

The Consequences of Ukraine-Russia Crisis: The Case of International Trade and Prices' Behavior in Egypt

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Abstract

This research aims to measure the impact of the Ukraine-Russia conflicts on the international trade and thus on the prices' behavior in Egypt. The purpose of this paper is to investigate and observe prices' behavior during the ongoing crisis. The literature review defined the real determinant of prices and what are the factors affecting prices in the market. This research is quantitative research with a descriptive then correlational research design and the type of investigation is non-contrived research. Observational method and questionnaire are used in data collection gathering a number of quantitative data. The questionnaires are to be directed to expert respondents whether consumers or wholesale merchants via emails or online questionnaire. The questionnaire focuses on the defining the prices' behavior and level before, after and during the war crisis. The measuring scale used is ratio scale. The IBM SPSS Statistics 26 software was used to analyze the questionnaire responses collected from respondents. Descriptive analysis section of all questionnaire responses, followed by hypothesis testing performed to answer the research questions.

This paper shows that the anticipated shortage of supply in strategic goods and Ukraine-Russia War significantly affect prices behavior. In addition, the Ukraine-Russia war has a moderating effect on the prices' behavior in Egypt in relation to the fear of supply shortage.

Future researches are recommended to analyze the macro and micro effects of the Russia-Ukraine war over longer time horizons; the increase in pricing in the Egyptian market is thought to be caused by a wide range of factors that are not all covered in this study. It is also advised that future researchers employ a large sample size for sake of generalization.

Keywords: Prices' behavior, prices' fluctuation, Ukraine-Russia war crisis, Monetary causes, Interest rates, Currency devaluation, international trade, Egypt

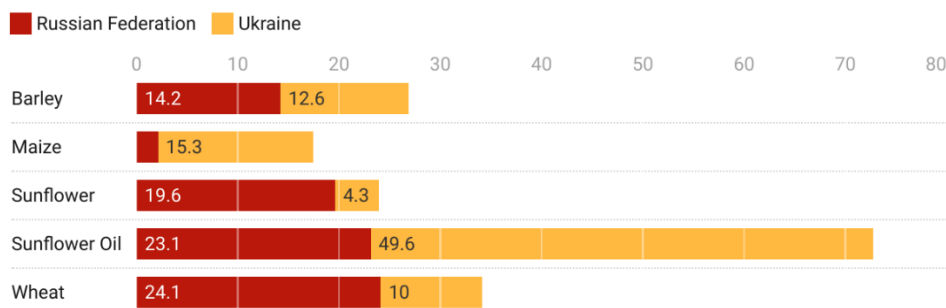
Introduction

Egypt has been closely following this dispute between Ukraine and Russia since it started because of its consequences for Egypt's food security, despite the enormous geographical distance between Cairo and the disputing countries.

The two nations hold significant positions on the map of the world's food supply as two of the major exporters of wheat; Russia exports a wide variety of agricultural products, while Ukraine has long been known as the "Breadbasket of the Soviet Union." Considering these factors, both nations have turned into crucial agricultural suppliers to many nations around the world (Salem, 2022).

Nearly 12% of all calories traded globally are exported by Russia and Ukraine, and the two countries are among the top five exporters of many crucial grains and oilseeds, including wheat, barley, sunflowers, and maize. Additionally, nearly half of the world's supply of sunflower seed oil comes from Ukraine (Glauber & Laborde, 2022).

Share in global markets, volume



Intra-EU trade excluded from computations.
 Chart: David Laborde • Source: COMTRADE • Created with Datawrapper

Figure 1 Ukraine and Russia’s share of global trade, 2018-2020

Egypt, which imports more than 13 million tons of wheat yearly and is the world's largest importer of the grain, purchased 30% of its wheat from Ukraine and 50% from Russia last year. To put it another way, Egypt depends heavily on its imports of wheat from the Black Sea region.

Problem Definition

As previously explained in the abstract, the ongoing conflict between Ukraine and Russia might have a direct impact on the wheat supply across the World. However, we might still wonder if such impact is the main cause of the prices’ hiking that we are witnessing recently in the Egyptian market.

Some might say that the supply chain problem that we have been facing is the result of the continuous increase in fertilizer prices, rising freight costs, and declining yielding quantities.

The research used the Nine Elements model/framework, see Figure 2, to analyze the context as the model has been used in several research papers Elsafty (Elsafty, Elsayed, & Shaaban, 2020; Elsafty, & Elzeftawy, 2021/2022; Elsafty, & Shafik, 2022; Elsafty, & Seddek, 2022; Elsafty, & Oraby, 2022), applying the 9-elements model to get a deeper look into the problem in hand.

