Russo-Ukrainian crisis and instability of the cereal market (case of wheat); "What impact on the Algerian economy? (Theoretical approach)".

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ARTICLE INFORMATION

Original Research Paper
Received: 20/4/2022
Accepted: 23/7/2022
Published: 21/9/2022

Keywords:
Russo-Ukrainian crisis
Wheat
Financial speculation
Contagion
Algeria
JEL Clkassification Codes: D9, G41, Q02

Abstract :

The purpose of this paper is to highlight the impact that the war in Ukraine may have on the world cereal market, particularly that of wheat, and consequently, its repercussions on vulnerable economies such as Algeria. We rely in our analysis on a theoretical approach by returning to the foundations of the market economy and the hypothesis of financial speculation, price inflation and mimicry in the financial market in order to understand this impact. Obtained results indicate a possible latent effect vertically on the Algerian economy, but very pronounced horizontally, due to the policy of all-out subsidies, which requires a profound and urgent revision of this policy.

Mots clés:
Crise Russo-Ukrainienne
Blé
Spéculation financière
contagion
Algérie

Codes de classification JEL: D9, G41, Q02

Cette contribution a pour objet de mettre en évidence l'impact que peut avoir la guerre en Ukraine sur le marché mondial des céréales, notamment celui du blé, et par voie de conséquence, ses retombées sur les économies vulnérables comme l'Algérie. Nous comptons dans notre analyse sur une approche théorique en revenant sur les fondements de l'économie de marché et l'hypothèse de la spéculation financière, l'inflation des prix et du mimétisme au niveau du marché financier afin d'appréhender cet impact. Les résultats de l'analyse indique un effet éventuel latent verticalement sur l'économie Algérienne, mais très prononcé horizontalement, en raison de la politique de subvention *tous azimuts*, ce qui nécessite une révision profonde et urgente de cette politique.

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Introduction :

The episode of commodity price volatility since the early 2000s has led to economic turmoil. The war in Ukraine has resurrected this episode, raising many questions in recent days about the negative impact on economies around the world. Economic theory states that the impact differs from country to country depending on the economic openness and degree of import dependency of the product in question. In addition, the new trend of extensive financial speculation on commodities has been found to stimulate price volatility.

Since the Russo-Ukrainian crisis in February, the market has expected a massive tightening of supplies of black gold, wheat and natural gas, said Carsten Fritsch, an analyst at Commerzbank. Russia is one of the world's largest producers of gas, oil and wheat, panicking investors about possible supply disruptions due to economic sanctions. The surge in prices of these commodities is terrible news for businesses and consumers, and basically clarifies one of the main impacts of the war on the global economy: "It will serve to further fuel inflation and speculation," says Russ Mould, an analyst at AJ Bell. Thus, the war in Ukraine has fueled the debate on the issue of volatile energy and grain prices; the price of oil has reached its highest level in a decade (around $120 a barrel). Grain prices have risen to their highest level since 2008, with a bushel of wheat, for example, selling on 4 March 2022 at $11, or €400 a tonne according to Terre-net. The Dutch Title Transfer Facility (TTF) was trading at €117.50 per megawatt hour (MWh), having peaked at €125 earlier in the day. The price of natural gas thus soared by 33%, the largest one-day increase since 2019 (Ait Ali & al, 2022). This state of affairs has led to questions about the effect of the crisis, and the capacity of vulnerable economies to cope with it.

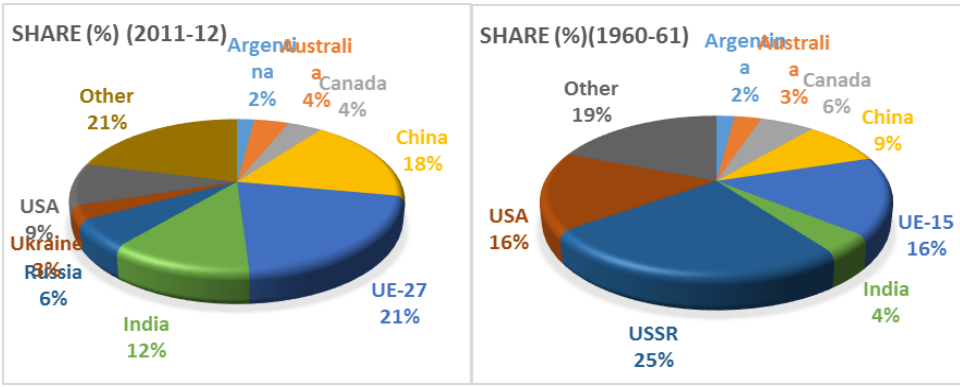
Algeria, which is a developing country, renowned for its dependence on cereal imports, with its third place on the podium of wheat importing countries, and a major importer of maize, may constitute a perfect model for discussing this impact. Indeed, in Algeria, cereals represent *de facto* the most important part of food consumption, the national need for cereals for a population estimated at around 42 million people (30% of whom are traditional rural dwellers) is constantly increasing, and currently stands at around 10 million tonnes annually, all cereals taken together. With a potential of 8.4 million hectares of useful agricultural surface (of which 3.8 million hectares are devoted to cereal growing), Algeria only satisfies 25% of the national need, and is dependent on cereal imports for 75% of its needs. As a result, the food bill weighs heavily on the state budget, with US$824 million spent on cereals in 1990 and US$9.85 billion in 2011 on food, including US$2.5 billion on cereals. Currently, the cereal bill exceeds US$3.4 billion. Thus, agriculture and the reduction of food dependency are officially among the national priorities (Omari.c, 2012). Originally considered both as an instrument to protect against fluctuations in the world market and as a tool for redistributing wealth in Algeria in order to maintain social equity, the production and consumption subsidy mechanism weighs heavily on the state budget. The difference borne by the public authorities is on average 58% for wheat (2006-2013) (Hamadache.H, 2015), and around 40% for other cereals (barley, maize, oats). This subsidy policy has become possible thanks to the country's capacity to export hydrocarbons. Therefore, can this dependence on cereal imports, using oil rents as a cover for its intervention, by guaranteeing prices upstream and downstream, make Algeria a vulnerable country in its economic structure, in the face of a very difficult world economic situation marked by a strong wave of speculation on basic products? This study aims to answer this recurrent problem, based on the hypothesis of excessive speculation on prices, we will try to understand the effect of the crisis by starting with a general overview of the world wheat supply situation, then we will look at the effect of financial speculation and mimicry on

