By projecting the results of the two tables, we obtain the following graphical representation:

**Figure (4): Graphical representation of variables and individuals (study months) for the period July 2021 – July 2022**




**The source** : Prepared by the researcher based on Program outputs XLSTAT V2016

The previous graph shows the relationship between the variables and the months of study, as we notice from the figure that there is a negative and strong correlation between the two variables and this is with respect to the vertical axis. As for the horizontal axis, we notice that all the months of study are close to the center of gravity, which means that there is a temporal correlation between individuals in addition to To have a strong representation of the variables.

## VII- Conclusion:

After reviewing and analyzing the current developments taking place in the Russian-Ukrainian war and highlighting the extent of its impact on Algeria politically and economically, it becomes clear to us that Algeria's position was politically neutral regarding the Russian-Ukrainian war.

Economically, Algeria has benefited from the rise in energy prices to record levels of about 70% during the past months, which is This ensures that Algeria will receive more of the financial revenues it needs for its national economy, which has suffered economic problems since 2014, which have worsened during the recent period due to the Covid-19 pandemic. This will enable it to confront the rise in food prices, especially wheat.

This war also has positive and negative effects, whether these effects are direct or indirect due to the interconnected economies of countries. These effects do not appear directly, but rather appear after a year or two, or perhaps several years, and among them is Algeria, which benefited from the rise in energy prices because Russia is The main supplier of oil exports to the European Union, which affected energy prices and increased them to record levels, and the effects of the war are clearly visible on the Algerian economy in a generally positive way.

**The results:**

The Russian-Ukrainian conflict has a number of consequences, which can be explained as follows:

- Some developing economies rely heavily on Russia and Ukraine for food, as these countries provide more than 75% of the wheat imported by Europe, Central Asia, the Middle East, and Africa. Supply disruptions as well as high prices can lead to increased hunger and food insecurity;
- Russia is a major force in the energy and minerals market, as the sharp decline in these commodities will lead to a decline in construction, petrochemical and transportation projects;
- Given Algeria's dependence on its exports of energy and natural gas as sources of national income for the country, the rise in global oil prices will provide additional revenues for Algeria that will enable it to avoid its repercussions on its food needs;
- An increase in the volume of oil production has continued since July 2021. This is due to the increase in demand for oil and its derivatives, especially during the current war between Russia and Ukraine;
- Fluctuation in oil prices, as before the war, oil prices ranged between 70 and 85 dollars per barrel, but at the beginning of the war, the price of one barrel reached 93.95 dollars in February, and the price of oil witnessed its highest value in June 2022, when it reached 129.87 dollars per barrel.

**The Recommendations:**

Based on the previous data and results, some recommendations can be suggested:

- Working to reduce Russian and Ukrainian imports, especially food, and rely heavily on local production in order to provide food security;
- Launching an emergency plan to increase energy supplies to Europe in light of the sharp rise the world is witnessing and the cessation of Russian supplies within the Union;
- Develop a strategy to more strongly integrate energy systems to provide energy security;
- The necessity of developing strategies for managing crises and risks in order to mitigate the severity of sudden shocks and crises.

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## - Appendices:

Program outputs XLSTAT V2016

XLSTAT 2016.02.28451 - Analyse en Composantes Principales (ACP) - Début :

Tableau observations/variables : Classeur = Nouveau Feuille Microsoft Office Excel.xlsx / Feuille = Feuil1 / Plage = Feuil1!$H$2:$I$15 / 13 lignes et 2 colonnes

Type d'ACP : Pearson (n)

Type de biplot : Biplot de distance / Coefficient = Automatique

Statistiques descriptives :

| Variable | Observations | Minimum | Maximum | Moyenne | Ecart-type |
|---|---|---|---|---|---|
| Var1 | 13 | 915.000 | 1040.000 | 975.846 | 39.694 |
| Var2 | 13 | 70.330 | 117.720 | 91.773 | 17.778 |

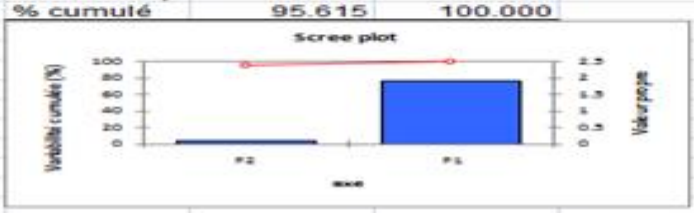
Matrice de corrélation (Pearson (n)) :

| Variables | Var1 | Var2 |
|---|---|---|
| Var1 | 1 | 0.912 |
| Var2 | 0.912 | 1 |

**Analyse en Composantes Principales :**

Valeurs propres :

| | F1 | F2 |
|---|---|---|
| Valeur propr | 1.912 | 0.088 |
| Variabilité (% | 95.615 | 4.385 |
| % cumulé | 95.615 | 100.000 |