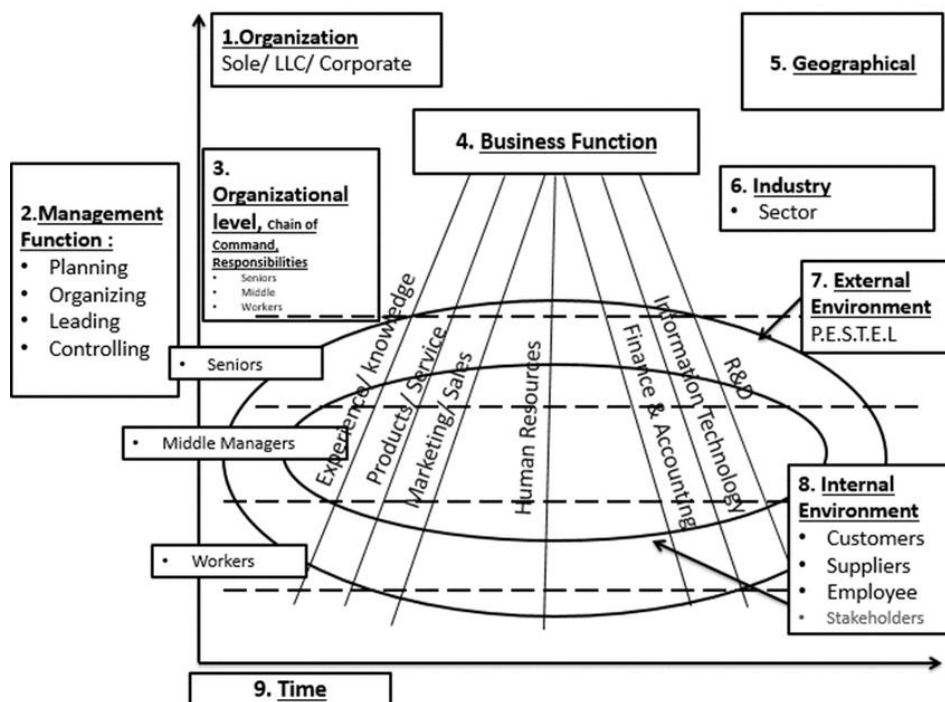


Figure 2. The nine elements model/framework (Elsafty, 2020)

Organization

The government, controlling inflation and the prices stability are the major objectives and challenges that faces any

government, where it works on keeping the prices, especially for essential products and services, under control and remain affordable to everyone.

Industry and Management Functions

Planning, it is believed that the Egyptian administration were closely paying attention to the rising crisis even before it turned into a war as Egypt's Prime Minister said that the country is working on avoiding price variations in strategic goods and that Egypt has enough wheat for more than 4 months (Ahram Online, 2022).

However, it appears that the Minister of Supply and Internal Trade underestimated the market volatility effect given Egypt's limited sources of imported wheat, considering the situation impact on the Egyptian market. As a result, the Minister has recently issued a new decree that aims to regulate the trade and selling of locally derived wheat supply, the government has concluded that severe limitations on the trade of local wheat supplies are essential. Accordingly, all registered wheat producers must provide local authorities with around 60% of their output per feddan (Abdou, 2022).

Business Functions

Product

In our case, there is no particular product to monitor prices fluctuations and the impact of war on the international trade, however, we shall take the FMCGs as an indicator.

Internal/Microenvironment

Customers

Customers are represented in the vast majority of Egypt's population who might be affected negatively with the hiking prices in almost all products and services in the market.

Suppliers

Are represented in Ukraine and Russia given that these two countries represent around 70% of Egypt's yearly imports of Wheat. And since wheat has always been considered as one of the most strategic goods in the Egyptian market and it is believed that it is the main driver of the insanely increasing prices across the market.

External/Macroenvironment

There is no doubt that the Ukraine-Russia war crisis will affect their exports but not just that, because of the international opposition on the Military operations carried out by Russia, world leaders will continue to impose sanctions. In reaction to Russia's invasion of Crimea, the EU has progressively imposed sanctions and restrictive measures since 2014. Sanctions imposed by the European Union and the United States are still in place as of February 2022, see Figure 3.



Figure 3. Sanctions against Russian economy (European Council, 2022)

Following Russia's invasion of Ukraine in February 2022, the United States, the European Union, and other countries, including China, imposed or significantly expanded sanctions on Russian president and other government members, see Figure 4 and Figure 5, as well as cutting off "selected Russian banks" from SWIFT, resulting in a financial crisis in Russia and a massive international boycott of Russia (European Council, 2022).