prices, given the interdependence of the financial and physical markets. Finally, we will identify the factors that explain the pass-through, particularly for the Algerian economy.

1- Situation of wheat production in the world:

Russia and Ukraine together account for about 30% of global wheat production and 80% of sunflower oil (Alfred. K & al., 2022). The figures show clearly that these two countries have always been on the podium of the largest wheat producers, Russia (former USSR) was dethroned from its position as the world's largest wheat producer during the 1960s, to give way to the European Union. EU is currently ranked as the world's largest wheat producer with a share of about 21% of the world total. It is the world's largest wheat producer with a share of around 21% of the world total, i.e. 137.5 million tonnes in 2010/2011 and 143 million tonnes in 2013/2014, followed by the two Asian giants that have recently emerged, China and India, with 17.7% and 12.5% of world production respectively, i.e. 114.5 million tonnes and 80.7 million tonnes in 2010/2011 and 122.124 million tonnes in 2013/2014.

Figure n°1: comparison of world wheat supply between (1960/61) and (2010/11)



Source: Realized by the author based on USDA stats.

The statistics also show that in the 1960s the five major producers were the USSR with 25% of world production, the European Union and the United States with 16%, China and Canada with 9% and 6%. This state of affairs does not rule out a possible price shock due to a slowdown in supply, particularly from Russia and Ukraine (Glauber.J, 2022).

The emergence of commodity speculation: The futures market is probably the most debated invention of our time, both recent and ancient. It was originally created to address the lack of liquidity and uncertainty faced by farmers concerned about the future of their crops, who intervene in the physical market, and by political leaders and international organizations concerned about the future of food in the world. We are well aware that the cereal market is an imperfect market, characterized by a low elasticity of demand and a supply that lags behind this demand due to its seasonality. Based on this observation, it becomes clear that the physical market is far from being able to meet the expectations of the various stakeholders, hence the need to develop a futures market to compensate for its imperfections. Thus, with the rise of financial investment, the decline in profit margins in other sectors (securities and equities), and uncontrolled inflation, the agricultural markets have become the preferred destination for index funds, and the emergence of a third over-the-counter (OTC) market is another necessity. The latter is not regulated by the exchanges and is difficult to isolate from the two previous markets. The three markets currently appear to be interdependent, interlocking like a Russian doll. However, the multiplicity of the main

players on these markets, whose objective of intervention is difficult to predict, also makes it difficult for stock exchange management companies* to identify them, raising another difficulty linked to the possibility of regulation, which becomes a difficult task. The complexity of these markets lies not only in this difficulty but also in the dizzying evolution of the number of contracts traded that do not result in physical deliveries. Over the period 2000-2018, the number of contracts held by non-professionals represents more than two-thirds of the contracts traded, according to financial information agencies. The instruments used, which have become as complex as they are numerous, suggest the magnitude of the effect of a possible shock on grain prices.

3-1- Reasons for the attractiveness of MAT :

The main reason why investors are interested in agricultural futures markets is portfolio diversification, as long as commodity futures exhibit the same return as other financial assets. Moreover, they are negatively correlated with these assets (stocks and shares) according to Gorton and Rouwenhorst (Gorton.J & Rouwenhorst.K.G, 2006). Thus, the modern financial world circulates the idea that commodity prices rise when stock prices fall, and vice versa.

Another advantage of the agricultural futures market is that these future contracts on agricultural commodities can be used to hedge against inflationary pressures. Agricultural futures markets also have an advantage in hedging against fluctuations in the dollar exchange rate, as most transactions are invoiced in US dollars. In fact, when the dollar depreciates, commodity prices increase, so fluctuations in the exchange rate of the US dollar against other currencies partially explain the negative correlation between the value of the dollar and commodity prices. This is how financial investors landed on the agricultural futures market from the 2000s onwards, and financial assets indexed to agricultural commodities increasingly constitute their portfolio.

