Avoiding banking risks during the Corona pandemic

تفادي المخاطر البنكية خلال فترة جائحة كورونا

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***Abstract*:** The main purpose of this research is to understand the different measures approved by most governments, central banks and even international non-governmental organizations and committees to avoid banking risks in order to deal with the global impact that has hit the world due to the spread of the corona pandemic, these effects have affected all economic and financial sectors. For example, the banking sector has been greatly affected by the pandemic, making it vulnerable to various surrounding risks.

***Keys words*: banking risks, Corona repercussions, Measures taken.**

***JEL classification codes*:** F00 ; G00 ; G21.

ملخص: الهدف الرئيسي من هذا البحث هو معرفة التدابير المختلفة المعتمدة من قبل معظم الحكومات والبنوك المركزية وحتى المنظمات واللجان الدولية غير الحكومية لتجنب المخاطر المصرفية من أجل التعامل مع التأثير العالمي الذي أصاب العالم بسبب انتشار وباء الكورونا، أثرت هذه الآثار على جميع القطاعات الاقتصادية والمالية. على سبيل المثال، تأثر القطاع المصرفي بشدة بالوباء، مما يجعله عرضة لمختلف المخاطر المحيطة به.

الكلمات المفتاحية: مخاطر بنكية، تداعيات كورونا، تدابير متخذة.

تصنيف JEL: F00؛ G00؛ G21.

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1- Introduction:

Most of the countries of the world, especially the developed ones, have sought to contain the Coronavirus (Covid-19), leaving behind a health and social crisis that has affected every country in the world without exception, however, this containment has resulted in a global economic and financial crisis. Repercussions that affected every country, most of the world's economies having ceased. The epidemic has been spreading for a long time, it is not known when it will go away, and worse, there have been signs of its redeployment in its native China. Global economic and financial systems have already had a severe impact and the intensification of the crisis could affect global economic and financial stability and restore previous crisis scenarios.

To address the various dimensions of the topic in an academic way, we ask the following **main question**: **What are the most important global, national and local preventive measures adopted by governments, central banks, organizations and global committees to Avoiding banking risks of the global Corona epidemic (Covid-19) for the global economy and finance?**

In order to answer sub-questions, we suggest the following **hypotheses**:

- **Hypothesis I:** Global economic and financial repercussions have negatively affected global economies due to the Corona pandemic, which hit the world in 2020.
- **Hypothesis II:** The banking sector was not isolated from the effects of the Corona pandemic, however, was affected by the repercussions of the pandemic, resulting in the emergence and exacerbation of risks surrounding it.
- **Hypothesis III:** Precautionary measures taken by governments and banking bodies can manage banking risks resulting from the repercussions of the Corona pandemic.

The **importance** of this research lies in understanding the most important economic and financial impact that has affected the banking industry due to the spread of the corona pandemic around the world, leading to the rise of bank risk groups surrounding banking institutions. One of the most important preventive measures approved by most governments, central banks, and global NGOs and committees to manage these banking risks.

Previous studies show that there is interest on the part of researchers in trying to figure out the most important precautionary measures taken to manage banking risks in the light of crises, the most important of which we find:

The study "**Douadi Fatima Al Zahraa**" for the year 2014-2015 under the title "**The effectiveness of precautionary systems to avoid banking crises**", by the University of Bouira, aimed to find out the causes of the global financial crisis and how it affected the work of banks In addition to presenting the various precautionary measures taken by the Basel Committee in that regard, the study showed the negative impact of banks on the global financial crisis in 2008, which caused the bankruptcy of many large banks, and therefore the Basel

Committee issued new standards for it (Basel III) after all Criticism sought by Basel II.

The study by **"Suleiman Nasser"** in 2014 under the title **"Prudential standards in the banking sector and the extent of their application in the Algerian banking system"**, by the University of Sétif, so that this study aims to know the scope of the application of the precautionary standards for the management of banking risks issued by the Basel Committee through several stages on the Algerian banking system. The study showed that the Algerian precautionary rules keep pace with the standards applied in the distribution of risks, thanks to the development of similar indicators to a large extent, the standards of the Basel 1 committee have been respected in all their details, but there was a delay in compliance with certain standards of the amended Basel I committee and the standards of the Basel committee 2, and there is no clear compliance with Basel III.

The study by "**Mahmoud Muhammad Al-Ajlouni**" under the title "**Crisis Management in the Banking Sector in the Northern Region" A Field Study** ", by Irbid National University in Jordan,, which aimed to identify the concept, system and constraints of crisis management in the banking sector, and the study showed an interest in the senior management of commercial banks to identify signs and indicators of crises, and an interest in the importance of adopting internal and external environmental factors in dealing with crises affecting the banking sector.

The difference between our research and previous research is that we have adopted a new type of preventive measure to deal with new types of crises, similar to economic and financial crises affecting the banking industry directly or indirectly, and the recent global health crisis and the "corona pandemic" has affected all sectors in various international systems. This will inevitably have an impact on banks and financial systems due to the increase and growth in banking risks. Therefore, preventive measures should be taken.