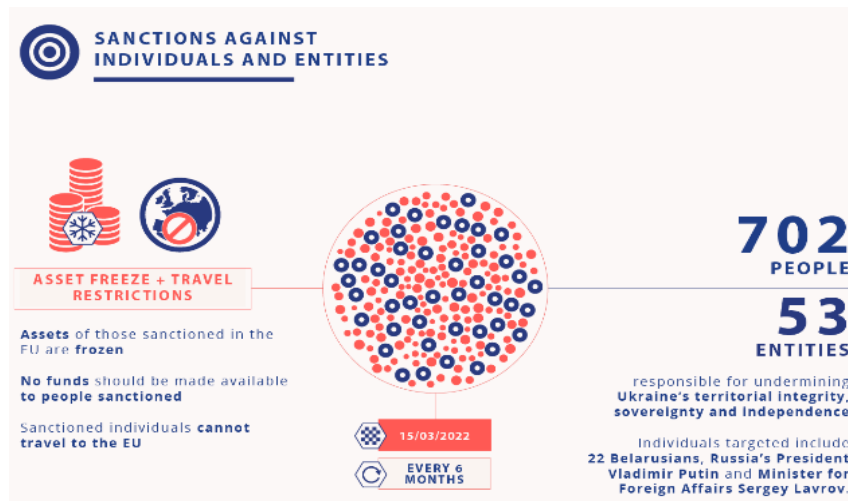


Figure 4. Sanctions against Russian individuals and entities (European Council, 2022)

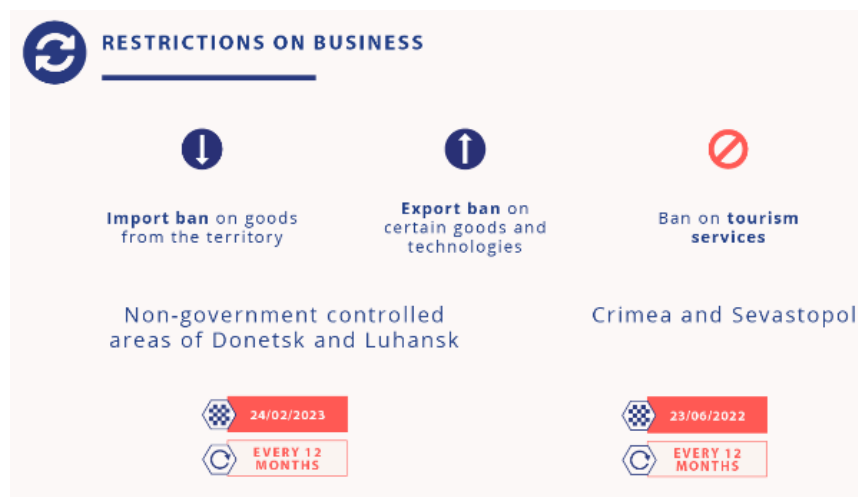


Figure 5. Restrictions on Russian businesses (European Council, 2022)

Geographical Location

We suppose that the war crisis will affect the international trade worldwide not only the supply of certain goods but also will cause freight and shipping cost to hike. However, we will take the Egyptian market as our case study to monitor whether this war is directly affecting the aggressive increase in almost all prices or not.

Time

The time interval for our study will be since the war eruption on Feb. 2022 and might last till the end of the crisis or if the prices stabilize again.

The Impact of War

i. Globally

Food prices were already growing before the war, due to the Covid epidemic, supply chain disruptions, and rising energy expenses. The drumbeat of the larger economic war is becoming louder as tensions between Russia and Ukraine escalate. Conflict surrounding the Black Sea, which is a key supplier of grain and vegetable oil, is already hampering trade. Food price inflation is on the rise, just like other global commodities, see Figure 6.

Petrol prices have risen to a new all-time high as oil and gas prices rise amid worries of a worldwide economic shock

because of Russia's invasion of Ukraine. At one time, oil reached \$139 a barrel, the highest level in over 14 years, while wholesale gas prices for next-day delivery more than doubled. The Russia-Ukraine crisis has worried investors across the world, leading them to seek refuge in gold, which has driven the precious metal's price to new highs, surpassing \$2,000 per ounce and reaching \$2,020.9 on March 08, 2022. As a result of the escalation in the Russia-Ukraine situation and its consequences on the global economy, some experts believe that prices will rise above the all-time high of \$2074.8 per ounce that was reached on August 2020, following the breakout of coronavirus pandemic and its catastrophic effects on world economies (Kotb, 2022).



Figure 6. Rising agricultural prices: Chicago Mercantile Exchange, Moody's Analytics (Canuto, 2022)

ii. From the Egyptian perspective

In reaction to soaring international prices, gold prices in Egypt have reached all-time highs since the crisis began. On March 8, 2022, the price of 24-karat gold, the finest grade, was EGP 1,013 per gram against EGP 900-920 per gram price prior to the crisis (Kotb, 2022). Egypt is currently experiencing a serious wheat shortage due to rising prices. According to United States Department of Agriculture (USDA) forecasts, Egypt's wheat output will reach 9.0 million metric tons in marketing year 2021/22, although its consumption will amount 21.3 MMT, leaving a 12.3 MMT shortfall that will have to be made up with imports, see Figure 7.