3-2- Effect of speculation on prices

As we have already seen, volatility is only a symptom of the increased financialization of the cereals market. Between opponents and supporters of the effect of speculation on the volatility of agricultural commodity prices, the debate continues to be a hot topic. The European Commission has spoken out on this issue, stating that there is no tangible evidence of a causal link between speculation in derivatives markets and excessive volatility and price increases in the underlying physical markets, but believes that speculation plays an important role in these markets by providing them with the necessary liquidity. However, other organizations, such as the FAO, the G20, and UNCTAD, do not share this view. In a report published in 2012, UNCTAD denounced the action of speculators in commodity markets as harmful, requiring urgent financial regulation to limit speculative positions in these markets, which, according to them, are the cause of disruption and price volatility. The Dodd-Frank law passed in 2010, the implementation and reform, again, of the Common Agricultural Policy in 2013, are only measures and means of response that justify the strong conviction of the significant impact of speculation on the volatility of grain prices.

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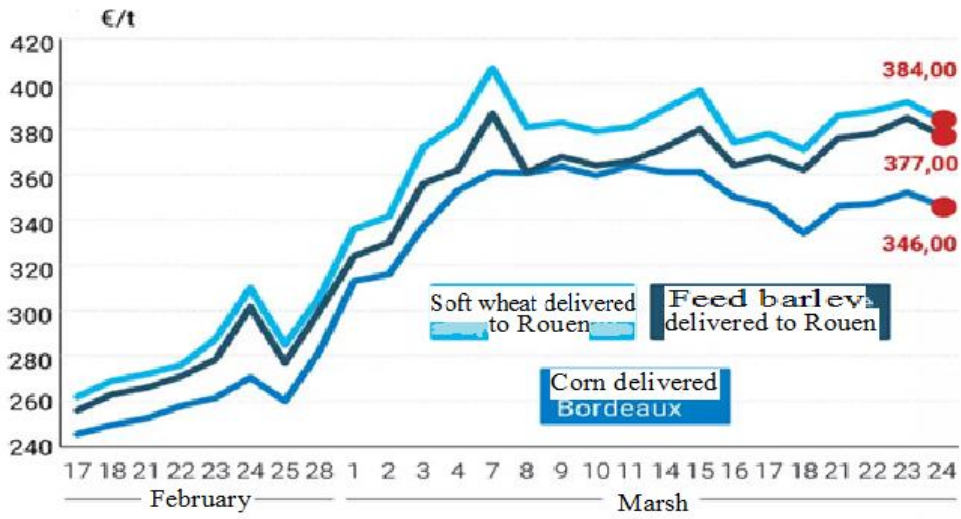
* On the CBOT market, swap dealers, for example, were for a long time involved in the various segments of the market as professionals, escaping the classification of stock exchange management companies, and it was only from 2006 onwards that the CFTC realized that these players should be included in the non-professional category.

4- Speculation: liquidity *versus* volatility:

The phenomenon that has greatly marked the commodities market over the last two decades is, of course, financialization. Indeed, from 2003 to 2008 the market capitalization of index funds (commodity-indexed hedge funds) increased from US$15 billion to more than US$320 billion, while the prices of the 25 commodities (making up the underlying) rose by 200% over the same period, according to the financial information agency Bloomberg. The following graph clearly shows the effect of speculation on prices following Russo-Ukrainian crisis information, as it can be seen that well before the aforementioned crisis, the prices of the main grains rose sharply, while they were relatively stable in March compared to February.