2- Banking risks and banking operations:

Banks are financial intermediaries whose main activities consist of granting loans to borrowers and collecting deposits from depositors. In other words, they play the role of intermediaries between borrowers and savers. By performing an intermediary function, the bank collects excess funds from depositors and distributes them to those who lack funds (borrowers and businesses). In this way, they transfer funds from depositors to borrowers, thus increasing economic efficiency by promoting better allocation of resources. **(CASU, GIRARDONE, & MOLYNEUX, 2006, p. 4)**.

Banking institutions contribute to economic growth by helping manufacturers, traders and other institutions complete their projects efficiently and accurately, especially considering the development of the ever-changing global economy that dominates international trade and markets and prosperity.

The contribution of a banking institution is made through various banking operations carried out daily, and involves its main and secondary activities.

In accordance with the provisions of articles 66 to 69 of Order 03-11 of August 26, 2003 and article 2 of article 09-03, banking services only accept deposits, grant loans, open bank accounts and issue payment methods payment (Facilitate customer financing operations **(BERNET-ROLLANDE, 2008, p. 5)**) and transfer funds **(Order 03-11 of August 26, 2003) (Regulation 09-03 of May 26, 2009)**. According to article 72 of the same decree and article 6 of the revised and supplemented ordinance 03-11, one of the most important banking services provided by banking establishments is foreign exchange and precious metals transactions, the use of transfer value, property management, and agency and foreign trade advice **(Order 03-11 of August 26, 2003) (Order 10-04 of August 26, 2010)**.

Banking operations carried out by banking institutions in transactions with customers, in the form of banking services to direct and provide customers, such as free banking services, such as opening and closing accounts, check books and savings books, including commission deduction payments by banking institutions, such as banking services for foreign trade (Especially documentary credit **(NACIB, 2005, p. 106)**, It is one of the most important bank loans aimed at financing foreign trade)**(Regulation 13-01 of April 8, 2013)**.

Article 2 of Regulation No. 20-01 of March 15, 2020 contains the general rules on banking conditions that apply to banking operations, such as bonuses, duties and commissions **(Regulation 20-01 of March 15, 2020)**. Articles 2 and 4 of Regulation No. 20-02 of March 15, 2020 specify the banking business related to Islamic banking and the commercial rules of its banks and financial institutions, that is, the banks mentioned in the text of the articles. Previous Businesses (page 66). According to article 69, article 72, paragraph 6), it will not give rise to the collection or payment of interest. In addition, some banking services are for Islamic banking only, namely murabaha transactions, participation, speculation, leasing, peace, insurance, deposit account and investment in deposit account. **(Regulation 20-02 of March 15, 2020)**.

Banking business faces various banking risks every day **(FAURE, 2013, p. 72)**, which vary to a different extent from one banking institution to another, from one banking system to another and from one economic and financial period to another, and are multiplied and varied by the multiplicity and variety of banking, if not for every banking transaction the banking institution eliminates a series of threats that surround it, and traditional banking involves risk, and electronic banking also carries risks. In general, banking risks can be divided into several types, the most important of which are: financial risk (i.e. credit risk, liquidity risk, interest rate risk, risk and currency risk), operational risk, strategic risk, technological risk, legal risk, government risk and crisis **(ISHTIAQ, 2015, pp. 21-22)**.

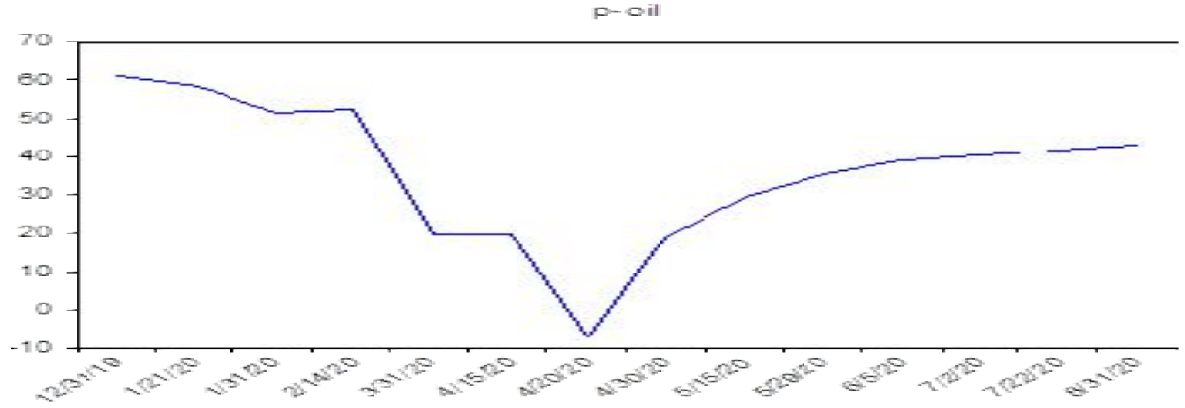
3- The global economic and financial repercussions:

Since the beginning of the epidemic, the Corona epidemic had a significant and dangerous impact on oil prices, and soon most countries stopped their air, land and sea flights. To avoid further deterioration, the Organization of Petroleum Exporting Countries (OPEC), the United States of America and most of the world's oil-producing countries rushed to reach an agreement to reduce daily production, which led to a recovery in the price of a barrel, and its price stabilized at $ 42 a barrel.