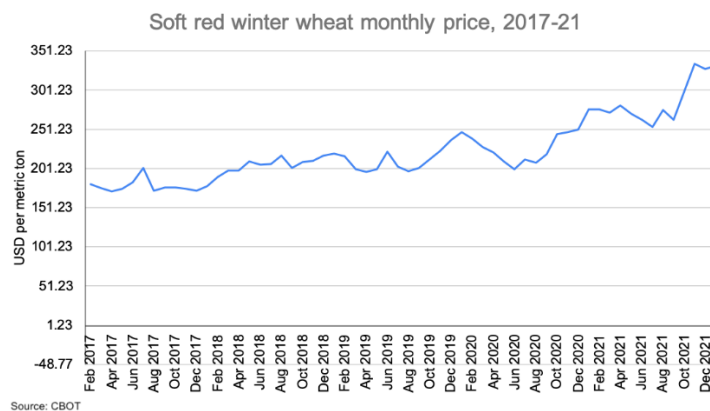


Figure 7. Soft red winter wheat monthly price

Egypt is the world's largest importer of wheat and one of the top ten importers of sunflower oil, the Russia-Ukraine conflict forced prices to unsustainable levels for Egypt, with wheat prices rising by 44% and sunflower oil prices rising by 32% almost instantly. Even worse, the war poses a direct threat to Egypt's physical supply, as 85% of its wheat and 73% of its sunflower oil come from Russia and Ukraine. Egypt already must find alternate supplies considering the activity at Ukraine's ports has come to a halt. Yet furthermore escalations that halts all Black Sea shipments might force Russian supplies off the market, perhaps causing a catastrophe in the market (Tanchum, 2022). Prices for those imports were already at record highs before to Russia's invasion of Ukraine.

Stakeholder Analysis

According to some owners of a gold businesses in the local market, gold prices are projected to soar higher during the coming period and reach a new all-time high. "The global crises have expanded beyond the Russia-Ukraine conflict to include fears about increasing inflation and a possible China-Taiwan conflict." "All of these issues have a huge impact on gold prices," they said (Kotb, 2022). Consumer prices jumped 8.8% in February, compared to 7.3 percent the

previous month, as per the state-run statistics agency (CAPMAS), (Inflation, 2022). The main cause was a 17.6% increase in food and beverage prices, the largest single component of the inflation basket.

Also, according to CAPMAS - Egypt, Consumer Price Index (CPI) increased to an all-time record of 118.10 points in January compared to 117.20 points in December 2021 (CPI, 2022). See Figure 8

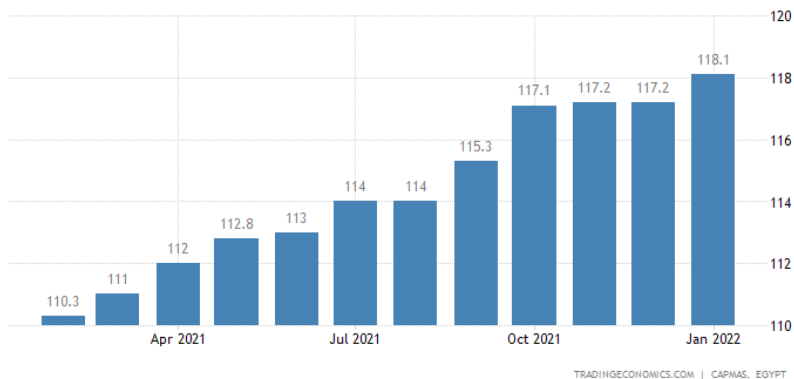


Figure 8. Egypt CPI (CPI, 2022)

Research Questions

Based on all the above observations, the research questions are as follows:

Conceptual model: Figure 9

i. Major Research Question

What is the real determinant of the prices’ behavior in the Egyptian market?

ii. Minor Research Questions

Does the anticipated shortage of supply in strategic goods can affect prices behavior in all market industries?

Does the increase in demand of strategic goods, not only for the sake of usage but also to stock, can affect prices’ behavior?

Is it possible that merchants/traders are only taking advantage of the situation to generate more profits and manipulate prices’ behavior?

Does the war crisis between Ukraine and Russia have a moderating effect on the prices’ behavior in Egypt?