Figure 2: Prices of the main French cereals before and during the Ukrainian war

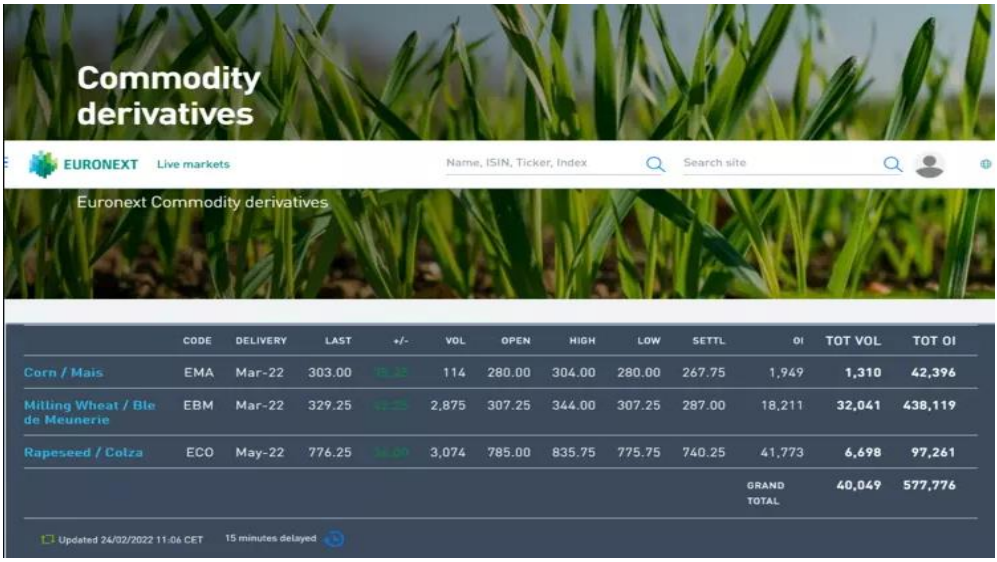


Source :FAO stat

Thus, speculation has grown excessively on the commodity MAT. This finding has attracted the interest of several research studies in recent times, and researchers' opinions are forever divided between supporters and opponents regarding the effect of financial speculation on price volatility. However, most were in favour of a wave of excessive speculation that would have contributed to the upward and downward movement of prices, but not requiring restrictive measures on speculators' positions, as this action will make the physical agricultural markets less liquid. The proponents of the significant effect of financial speculation on price instability, represented by the manager of an investment fund, Mr. Masters, state that the growth in market capitalization of commodity funds, and/or funds whose financial assets are indexed to commodity prices, may be responsible for creating a wave of fictitious forward demand, causing a sharp rise in spot prices. Consequently, it may destroy the signals sent by the physical market and lead to excessive price volatility (Sornette.D & Woodard.R, 2009). Masters argues that the prior pressure created by investment funds stimulates the creation of a speculative bubble in the futures market, which transmits to the physical market to affect price stability upwards or downwards. As a result, price spikes would be driven, to a large extent, by the new form of

financial speculation on commodity MAT, and this means that the causal link goes in the direction of futures price, spot price and not the other way around (Aulerich.N.M & & al, 2012). Masters' hypothesis has been confirmed by the work of Hernandez.M and Torero.M (Hernandez.M & Torero.M, 2010), Obviously, the war in Ukraine confirms this observation, as derivatives indexed to grain prices have recorded a record increase on Euronext in March alone, according to the statistics below.

Figure 3: Price of derivatives indexed to cereal prices on Euronext
Source :FAO Stat



	CODE	DELIVERY	LAST	+/-	VOL	OPEN	HIGH	LOW	SETTL	OI	TOT VOL	TOT OI
Corn / Mais	EMA	Mar-22	303.00		114	280.00	304.00	280.00	267.75	1,949	1,310	42,396
Milling Wheat / Ble de Meunerie	EBM	Mar-22	329.25		2,875	307.25	344.00	307.25	287.00	18,211	32,041	438,119
Rapeseed / Colza	ECO	May-22	776.25		3,074	785.00	835.75	775.75	740.25	41,773	6,698	97,261
										GRAND TOTAL	40,049	577,776

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Masters was not the only one to express his views on the significant impact of speculation, we cite the work of Robles, S.Irwin (2009, 2010,2011,2012), Aulerich (2009), Kelly and Nash(2011), (Gilbert.C.L, 2010), Coleman and Levine(2006) , White(2008).
S. Irwin (2012) criticises the weekly data of the CFTC (Commission of Financial Trade and Commodities), and believes that the impact would have been obvious if the data were daily.
For their part, Tang.K and Xiong.W found that the prices of commodities, which are the underlying of index funds (S&P GSCI and DJ-UBSCI) were very volatile compared to other commodities that are not part of the underlying of these funds in 2008. They concluded that commodity prices are no longer determined by fundamentals alone, but that financial speculation plays a major role.
(Cordier.J & Gohin.A, 2012)went in search of a causal link between financial speculation and price instability, they manage to confirm the shared opinion of the previous authors by validating the causal link between variations in the capitalisation of index funds and price instability, then they show themselves to be in favour of the French proposal made to the G20 in 2011 concerning the regulation of MAT. Another fact, which can be added to the favour of the proponents of the Masters hypothesis, is the report presented to the US Senate in June 2009 by Levin.C and Coburn.T, concerning excessive speculation in the wheat market. This report revealed many hidden truths and key figures that confirm the significant impact of financial speculation on price volatility, particularly in the wheat market (Levine.C & Coburn.T, 2011) :

Numerous works have been carried out justifying the importance of speculation, and its marginal role in the volatility of grain prices, Rolli(2012), Stein, Gohin, Hamilton(2009), Smith(2009), Krugman(2009). To this end, and despite their antagonism, some researchers use the Master's hypothesis as a label to describe the excessive volatility induced by high speculation, and a controversy has been created on this subject with the view put forward by the antagonists as follows:

Researchers such as S. Irwin, S. Sanders, Gilbert, Stoll and Wally, Hamilton and Wu, consider that speculative activity constitutes a source of liquidity, mainly for agricultural markets. Moreover, referring to the theory of normal backwardation*, speculators' activity is a sine qua non condition to reach the equilibrium between spot and futures prices, therefore they do not agree with Masters' hypothesis. Gilbert (2010) challenged this hypothesis, through the Granger causality test on price time series, by asserting the non-existence of a significant link between future contracts on the futures market and the instability of wheat, maize and soybean prices.

In addition, the FAO revealed at the Rome Treaty on 23 June 2010, that index funds hold between 25 and 35% of the total futures contracts on agricultural markets, along with other investors, they have become a de facto important source of liquidity, which allows professionals to buy and sell at any time, while providing an effective risk management tool. On the other hand, it should be noted that only about 5% of these contracts are unwound by physical delivery of goods, as these contracts will be liquidated before maturity. As a result, this technique has become the goal of a large number of participants in these markets, and is the safe haven for speculators when other assets become more risky and generate low returns.