To study the effect of variations in the number of corona lesions $(x_t = n - \inf)$ on oil prices $(y_t = p - oil)$, we will estimate the following relationship: $y_t = \alpha + \sum_{i=1}^{p} a_i y_{t-i} + \sum_{j=0}^{q} b_j x_{t-j} + \varepsilon_t$.....(1) between the two variables using the regular least squares method because it gives very important results in the case of small samples , where (p) : the number of delays.

Evolution of oil prices: The following curve represents the evolution of oil prices during the study period.

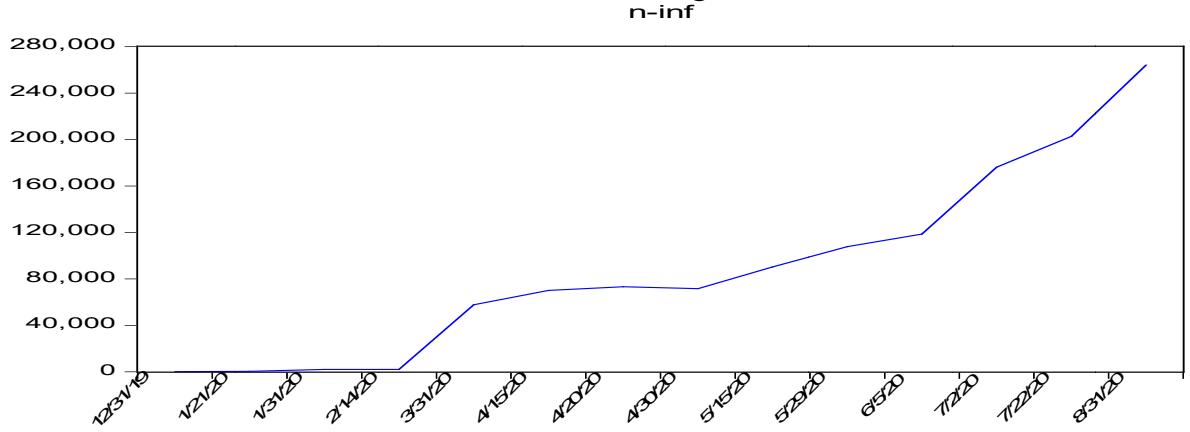
Fig.1. The evolution of oil prices for the period 31/12/2019 to 31/08/2020



Source: Prepared by researchers based on Eviews results

Development of Corona lesions: The following curve represents the evolution of the number of Corona lesions during the study period.

Fig.2. The development of new infections with the Coronavirus for the period December 31, 2019 to August 31, 2020



Source: Prepared by researchers based on Eviews results

Correlation (1) gives the number of optimal delays (p = 1) and the results are shown in the following table:

Table 1. Results of determining the optimal degree of delay

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-2611.681	NA	3.26e+17	54.51419	54.64775	54.56817
1	-2087.827	982.2255	9.99e+12	44.12140*	44.92276*	44.44533*
2	-2064.599	41.13440	1.04e+13	44.15830	45.62746	44.75216
3	-2024.671	66.54530	7.71e+12	44.84732	45.98428	44.71111

Source: Prepared by researchers based on Eviews results

Results of the evaluation: The results of the evaluation of relation (1) gave the following form:

$$y_t = \underset{(0.0087)}{0.788} * y_{t-1} - \underset{(0.2459)}{0.000268} * x_t - \underset{(0.0020)}{0.36} * x_{t-1} + \underset{(0.7182)}{4.085} \ldots\ldots(2)$$

$$R^2 = 0.97 \qquad F = 38.69 \qquad P(F-statistic) = 0.0038$$

From relation (2), we note that oil prices are affected by their values for the previous period through the morale of the parameter $(a_1 = 0.788)$ where it was $(p-value = (0.0087) < 0.05)$ for this parameter at a significant level (5%), and we also note that the prices are affected by the number of corona injuries for the period While it is not affected by the number of injuries for the same period $(b_2 = -0.36)$ where $(p-value = (0.0020 < 0.05))$ for this parameter was at a significant level (5%). The model is considered statistically acceptable given that the coefficient of determination $R^2 = 0.97$ that is to say that the independent variables explain the dependent variable in proportion to 97% in addition to the overall significance of the model $P(F = 38.69) = 0.0038 < 5\%$. Economically, the increase in the number of crown injuries of 1% is offset by the drop in oil prices of 0.36%.