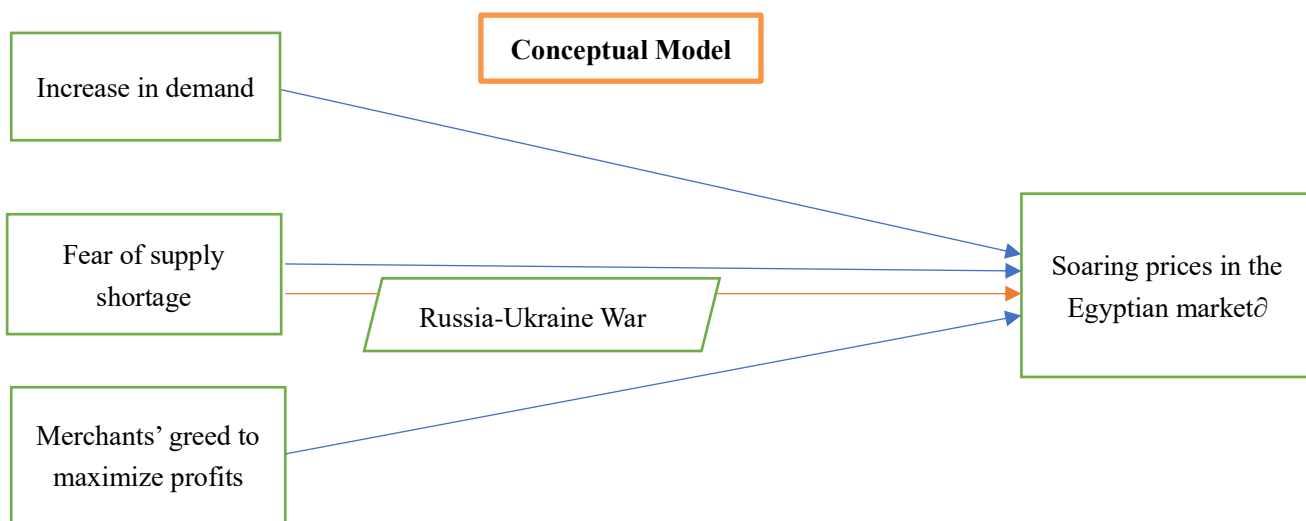


Figure 9. Conceptual Model

Literature review

In order to assess and evaluate the impact of the war crisis on the determinants of prices' behavior, we reviewed previous researches and studies. According to research conducted by Mesut Dogan (Dogan, 2022) to monitor the economic impact of the Russia-Ukraine conflict on many countries stock market across the globe, although economic sanctions were imposed on Russia as a consequence of Russia's invasion of Ukraine on February 24, 2022, Russia-Ukraine conflict had an economic impact on numerous countries. On the first day of the Russia-Ukraine conflict, the DAX Performance (DAX), Nikkei 225 (N225), FTSE 100 (FTSE), and Borsa Istanbul 100 (BIST 100) indexes all lost value. The stock market in Istanbul, Borsa Istanbul, has lost the highest value, losing 8.17 percent. The DAX index of the German Stock Exchange and the FTSE 100 index of the London Stock Exchange both fell by about 4%.

This research discussed the impact of the Russia-Ukraine conflict on stock markets which might be an indicator for economy as a whole, however it did not extent the research to reach out to our topic on question. Another research was done to evaluate the effect of such war on the economic performance in Europe (Havlik , 2014), Not only does the Ukraine crisis have major ramifications for Russia and Ukraine, but it also poses a threat to Europe's still fragile economic recovery. Apart from travel bans and asset freezes for more than 100 persons, there are currently limitations on borrowing by leading Russian banks and corporations, as well as restrictions on exports of military and dual-use commodities and oil extraction technologies to Russia, which have been in place since March 2014. Russia has responded by imposing an import restriction on agricultural products and restricting travel to the West. The overall atmosphere between Russia, Ukraine, and the West has deteriorated significantly. The effect on individual EU countries varies based on their level of exposure to the Russian and Ukrainian markets. Despite the EU's overall modest trade exposure to Russia and particularly Ukraine, a number of EU nations trade extensively with Russia, including the Baltic States, other NMS, and Finland. Austria is not unduly dependent on Russia: in 2013, only 1.7 percent of Austrian GDP was exported to Russia (and only 0.6 percent of Austrian GDP in terms of domestic value added of exports, respectively). Although the two formers have substantial exposure in tourism and banking, Cyprus, Greece, the United Kingdom, Portugal, and Spain have very limited goods commerce with Russia.

Based on the findings stated in this study, it is obvious that even exporters to Russia and Ukraine will be negatively affected by the ongoing military operations as well as sanctions imposed on Russia. This might arise that the impact on the Egyptian economy (as our case study) will be even greater considering the volume of annual imports from both disputing countries. Another report that discussed the impact of the Russia-Ukraine war on the Egyptian market (Oxford, 2022), it points at the food crisis that would result from the conflict between these countries. Both countries contribute in almost 30% of the global wheat exports Egypt is the world's top wheat importer. It will be disproportionately affected by the long-running conflict between the two countries, which have provided the majority of Egypt's grain in past years. Ukraine's ports are closed, and the government banned the shipment of cereals yesterday. Sanctions against Russia's economy have wreaked havoc on a variety of industries, including agriculture and shipping, see Figure 10.

Despite the Egyptian government's intentions to expand wheat production, Egyptians will soon confront a rise in subsidized bread prices, something that most have never experienced in their lives. Government subsidies allow almost two-thirds of the population to buy five little loaves of bread every day for a token price. In Cairo, unsubsidized bread prices have already risen by 50% in the first week of March.