It is commonly accepted that the flow of information plays a crucial role in price formation, the efficient market theory (EMH) states that all solemnly available information will be incorporated into the determination of prices, and only the individual information of market participants reflects the prices through the transaction of the person in possession of that information. For this reason, agricultural commodity prices should not reflect anything other than changing fundamentals. However, market participants often make decisions that are not related to the actual value of the commodity, but for investment portfolio considerations, for example, or because of following the market trend while ignoring the variation in fundamentals. Thus, the buy/sell decision process is characterized by high uncertainty, especially in agricultural markets. Most traders imitate other traders in making buying and selling decisions, which leads to the stimulation of mimicry, which in turn can distort the market, and create speculative bubbles that cannot be justified by changing fundamentals.

2- **Mimicry (herd behavior):** When investors decide to ignore their own information and signals, in order to follow the decisions observed by other analysts and investors, market efficiency will be difficult to verify, and changes in fundamentals alone cannot explain price movements. Information is an important element in price

* A theory first developed by J.M.Keynes in 1930, this theory states that forward prices are lower than spot prices on commodity futures markets, and this is quite normal. Because short positions are lower than long positions, the intervention of speculators is obvious to compensate for this imbalance; the remuneration of the speculator by a positive risk premium constitutes the adjustment instrument, which explains the difference between spot and forward prices.

determination, and its important role has been traditionally recognized in the efficient market hypothesis. Consequently, Russia, of his intention to resolve its problems with Ukraine, has shaken up the global commodity market. Indeed, market participants continuously update their expectations by referring to public or individual information, which means that prices change either when information comes from market entrants, or individually, specific to the investor himself. This information will generate a transaction that will on its part affect prices in the future. The efficient market hypothesis states that market participants value their assets on the basis of fundamentals, a behaviour that is considered rational. This is because all actions are the result of solemnly disclosed information, or individual information. However, in certain circumstances, the behaviour of individuals deviates from its rational path by following an action taken by the majority of market participants, this behaviour is known as herd behaviour, it is also the result of uncertainty, or when one wants to make a decision in the uncertain.

Mimetic behaviour involves both systematic and erroneous decision-making by a group. Citing the case of an investor who intuitively acts by mimicry when he is ready to make a given investment while ignoring the decisions of other investors, but changes his mind when he sees that the latter have given up on this investment (Eric Jondeau, 2001).Mimicry can take many forms that are qualified as irrational, but this does not prevent them from being rational. Taking the example of banking panics, or the lifting of the US embargo on Iran, this information can have an effect on the demand for oil, which will decrease, knowing that the market should be flooded by an increase in Iranian supply in the near future, causing prices to fall. On the other hand, the recent war in Ukraine has further boosted prices by betting on a possible decrease in Russian and Ukrainian supply. Clearly, it can be said that the evolution of prices is mainly linked to the change in fundamentals, and at the same time to the games of financial investors; with the rise of artificial intelligence, on the different stock markets, buying and selling decisions are entrusted to microcomputers and algorithms that make decisions in milliseconds. As a result, different strategies have emerged, such as spoofing*, or layering*, these practices are harmful and create a dangerous mimicry, on 6 May 2010, the main index of the American stock market fell by nearly 10% in five minutes generating a loss of 800 billion dollars, such practices are considered counterproductive (Lallemand.B, 2013)

No stock market is excluded from this observation, false signals are issued every day in order to create a following that is profitable for few investors and destructive for the entire real economy. In such circumstances, uncertainty is heightened for risk-averse producers, and buying and selling decisions in this context become a difficult task. The context in which cereal prices evolve, and the recent instabilities in the world market, can be summarized in general terms as a period of rising prices and uncertainty, with market players betting on further increases and often opting for a herd position in the market, thus becoming more aggressive, buying and selling faster, with the possibility of building up stocks. Sellers are slower to dispose of their goods. In addition, their behaviour, described as both cautious and greedy, contributes to a more pronounced rise in prices. The same observation can be made in a period of falling prices. To this end, the more unstable the market, the more uncertainty reigns, and the situation becomes more profitable for financial speculators, assuming that the risk aversion of professionals increases, which increases the risk premium, to the detriment of the certainty equivalent*, which is incorporated in the futures prices, which does not exclude the indirect effect of financial speculation on the prices of these cereals.

According to a report published by Foodwatch in 2011, until 1999, the proportion of contracts entered into for purely speculative purposes was around 20-30% of the total

contract volume. At least two-thirds of the contracts were held by conventional traders for hedging purposes, the so-called hedgers, whose intention was to secure future buying or selling prices. Between 1999 and 2006, however, this proportion was reversed. Up to 80% of all positions are now held by financial speculators, while traditional contracts intended to guarantee prices (hedging) now account for no more than a third of the total volume of contracts. Thus the three markets, physical, futures and OTC, have become under the sway of this category of players, and hostage to financial speculation. As a result, the activity of professionals is becoming subject to decisions taken by non-professionals. The latter, who are becoming increasingly better informed than the former because of their extensive involvement in the three markets, can adopt strategies that affect the prices of the contracts traded upwards or downwards. This leads to a chain reaction that affects the buying and selling decisions of the professionals, and subsequently abruptly affects the volume offered and demanded of the commodity in question, as well as the prices, upwards or downwards.