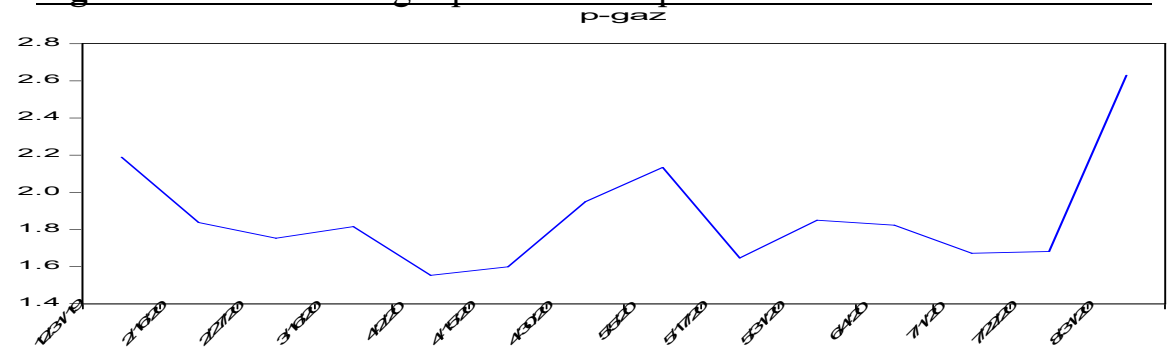
The price per barrel was $ 61.08 as of 31/12/2019 and continued to rise above $ 63 per barrel in the first week of January 2020, starting with the second week of January 2020, it plunged sharply and dangerously, beyond below $ 5 a barrel on 20/04/2020, when the modest price increase was interrupted by a sharp drop in prices, and in mid-April countries and oil organizations sought an agreement to limit oil production to the lowest level, which after 20/04/2020 led to a gradual return of crude oil price increases to $ 42.8 per barrel on 31/08/2020.

With oil fluctuating at the same volatility, speed and direction, the corona pandemic has a significant impact on natural gas prices.

To study the effect of variations in the number of corona lesions $(x_t = n - \inf)$ On gas prices $(y_t^{'} = p - gaz)$, we will estimate the following relationship: $y_t = \alpha + \sum_{i=1}^{p} a_i y_{t-i} + \sum_{j=0}^{q} b_j x_{t-j} + \varepsilon_t \ldots\ldots\ldots\ldots(1)$ between the two variables using the regular least squares method because it gives very important results in the case of small samples , where (p) : the number of delays.

Evolution of oil prices: The following curve represents the evolution of gas prices during the study period.

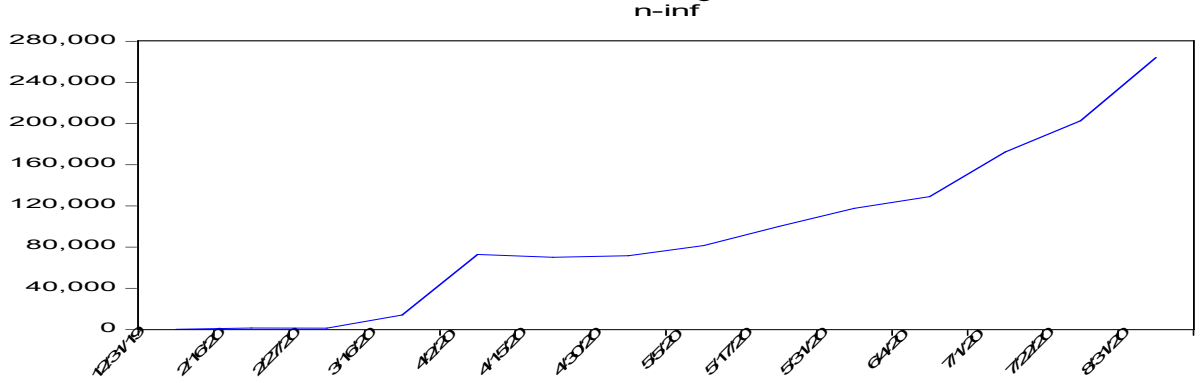
Fig.3. The evolution of gas prices for the period 31/12/2019 to 31/08/2020



Source: Prepared by researchers based on Eviews results

Development of Corona lesions: The following curve represents the evolution of the number of Corona lesions during the study period.

Fig.4. The development of new infections with the Coronavirus for the period December 31, 2019 to August 31, 2020



Source: Prepared by researchers based on Eviews results

Correlation (1) gives the number of optimal delays (p = 1) and the results are shown in the following table:

Table 2. Results of determining the optimal degree of delay

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-2611.681	NA	3.26e+17	55.51419	54.64775	54.56817
1	-2087.827	982.2255	9.99e+12	43.96140*	42.54276*	44.11533*
2	-2064.599	41.13440	1.04e+13	44.15830	45.62746	44.75216
3	-2024.671	66.54530	7.71e+12	44.84732	45.98428	44.71111

Source: Prepared by researchers based on Eviews results

Results of the estimation: The results of the evaluation of relation (1) gave the following form:

$$y_t^{'} = \underset{(0.0095)}{0.51} * y_{t-1} - \underset{(0.3459)}{0.00058} * x_t - \underset{(0.0010)}{0.29} * x_{t-1} + \underset{(0.1252)}{1.511} \ldots\ldots (3)$$

$$R^2 = 0.95 \qquad F = 21.49 \qquad P(F-statistic) = 0.0061$$

From relation (3), we note that gas prices are affected by their values for the previous period through the morale of the parameter $(a_1 = 0.51)$ as it was $(p-value = (0.0095) < 0.05)$ for this parameter at a level significant (5%), and we also note that the prices are affected by the number of corona injuries for the previous period, while It is not affected by the number of injuries for the same period $(b_2 = -0.29)$ where c was $(p-value = (0.0010 < 0.05))$ for this parameter at a significant level (5%). The model is considered statistically acceptable given that the determining factor is $R^2 = 0.95$ that is, the independent variables explain the dependent variable in proportion to 95% in addition to the overall significance of the model $P(F = 21.49) = 0.0061 < 5\%$ On the economically, the increase in the number of injuries to Krona by 1% offset by the drop in gas prices from 0.29%.