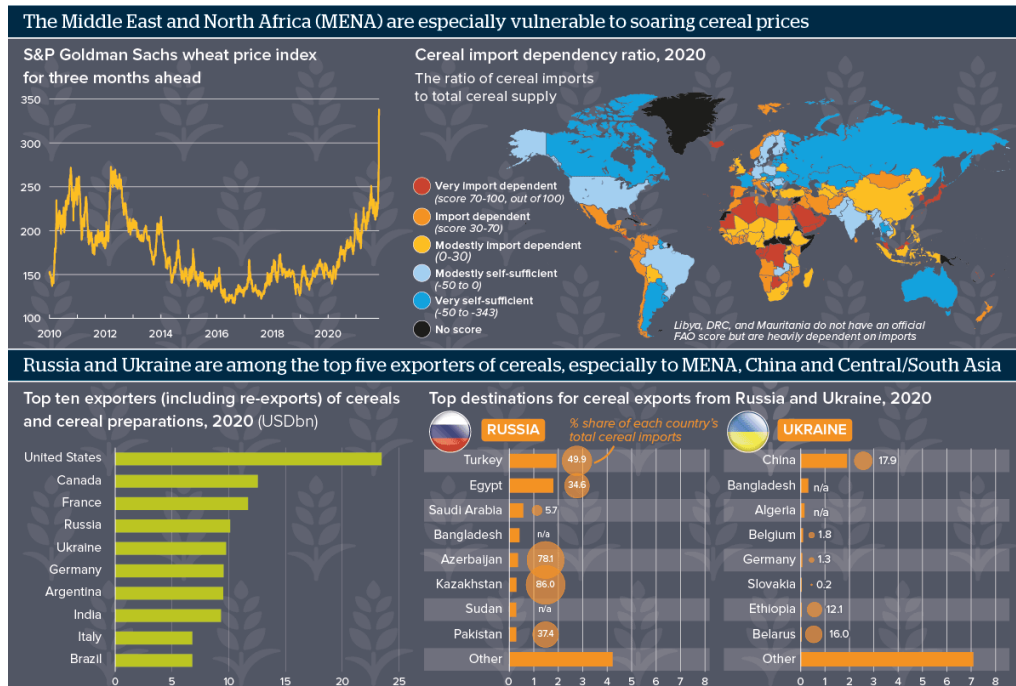


Figure 10. Top destinations for cereal exports from Russia and Ukraine

As a result of the shortage in supply of cereal due this war, and according to the UN Food and Agriculture Organization, grain prices would climb in March after rising by 3.0 percent month on month and 14.8 percent year on year in February. Russian and Ukrainian cereals are purchased in large quantities in the Middle East, China, and Central and South Asia. According to research on food and political stability, increased costs of basics like bread might cause political unrest (Analytica, 2022). According to a study on prices fluctuation, it is found out that spike prices could be caused by over-demand, quote “As two frequently observed phenomena and the constituents of extreme values, spike and negative prices have opposite economic meanings. Negative prices indicate over- supply while spike prices indicate over-demand.” (Li, Cursio, Sun, & Zhu, 2019). “A change in the inner value of money is defined as the change in prices, which is solely brought about by monetary causes.” (Fase & Folkertsma, 1999).

Research Design

Purpose of the research design: Exploratory research design, non-contrived. As per literature review, no comprehensive model was found that contains all variables affecting prices’ behavior. Statistics type of investigation: Descriptive, then correlational research to test relation, amount, and direction between variables. Time Horizon: Longitudinal study, data related to goods prices’ will be collected for the period before and after the Russian declaration of Ukraine invasion.

Variables Definition:

- i. Soaring prices in Egyptian Market: Dependent, primary variable to be explained using Ratio scale.
- ii. Increase in demand: Independent variable, to be measured using ratio scale.
- iii. Anticipated shortage in supply: Independent variable, to be measured using ratio scale.
- iv. Russia-Ukraine War: Mediating variable affecting the relation between supply and prices change.
- v. According to literature found, Monetary causes are considered as an independent variable affecting price behavior. Inflation will be taken as an example for monetary causes in our study to be further examined using ratio scale.