3- **Explanatory factors of contagion in Algeria (pass-through):** Indeed, in an international dimension, contagion (whether pure or partial) is summarized in the loss of confidence by speculative attacks from a country to other countries, which are linked commercially and/or financially, contagion in a fundamental perspective is linked to the fundamentals of the economies concerned, which are also affected by the nature of the different commercial and financial policies adopted. Thus it seems clear that exchange rate policy, trade policy, and local market capacity play a key role, and can be seen as important factors in the vulnerability, or resilience, of an economic system to a major price fluctuation in a strategic commodity (Orva.T & Macafee.I, 2022). The degree of pass-through links the variation in import prices to the variation in domestic prices. In other words, it refers to the capacity of firms to modify their prices following a variation in the import price rate. At the macroeconomic level, the state relies on a policy of supporting consumer prices, when it is an important and sensitive sector such as cereals, and a local market unable to meet overall domestic demand. On the other hand, the impact may be more intense in an economy where exchange rate controls are imposed as a policy to regulate foreign trade operations. If we want to show empirically the effect of the transmission of the instability of the prices of the main cereals on the Algerian economy, we must analyze the degree of transmission through the shocks observed on import prices, in order to highlight this dynamic relationship between the selected variables. To this end, we can proceed by estimating a VAR model to test in the sense of Granger the causal links between import prices and the various economic variables such as consumer prices, producer prices, the real and nominal exchange rate of the Algerian Dinar, the balance of payments, government expenditure and the inflation rate. Then we need to analyze the impulse response functions to the shocks, and finally, we will study the variance decomposition of the forecast errors, using monthly, weekly or daily data. Some researchers argue that the degree of impact or speed of contagion depends on several factors: the expected duration of the reaction of economic agents at the national level, the costs associated with price adjustment and demand conditions. However, contagion or vertical transmission cannot be foreseen in the case of Algeria, and even if this transmission will be detectable, it will be weak whether on the level of producer or consumer prices, following the subsidy policy practiced at two levels. Consequently, it seems useless to analyze the vertical transmission by relying on econometrics, because the vertical transmission can only appear at the level of imports, following the barriers put in place. On the other hand, horizontal transmission can be obvious and econometrically detectable, so our hypothesis is based on a potential impact on variables of considerable importance for the economy, namely :

The consumer price index (CPI): This is a general indicator of the evolution of all cereal prices consumed by households in Algeria. More precisely, a variable represents a measure

of the evolution of prices obtained by comparing the retail price of a typical basket of provisions at two different dates. It is the variable to be explained from which we can determine the extent of the impact on the inflation rate induced by the cereals sector, in other words the share of the volatility of cereals prices in the formation and evolution of the inflation rate in Algeria over the period studied.

The real effective exchange rate (REER): The REER of the Algerian dinar seems to be covered by a strict exchange control policy. However, the impact of the volatility of the price of a strategic imported product can be evident if we focus on the REER of the dinar, because the parallel market continues to serve as a vast market (given that about 50% of the national currency escapes the banking network) to obtain currency, and constitutes in certain cases the only way out for international commercial transactions. It therefore represents a market where supply and demand unquestionably constitute the unique law that determines the exchange rate of the Dinar. Thus, a depreciation of the invoicing currency, in relation to the national currency, will reduce, or even eliminate, in certain measures, the impact of the rise in international prices. On the other hand, an appreciation of the invoicing currency will further intensify the effect of volatility, or a possible rise in the prices of imported products. However, in the case of the Algerian economy, it should be noted that the strong point of the national currency is the export of hydrocarbons, which means that a rise in oil prices will lead to an appreciation of the national currency, given the stability or decrease in imports, particularly cereals, which are imported up to 75%, and vice versa. Consequently, an effect on the real exchange rate of the Algerian dinar is very remote, in the Algerian case, under these circumstances. This is because cereal prices move in the same direction as oil prices, and have become increasingly linked to oil prices on world markets.

The balance of trade: Oil revenues provide a source of foreign exchange to cover Algeria's imported cereal needs, raising questions about the government's ability to rely on this source of foreign exchange. Although the 2000/12 period was generous in terms of oil revenues collected, Algeria's foreign exchange reserves were soon depleted, following a significant increase in the volume and value of imports, and the collapse of oil prices in the following years. The evolution of the balance of trade is an important indicator for judging an economic system; a permanent negative balance serves as an alibi for dependence on imports and the weakness of the national productive system, with the resulting economic worries, particularly on the monetary and financial level. Thus, given the importance of the cereals sector, price volatility on world markets can have an apparent, non-negligible effect on this variable. However, for the Algerian trade balance this effect is latent, it is covered thanks to oil revenues, so the balance can be maintained in equilibrium given the large volume of hydrocarbon exports, to make the effect apparent, it is necessary to take into account the balance of the agricultural trade balance, or by simulating a situation of falling hydrocarbon prices through impulse response functions.

The balance of payments : This variable is dependent on the previous one, and constitutes an indicator to apprehend the totality of Algeria's trade with the outside world, as it serves as a tool for the evaluation of economic policies and the echoes felt on the various markets. In fact, this variable can be used as an analytical tool in terms of the evolution of trade in goods and services, in addition to the financial transaction account which is an indicator of the country's investment and productive capacity; if it is positive, Algeria is a net importer of capital, and if it is negative it is a net exporter of capital. The external position can also shed light on the evolution of the financial and monetary assets, both private and public, vis-à-vis the rest of the world. Thus, our analysis must be extended to the balance of payments in order to note the effect that a significant volatility of cereal prices on the world

market can have on the various components of the balance of payments, which seems to us to be already exposed to this phenomenon, since the impact of price volatility depends on the contribution of agricultural products in external trade. It should also be noted that the impact of high volatility on the balance of payments can contrast with the future projection of fiscal policy, which relies on oil rents, which have also become very volatile, to cover cereal imports.