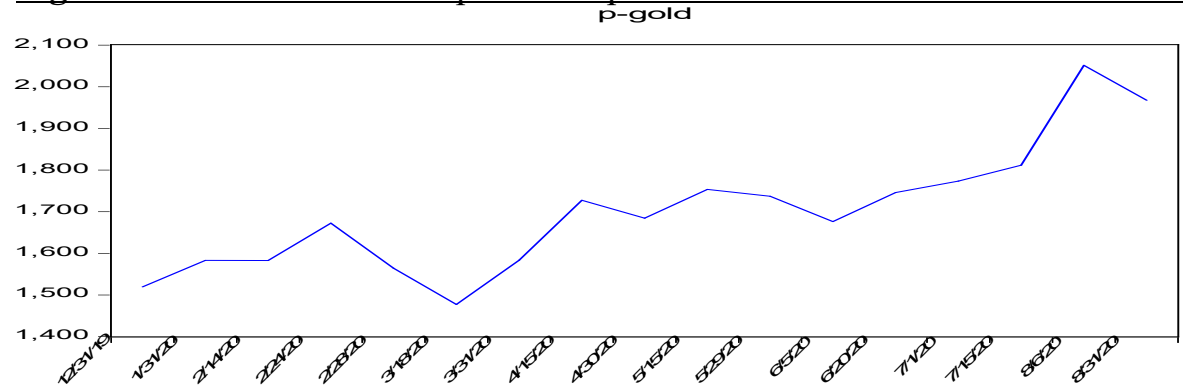
As of 31/12/2019, the price of natural gas was US $ 2.189 per million thermal units. Since then, the price fluctuated and fell to its lowest level in early April, below US $ 1.56 per million thermal units, and then rose to 1 million in early May. The thermal unit was US $ 2.133, and then it fell again to less than US $ 1.62 per million thermal units, and then it rose again, but the price fluctuated and stabilized at US $ 2.63 per million thermal units on the 31/08/2020.

From December 2019 to August 2020, gold increased significantly. This is one of the most obvious effects of the corona pandemic on the entire world and on the significant decline of the US economy. The impact of the economic slowdown reflects its economic slowdown. This reflects the economic downturn, namely the decline in global oil prices and the depreciation of the US dollar against the world's strongest currencies (such as the euro), accompanied by an increase in the price of gold as its price is denominated in US Dollars and cost of gold for holders of other currencies Decreasing.

To study the effect of variations in the number of corona lesions $(x_t = n - \inf)$ on gold prices $(y_t = p - gold)$, we will estimate the following relationship: $y_t = \alpha + \sum_{i=1}^{p} a_i y_{t-i} + \sum_{j=0}^{q} b_j x_{t-j} + \varepsilon_t$.....(1) between the two variables using the regular least squares method because it gives very important results in the case of small samples, where (p) : the number of delays.

Evolution of the price of gold: The following curve represents the evolution of the price of gold during the study period.

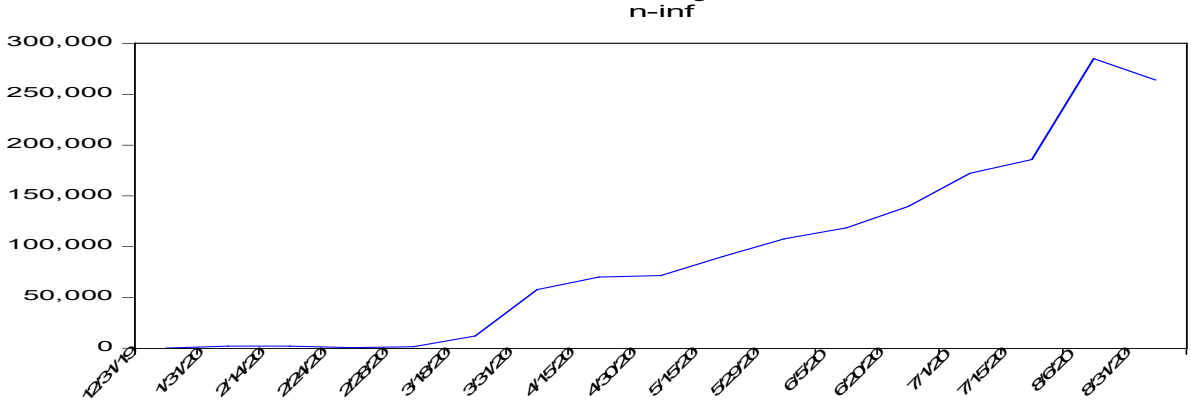
Fig.5. The evolution of Gold prices for period from 31/12/2019 to 31/08/2020



Source: Prepared by researchers based on Eviews results

Development of Corona lesions: The following curve represents the evolution of the number of Corona lesions during the study period.