Vecteurs propres :

| | F1 | F2 |
|---|---|---|
| Var1 | 0.707 | 0.707 |
| Var2 | 0.707 | -0.707 |

Coordonnées des variables :

| | F1 | F2 |
|---|---|---|
| Var1 | 0.978 | 0.209 |
| Var2 | 0.978 | -0.209 |

Corrélations entre les variables et les facteurs :

| | F1 | F2 |
|---|---|---|
| Var1 | 0.978 | 0.209 |
| Var2 | 0.978 | -0.209 |

Contributions des variables (%) :

| | F1 | F2 |
|---|---|---|
| Var1 | 50.000 | 50.000 |
| Var2 | 50.000 | 50.000 |

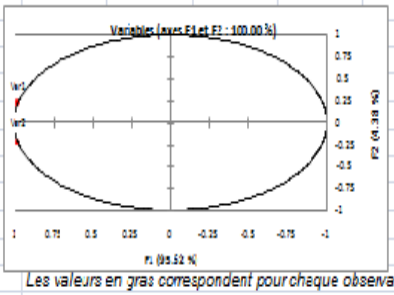
Cosinus carrés des variables :

| | F1 | F2 |
|---|---|---|
| Var1 | **0.956** | 0.044 |
| Var2 | **0.956** | 0.044 |

*Les valeurs en gras correspondent pour chaque variable au facteur pour lequel le cosinus carré est le plus grand*

Coordonnées des observations :

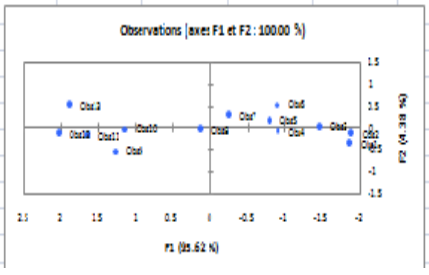
| Observation | F1 | F2 |
|---|---|---|
| Obs1 | -1.883 | -0.373 |
| Obs2 | -1.905 | -0.129 |
| Obs3 | -1.461 | 0.021 |
| Obs4 | -0.858 | -0.098 |
| Obs5 | -0.784 | 0.160 |
| Obs6 | -0.903 | 0.537 |
| Obs7 | -0.249 | 0.292 |
| Obs8 | 0.130 | -0.050 |
| Obs9 | 1.272 | -0.525 |
| Obs10 | 1.133 | -0.015 |
| Obs11 | 1.641 | -0.189 |
| Obs12 | 2.023 | -0.126 |
| Obs13 | 1.884 | 0.495 |




*Les valeurs en gras correspondent pour chaque observation au facteur pour lequel le cosinus carré est le plus grand*

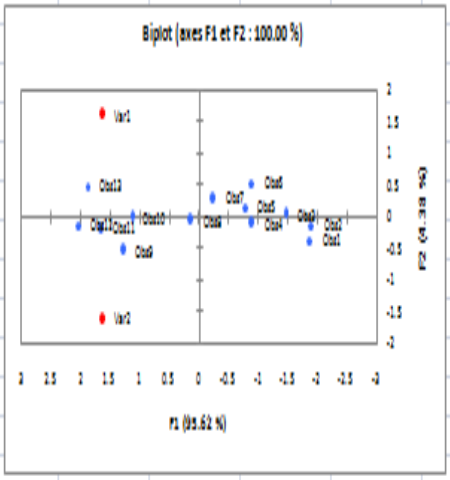
Cosinus carrés des observations :

| | F1 | F2 |
|---|---|---|
| Obs1 | **0.952** | 0.038 |
| Obs2 | **0.995** | 0.005 |
| Obs3 | **1.000** | 0.000 |
| Obs4 | **0.938** | 0.012 |
| Obs5 | **0.950** | 0.040 |
| Obs6 | **0.738** | 0.262 |
| Obs7 | 0.421 | **0.579** |
| Obs8 | **0.870** | 0.130 |
| Obs9 | **0.855** | 0.145 |
| Obs10 | **1.000** | 0.000 |
| Obs11 | **0.987** | 0.013 |
| Obs12 | **0.996** | 0.004 |
| Obs13 | **0.935** | 0.065 |



Contributions des observations (%) :

| | F1 | F2 |
|---|---|---|
| Obs1 | 14.269 | 12.198 |
| Obs2 | 14.592 | 1.464 |
| Obs3 | 8.586 | 0.037 |
| Obs4 | 3.242 | 0.838 |
| Obs5 | 2.475 | 2.238 |
| Obs6 | 3.277 | 25.340 |
| Obs7 | 0.250 | 7.471 |
| Obs8 | 0.068 | 0.221 |
| Obs9 | 6.512 | 24.173 |
| Obs10 | 5.165 | 0.020 |
| Obs11 | 10.829 | 3.128 |
| Obs12 | 16.456 | 1.386 |
| Obs13 | 14.278 | 21.487 |

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