The inflation rate: It is obvious that this phenomenon exists in all economic systems, and its rise is the reflection of an unfavourable evolution of all the variables mentioned above, or of a public policy unable to maintain macroeconomic balance. However, in our case, the process of contagion of price volatility can result in imported inflation, and this depends on the conviction and will of the public authorities, and the predisposition of the economic system to limit the impact. The risk of food price inflation in the event of a rise in international market prices depends on how these prices are transmitted to national economies. This risk is all the more important as the raw materials whose prices have soared still make up a large proportion of the finished products consumed. However, inflation is not only "imported", its evolution also depends on national developments. It is clear that the period of uncontrolled inflation in Algeria corresponds to the time of the black decade (the 1990s) (Lemeilleur.S & al, 2009).

Thus, if the contagion affects the balance of payments, the value of the national currency will be affected, and consequently, in the absence of effective adjustment mechanisms, the inflation rate may escape control.

The M2 monetary aggregate: This is the most representative aggregate of the monetary policy in Algeria for the moment, knowing that the largest and most representative monetary aggregate is the M4 aggregate in an open economy, which includes the M3 aggregate, as well as treasury bills and commercial paper, and this explains the monetary rigidity of the Algerian economy. The integration of this variable in our model makes it possible to follow the evolution of monetary creation and to analyze the effect of an external impact (volatility observed through cereal imports) on monetary policy, in particular, the predisposition for a more intense contagion of prices, as it will allow us to eliminate this effect after identification, to distinguish the effect of the cost of importation alone in lover. In fact, this variable dictates monetary policy in Algeria, and the credibility of the Algerian economy in general is dependent on the credibility of monetary policy. To this end, the evolution of this aggregate, which must be linked to the evolution of the real sector, sufficiently informs us about the capacity of the monetary system to react to shocks observed in the real sphere.

Public subsidies: Since 2008, the issue of subsidies has been at the center of debates in Algeria, and the new thinking focuses on targeted subsidies from 2018. However, it has become difficult to change course suddenly, after a long period characterized by a policy of aid and support for strategic products. Indeed, cereal subsidies have long been a stopgap for the Algerian economy, and each time a rise in world prices occurs, consumer prices and the GMP will be revised. According to the FAO (Lemeilleur.S & al, 2009), Algerian consumers were only marginally affected by the surge in food prices during the 2008 crisis. Given the high level of imports of cereals, oils, industrial milk and sugar, the prices of which rose dramatically, this finding implies that the state continued to intervene strongly, at the cost of budgetary expenditure made possible by the oil rent. Three main measures are responsible for the stability of domestic prices:

- In 2008, the state granted an amount of DA55 billion, or 0.5% of GDP (compared to DA28 billion in 2007, or 0.3% of GDP) to the Algerian Interprofessional Cereals Office (OAIC) to ensure the stability of flour prices. Moreover, this organization has a storage strategy that allows it to minimize price increases on the international market.

Thus, recourse to external debt was the ultimate solution for the government during the 1990s. During the period from 2000 to the present, oil rents were sufficient to finance the gap, which made the specter of debt disappear, but the latter resurfaced after the significant drop in oil prices since 2012.

This variable is of considerable importance, as it summarizes the mechanism for absorbing the imported inflation differential. This can have an impact in the long term by reducing foreign exchange reserves, thus affecting the exchange rate. Not to mention the impact on aggregate domestic demand which makes it virtually inelastic. Let us remember that agricultural demand is inelastic, even to a small variation in agricultural supply: 1 to 2% of variation in world production can induce price variations of 50 to 100 or even 200% (according to the momagri model), thus ignoring the possibility of regulation by the market, through the supply and demand mechanism.

Government spending on consumption and foreign debt: Thanks to the financial wealth generated by hydrocarbons, the various successive governments since political independence, in the name of social peace, have generalized subsidies. The Algerian state subsidized a large number of necessities, such as cereals, water and milk, electricity and fuel. When one realizes that cereal imports account for a large share of imports, and Algeria continues to maintain its policy of subsidizing production and consumption, it is clear that a mechanical effect of price increases on the state budget cannot be excluded. Moreover, the tax exemption from which this sector benefits represents a loss of income for the state, thus making the burden heavier, especially in the case of a possible fall in oil prices, where it seems almost impossible to continue with the said policy. During the 1990s, the downturn in Algeria's agriculture and hydrocarbon market pushed the government into external debt with all the macroeconomic imbalances it has generated since. However, the financial upturn, which has come from the considerable rise in hydrocarbon prices since 2000, has avoided the worst for Algeria, making us forget the crisis of the 1990s.

Of course, external debt is a variable that should not be excluded from our analysis because the period 2000/2012 was the exception, so that the volatility of grain prices, especially upwards, can have a considerable impact on the Algerian economy following recourse to debt due to the lack of rationalization of public spending.