Fig.6. The development of new infections with the Coronavirus for the period December 31, 2019 to August 31, 2020



Source: Prepared by researchers based on Eviews results

Correlation (1) gives the number of optimal delays (p = 1) and the results are shown in the following table:

Table 3. Results of determining the optimal degree of delay

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-2611.681	NA	3.26e+17	54.51419	54.64775	54.56817
1	-2087.827	982.2255	9.99e+12	43.11240*	43.91176*	44.00543*
2	-2064.599	41.13440	1.04e+13	44.15830	45.62746	44.75216
3	-2024.671	66.54530	7.71e+12	44.84732	45.98428	44.71111

Source: Prepared by researchers based on Eviews results

Results of the estimation: The results of the evaluation of relation (1) gave the following form:

$$y_t = \underset{(0.4474)}{0.24} * y_{t-1} - \underset{(0.0219)}{0.001} * x_t - \underset{(0.5349)}{0.0006} * x_{t-1} + \underset{(0.0353)}{11750} \quad .....(3)$$

$$R^2 = 0.86 \qquad F = 25.88 \qquad P(F-statistic) = 0.000016$$

From Relation (3) above, we note that gold prices are not affected by their values from the previous period through the insignificance of the parameter $(a_1 = 0.24)$ as was the case $(p - value = (0.4474) > 0.05)$ for this parameter at a significant level (5%), We also note that the prices are affected by the number of corona injuries for the same period, while they are not affected by the number of injuries at the degree of delay (p = 1) for the period $(b_1 = -0.001)$ like this was the case $(p - value = (0.0219 < 0.05))$ for this parameter at a significant level (5%), because the significance of the constant is noted in the model. The model is considered statistically acceptable given the fact that the coefficient of determination $R^2 = 0.86$ that is, the independent variables explain the dependent variable in proportion to 86% in addition to the overall significance of the model $P(F = 25.88) = 0.0000016 < 5\%$ Economically, the increase in the number of crown injuries of 1% is offset by the increase in the price of gold of 0.0006%.

At a gold price of $ 1519.5 an ounce on 31/12/2019, it was $ 1967.6 an ounce on 31/08/2020. An increase in the price was observed until the end of December 2019. Until the end of the first week of March 2020, followed by a sharp drop in the price below $ 1500 an ounce by the middle of that month and immediately following a steady sharp rise in the rise in the price of gold from the third week of March 2020 to mid-April 2020 to reach the price of over $ 1720 an ounce, this period was the peak of the number of injuries and deaths due to the pandemic of the crown that hit America, The recent full and partial quarantine measures that have affected the US economy that have affected the exploration, industry and trade of gold, and we note through the same form of fluctuation of the gold price at which $ 1967.6 as of 31/8/2020.

4- Banking risks arising from the global repercussions:

The following Table 1 briefly explains the types of banking risk our banking business is exposed to due to the impact of the global corona pandemic on the global economy and finances, as follows:

Table 4. Types of banking risk surrounding banking operations due to the economic and financial implications of the Corona pandemic

Substance affected by the pandemic	Type of banking transactions affected	Type of bank risk occurring
Gold	Withdrawal of deposits and savings from the bank	Liquidity risk
Oïl and Natural Gas	Low deposits with the bank Not granting credit	Liquidity risk The risk of losing financial income The risk of losses The risk of bankruptcy The risk of credit

Source: Prepared by researchers based on the above

5- Precautionary measures to Avoiding banking risks:

The corona pandemic has had an impact on the global economy and finance, affected the banking sector, and increased banking risks, especially financial risks, such as credit risk, liquidity risk, market risk and risk, of interest rates, and therefore has been affected by the Institutional requirements of the World Bank. Central banks, in addition to the guidelines of the Basel Committee, the International Monetary Fund, the World Bank, the Arab Banking Union and the European Central Bank must also take a series of measures to manage and mitigate these banking risks.

The Association of Arab Banks has also made a number of proposals that would require banks to take precautionary measures to ensure banking risk management, in particular: seek the capital adequacy of banking institutions beyond this. who is asked of them; Deferral of credit benefits to customers; Don't change the current rules; Clarification of approved regulatory procedures; Use of ready-to-use protection margins; Don't hide your operational losses; Strengthening of interbank and external communication mechanisms; Be transparent and provide additional advice on risk disclosure; Review regulatory priorities and maintain close dialogue with the banking sector; Be flexible by adhering to minimum precautionary standards and being consistent with international standards; Undertake well-designed interventions to provide targeted support to borrowers and affected sectors in the public and private sectors; Suspend the automatic basis of corrective actions to respond to the specific circumstances of the current pandemic; reduce moral hazard and maintain adherence to best practices in credit risk management, while promoting the efficient allocation of new loans; classify assets based on guidance provided by standard setters Provide advice and monitor loss reserves to avoid diluting regulatory definition of bad debt; ensure the normal functioning of the main market infrastructures; actively coordinate with relevant local and international regulatory agencies; global coordination between banks from of the world.

In general, central banks and global banks institutions use four types of policies to limit the economic catastrophe caused by the Coronavirus: low interest rates; Lower interest rates Lower interest rates; Aims to encourage long-term repurchase of borrowing activities; Issuing pandemic bonds to support and maintain local companies; and relief programs for member states of the International Monetary Fund.