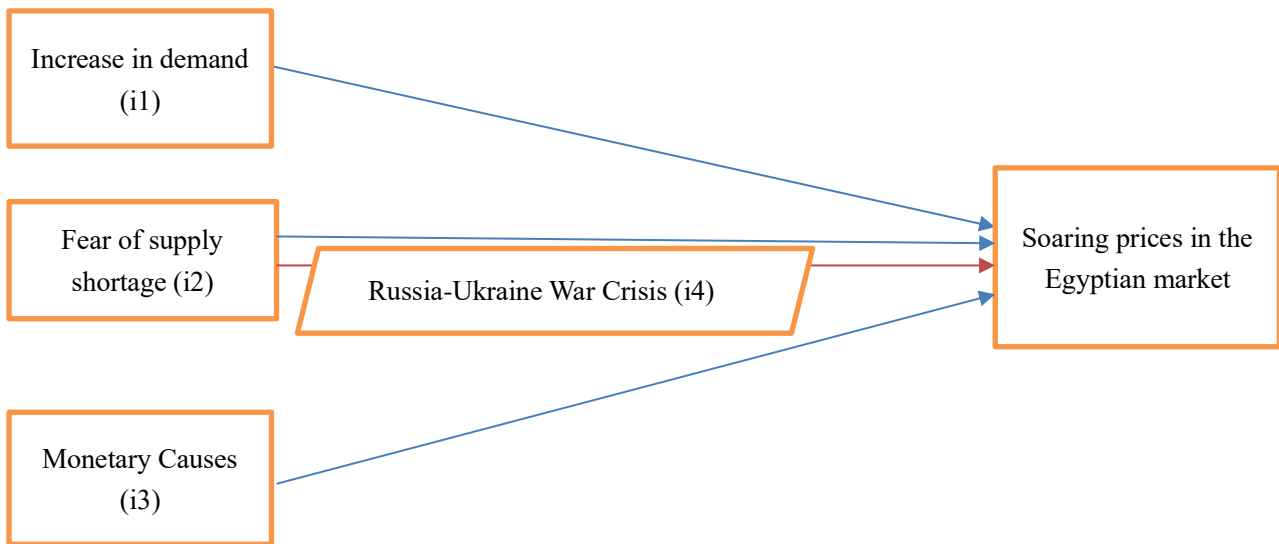


Figure 11. Theoretical Framework

Ha: i1	— + 15% —>	D
HØ: i1	— + 10% —>	D
Ha: i2	— - 18% —>	D
HØ: i2	— - 5% —>	D
Ha: i3	— + 50% —>	D
HØ: i3	— + —>	D

i4: Does the Russia-Ukraine war have a mediating effect on the relation between Fear of supply shortage (independent variable 2) and the soaring prices in Egypt (dependent variable)?

Operationalization of Monetary Causes: Figure 12

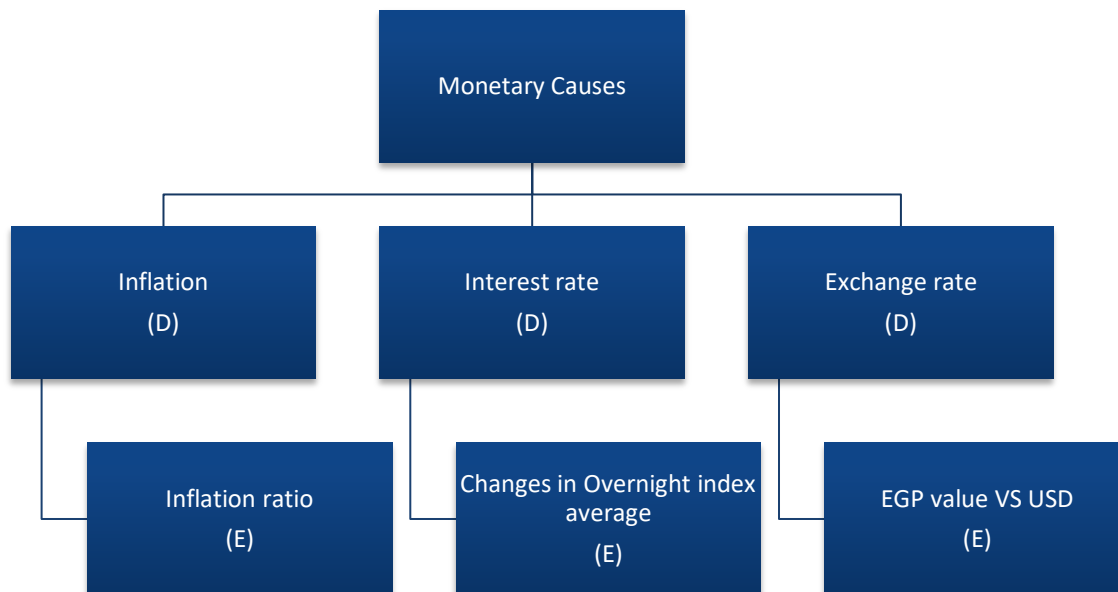


Figure 12. Operationalization

This figure presents the dimensions (D) and their elements (E) of the concept:

Monetary Causes:

The central banks determine the terms under which it supplies the money that circulates in the economy through a set of acts known as monetary policy. As a result, monetary policy has an impact on short-term interest rates, inflation, and currency exchange rate.

This variable could be assessed through number of dimensions:

Inflation:

Inflation reduces purchasing power, or the amount of something that can be bought with a currency. Because inflation reduces the purchasing power of currency, customers are encouraged to spend and store up on products that depreciate more slowly. It decreases borrowing costs and reduces unemployment.