Economic growth and GDP: When a country is strongly dependent on a given commodity for export or import, instability in its price can affect the structure of the real sphere by modifying the income distribution system, thus making the economic development process unpredictable and uncertain. Indeed, Algeria began the process of liberalization in 1990, with the partial disengagement of the state, and this process spread to the cereals sector by opening up to private initiatives. However, the supply of the local market is still subject to the state monopoly, which reduces the degree of openness of the Algerian economy (strongly criticized by the WTO), which depends on its share of imports in this sector. The Algerian government continues to act in this sector by guaranteeing production and consumption prices outside of any instability in world markets. To this end, cereal growers and agri-food industrialists will be spared the effects of falling and rising prices, as their products will be sold at prices guaranteed by the State, and GDP in this sector will therefore be constantly growing, whatever the level of price volatility on the international market. Moreover, the national producer can take advantage of the GMP to sell his goods at competitive prices on foreign markets, and this effect, which appears to be positive for GDP and economic growth in Algeria, is the strong point of the cereal price control policy. Thus, even if the A.I.A. shows a strong dependence on external markets, a too weak proximity with the agricultural upstream and a deficit in the process of valorization of local products, it contributes today to the tune of 50 to 55% of the industrial GDP (excluding

hydrocarbons). It is the first employer in industry (40% of employment with nearly 150,000 workers) and it produces more than 45% of the industrial benefit (more than 300 billion DA). Companies in the "cereals", "milk", "water" and "non-alcoholic beverages" sectors are the key sectors in the Algerian ASI landscape (Bessoud.O, 2016)

Conclusion: In Algeria, as in all countries of the world, food issues are a matter for the sovereignty of the state. National production barely covers 30% of total needs, which has made Algeria the largest importer and one of the top five countries in the world. In addition, the subsidy policy often comes up against the plummeting price of a barrel of oil, which has experienced the same instability because of the difficult global economic situation marked by the Russo-Ukrainian crisis. Hence the renewed debate on price subsidy policy and the need to focus on the development of the agricultural sector. Consequently, the notion of the transmission of instabilities observed on the world market (which seems to be ignored by the entire research community because of its latent effect on prices) to the Algerian economy is becoming evident again with the fall in hydrocarbon prices observed since 2012 (even if prices have rebounded again in recent months), and the surge in prices of the main cereals at the beginning of the current year.

References :

Ait Ali & al. (2022). les repercussions économiques de la guerre en Ukraine pour l'Afrique et le Maroc. *Policy brief*.

Alfred, A. K. (2022). *comment la guerre en Ukraine se repercute dans toutes les régions du monde.* GENEVA: IMF.

Aulerich.N.M, & & al. (2012). *Bubbles, food prices and speculation evidence from the CFTC's daily large trade data.* NBER.

B, Lallemand. (2013). Spéculation boursière, les ordinateurs ont pris le pouvoir. *Science & vie n° 149*.

Bessoud.O. (2016). La sécurité alimentaire en Algérie. *Forum des chefs d'entreprises.* Alger: FCE.

Cordier.J, & Gohin.A. (2012). *quel impact des nouveaux speculateurs sur les prix agricoles?analyse empirique des fonds d'investissement.* LERECO n°12, UMR, INRA.

Gilbert. C.L, (2010). speculative influence on commodity futures prices 2006-08. *UNCTAD conference discussion paper n°197.* Geneva: UNCTAD.

Glauber.J, L. (2022). *How will Russa's invasion of Ukraine affecte global food security.* International food policy research institute.

Gorton.J, & Rouwenhorst.K.G. (2006). Facts and fantaisies about commodity futures. *Financial analyst journal n° 62, Issue 2*.

Hamadache.H. (2015). réforme des subventions du marché du blé en Algérie, une analyse en équilibre général calculable,. *Thèse de Doctorat*. Montpellier, France: EDEG Montpellier.

Hernandez.M, & Torero.M. (2010). *Examining the dynamic relationship between spotted futur prices of agricultural commodities.* USA: International food policy institute.

Lemeilleur.S, & & al. (2009). Volatilité des prix internationaux agricoles et alimentaires, et libéralisation en Afrique du nord. *Options méditerranéennes B n°64*.

Levine.C, & Coburn.T. (2011). *WALL STREET AND THE FINANCIAL CRISIS: anatomy of a financial collapse.* Washington DC: US Senate.

Omari.c, M. A. (2012). l'Agriculture Algérienne face aux défis alimentaires, trajectoire historique et perspectives. *Revue tiers monde n°210*.

Orva.T, & Macafee.I. (2022). *Russia invades Ukraine, damaging the global economy.* Oxford economics.

Sornette.D, & Woodard.R. (2009). *Financialbubbles, derivative bubbles, and the economic crisis.* Cornell University N.Y, USA.

Sites internet:

- Site of USDA (www.usda.org)
- Site of FAO (www.fao.org)
- Site of international grains council (www.igc.org)
- Site of Momagri (www.momagri.org)
- Site of l'OAIC (www.OAIC.dz)
- https://www.imf.org/fr/News/Articles/2022/03/15/blog-how-war-in-ukraine-is-reverberating-across-worlds-regions-031522 visited on 20/03/2022