6- Conclusion:

We have the following results from this study: The corona pandemic has affected banking institutions that are exposed to a range of banking and other risks; the banking risks of the corona pandemic are threatened worldwide. Many banking institutions are about to emerge and the banking system is paralyzed. To prevent the banking sector from increasing risk and seriously affecting the banking sector, most governments, central banks, and international non-governmental organizations and committees have taken preventive measures.

Based on the above findings, we will **confirm the study hypotheses**:

- Hypothesis I: The Corona pandemic has had negative repercussions on various economies around the world, the most important of which is the rise in gold prices and the fall in oil and natural gas prices, the decline in the price and the US dollar index. **(The first hypothesis has been confirmed)**
- Hypothesis II: Banking action has been affected by the global repercussions of the Corona pandemic, which has resulted in the emergence and exacerbation of banking risks that have negatively affected the work and banking performance. **(Second hypothesis has been confirmed)**
- Hypothesis III: Most governments and central banks around the world, and most organizations and committees around the world, have taken a package of precautionary measures to manage the banking risks generated by the repercussions of the pandemic. **(The third hypothesis has been confirmed)**

7- Appendices:

Appendix 1. The number of new infections with the Coronavirus has developed for the period December 31, 2019 to August 31, 2020

Date	new infections	Date	new infections	Date	new infections
31/12/2019	27	31/03/2020	57655	05/06/2020	118526
21/01/2020	282	02/04/2020	72846	20/06/2020	139602
31/01/2020	2008	15/04/2020	70053	01/07/2020	172288
14/02/2020	2056	20/04/2020	73262	02/07/2020	176117
16/02/2020	1277	05/05/2020	81451	15/07/2020	185836
24/02/2020	520	15/05/2020	90269	22/07/2020	202706
27/02/2020	1185	17/05/2020	100012	06/08/2020	285208
28/02/2020	1358	29/05/2020	107706	31/08/2020	264107
16/03/2020	13982	31/05/2020	117551		
18/03/2020	12018	04/06/2020	129057		

Source : https://news.google.com/covid19/

Appendix 2. Prices of oil for the period December 31, 2019 to August 31, 2020, in USD

Date	Prices	Date	Prices	Date	Prices
31/12/2019	61.08	15/04/2020	20.19	05/06/2020	38.98
21/01/2020	58.29	20/04/2020	-7.02	02/07/2020	40.30
31/01/2020	51.6	30/04/2020	19.32	22/07/2020	41.84
14/02/2020	52.22	15/05/2020	29.72	31/08/2020	42.8
31/03/2020	20.18	29/05/2020	35.33		

Source : www.boursorama.com

Appendix 3. Prices of gas for the period 31/12/2019 to 31/08/2020, in USD

Date	Prices	Date	Prices	Date	Prices
31/12/2019	2.189	15/04/2020	1.598	04/06/2020	1.822
16/02/2020	1.837	30/04/2020	1.949	01/07/2020	1.671
27/02/2020	1.752	05/05/2020	2.134	22/07/2020	1.681
16/03/2020	1.815	17/05/2020	1.646	31/08/2020	2.63
02/04/2020	1.552	31/05/2020	1.849		

Source : www.boursorama.com

Appendix 4. Gold prices for the period from December 31, 2019 to August 31, 2020, in USD

Date	Prices	Date	Prices	Date	Prices
31/12/2019	1519.5	31/03/2020	1583.4	20/06/2020	1745.90
31/01/2020	1582.9	15/04/2020	1727.2	01/07/2020	1773.20
14/02/2020	1582.7	30/04/2020	1684.2	15/07/2020	1811.40
24/02/2020	1672.4	15/05/2020	1753.4	06/08/2020	2051.50
28/02/2020	1564.1	29/05/2020	1736.9	31/08/2020	1 967.6
18/03/2020	1477.3	05/06/2020	1676.2		

Source : www.boursorama.com

Appendix 5. Complete results of the relationship between the evolution of the number of Coronavirus infections and the evolution of oil prices for the period between December 31, 2019 and August 31, 2020

Dependent Variable: Y
Method: Least Squares
Date: 01/30/21 Time: 17:49
Sample (adjusted): 1/21/2020 8/31/2020
Included observations: 13 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Y(-1)	0.788897	0.236303	3.338497	0.0087
X	-0.000268	0.000216	-1.241308	0.2459
X(-1)	-0.367277	0.099200	-3.704326	0.0020
C	4.085991	10.97122	0.372428	0.7182

R-squared	0.974811	Mean dependent var	34.13462
Adjusted R-squared	0.406415	S.D. dependent var	17.64188
S.E. of regression	13.59209	Akaike info criterion	8.304513
Sum squared resid	1662.705	Schwarz criterion	8.478344
Log likelihood	-49.97934	Hannan-Quinn criter.	8.268783
F-statistic	38.69871	Durbin-Watson stat	2.342783
Prob(F-statistic)	0.003987		

Source : Eviews

Appendix 6. Complete results of the relationship between the evolution of the number of Coronavirus infections and the evolution of gas prices for the period between December 31, 2019 and August 31, 2020

Dependent Variable: Y
Method: Least Squares
Date: 01/30/21 Time: 18:58
Sample (adjusted): 2/16/2020 8/31/2020
Included observations: 13 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Y(-1)	0.519032	0.469250	3.189733	0.0095
X	5.46E-07	4.43E-06	0.123155	0.9047
X(-1)	-0.29E-55	5.37E-06	-0.054563	0.0010
C	1.514078	0.895553	1.690662	0.1252

R-squared	0.955540	Mean dependent var	1.841231
Adjusted R-squared	-0.059281	S.D. dependent var	0.283456
S.E. of regression	0.291737	Akaike info criterion	0.621729
Sum squared resid	0.765992	Schwarz criterion	0.795559
Log likelihood	-0.041237	Hannan-Quinn criter.	0.585999
F-statistic	21.49212	Durbin-Watson stat	1.802785
Prob(F-statistic)	0.006167		

Source : Eviews

Appendix 7. Complete results of the relationship between the evolution of the number of Coronavirus infections and the evolution of golf prices for the period between December 31, 2019 and August 31, 2020

Dependent Variable: Y
Method: Least Squares
Date: 01/30/21 Time: 19:33
Sample (adjusted): 1/31/2020 8/31/2020
Included observations: 16 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Y(-1)	0.247446	0.315037	0.785449	0.4474
X	-0.001772	0.000673	-2.632384	0.0219
X(-1)	-0.000668	0.001045	-0.638901	0.5349
C	1175.077	495.5664	2.371180	0.0353

R-squared	0.866167	Mean dependent var	1711.894
Adjusted R-squared	0.832709	S.D. dependent var	147.9720
S.E. of regression	60.52240	Akaike info criterion	11.25622
Sum squared resid	43955.53	Schwarz criterion	11.44937
Log likelihood	-86.04978	Hannan-Quinn criter.	11.26611
F-statistic	25.88801	Durbin-Watson stat	1.737065
Prob(F-statistic)	0.000016		

Source : Eviews

8- Citations :

- ***BERNET-ROLLANDE, L. (2008)**, Principes de technique bancaire, (Éd. 25ème), France : DUNOD.*
- ***Boursorama. (2020, Novembre 02)**, consulté le 02 Novembre 2020, sur le site web : www.boursorama.com*
- ***CASU, B., GIRARDONE, C. and MOLYNEUX, P. (2006)**, Introduction to Banking, Harlow, United Kingdom: Pearson Education Ltd.*
- ***Eviews. (2021, January 30)**, used the software on January 30, 2021.*
- ***FAURE, A. (2013)**, Banking: An Introduction, Quoin Institute (Pty) Limited & bookboon.com.*
- ***Google actualités. (2020, Novembre 03)**, consulté le 03 Novembre 2020, sur le site web : https://news.google.com/covid19/*
- ***ISHTIAQ, M. (2015, March)**, Risk Management in Banks: Determination of Practices and Relationship with Performance, A thesis for the degree of Doctor of Philosophy, United Kingdom: University of Bedfordshire.*
- ***NACIB, R. (2005)**, La gestion financière à court terme, Algérie : Editions DAR EL OULOUM.*
- ***ORDER 03-11 of August 26. (2003)**, Relating To Money And Credit, the Official Journal of the Algerian Republic, (52), 3–18, Algeria: Official printing press of the General Secretariat of the government, the law is available on the website: www.joradp.dz, consulted on 19/08/2020, 2.15 p.m.*
- ***ORDER 10-04 of August 26. (2010)**, Modifies And Completes The Order 03-11, Relating To Money And Credit, the Official Journal of the Algerian Republic, (50), 10–14, Algeria: Official printing press of the General Secretariat of the government, the law is available on the website: www.joradp.dz, consulted on 16/08/2020, 5.15 p.m.*
- ***REGULATION 09-03 of May 26. (2009)**, Relating To The General Rules Defining Bank Terms And Conditions Applicable To Bank Transactions, the Official Journal of the Algerian Republic, (53), 21–22, Algeria: Official printing press of the General Secretariat of the government, the law is available on the website: www.joradp.dz, consulted on 18/08/2020, 3.15 p.m.*
- ***REGULATION 13-01 of April 8. (2013)**, Setting General Rules Defining Bank Conditions Applicable To Bank Transactions, the Official Journal of the Algerian Republic, (29), 37–38, Algeria: Official printing press of the General Secretariat of the government, the law is available on the website: www.joradp.dz, consulted on 15/08/2020, 6.15 p.m.*
- ***REGULATION 20-01 of March 15. (2020)**, Fixing The General Rules Relating To Bank Conditions Applicable To Bank Operations, the Official Journal of the Algerian Republic, (16), 30-31, Algeria: Official printing press of the General Secretariat of the government, the law is available on the website: www.joradp.dz, consulted on 14/08/2020, 7.15 p.m.*
- ***REGULATION 20-02 of March 15. (2020)**, Defining Banking Operations Under Islamic Finance And The Conditions For Their Exercise By Banks And Financial Institutions, the Official Journal of the Algerian Republic, (16), 31-33, Algeria: Official printing press of the General Secretariat of the government, the law is available on the website: www.joradp.dz, consulted on 14/08/2020, 8.15 p.m.*