Inflation is a term used in economics to describe the gradual rise in the price of goods and services over time. Inflation is viewed as a symptom of a suffering economy by some, while it is viewed as a sign of a thriving economy by others.

Table 1 Inflation

Inflation for Last Month: Feb 2022 (CBE, 2022)

Headline m/m	Core m/m	Headline y/y	Core y/y	Regulated Items m/m	Fruits and Vegetables m/m	Regulated Items y/y	Fruits and Vegetables y/y
1.608%	1.164%	8.819%	7.234%	0.176%	15.165%	8.680%	35.195%

Interest Rate:

How can interest rates affect demand and supply, which in return affect prices? Higher interest rates

drive up the cost of borrowing, lower disposable income, and thus limit consumer spending growth. Higher interest rates lower inflationary pressures and cause the currency rate to appreciate.

Exchange rate:

The devaluation of the Egyptian Pound

The exchange rate between the Egyptian pound and the US dollar changed overnight from 8 EGP to \$1 to 18 EGP to \$1. As a result, the cost of all goods and services increased dramatically, making life harder for everyone, but notably the most vulnerable are low-income individuals. Devaluation of the currency can even lower productivity by making imports of machinery, raw materials, and capital equipment incredibly expensive. Declining in the currency value also reduces the purchasing power of the country's nationals' abroad.

Data Collection

The primary data collected using human non-interactive (Delphi) technique through online questionnaire.

Sampling Design

Non-probability convenience sample of expert respondents is used to collect responses on the research questionnaire.

Questionnaire Developing and Mapping

Questionnaire is shared with respondents using an online tool and was developed in both Arabic and English languages to avoid any misunderstanding of all questions or answers.

Table 2. Variables Mapping

Research Question	Variable Type	Variable Name
Have you noticed that the prices in the Egyptian market have been rising aggressively lately?	Dependent	Prices' Behavior
What do you think is the main reason behind this hike?	Dependent	Prices' Behavior
Please choose one or more from the following causes that might be the reason of the increase in demand in the Egyptian market	Independent	Increase in demand
Please choose one or more from the following that you think might be the reason of supply shortage in the Egyptian market	Independent	Fear of supply shortage
Do you agree with the recent decisions taken by the Central Bank of Egypt regarding the interest rates? Please provide brief explanation for your opinion.	Independent	Monetary Causes
Do you think that the ongoing conflict between Russia and Ukraine has affected the world trade and the supply of strategic goods such as wheat, barley, sunflowers, and maize?	Mediating	Ukraine-Russia war
Do you think that the Ukraine-Russia war crisis has affected the prices' increase in Egypt?	Mediating	Ukraine-Russia war
If your answer in the previous question is yes, please share your opinion.	Mediating	Ukraine-Russia war

Data Analysis

Introduction

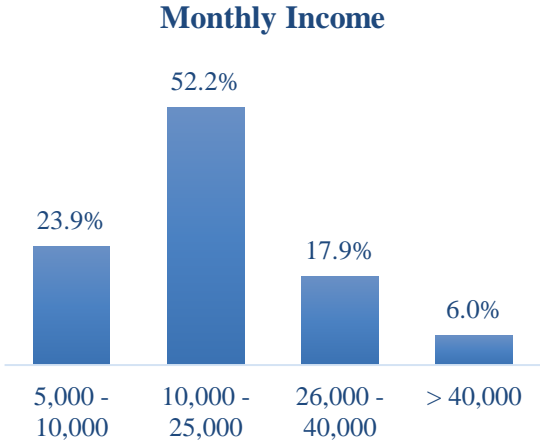
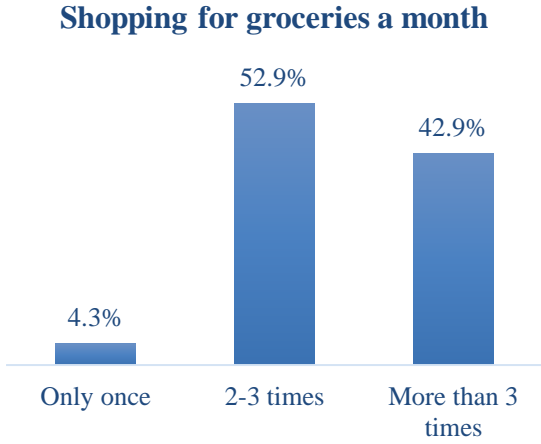
The questionnaire analysis results are presented. The IBM SPSS Statistics 26 software was used to analyze the questionnaire responses collected from respondents. The chapter starts with a descriptive analysis section of all questionnaire responses, followed by hypothesis testing performed to answer the research questions.

Descriptive Analysis

Frequencies and percentages were calculated in SPSS for questionnaire questions and represented as bar chart of percentages. A total of 70 respondents have participated in the study, giving valid responses to the questionnaire, summarized as shown below.

Demographic Profile

Demographic information about respondents was measured by their monthly income category and frequency of their shopping trips for groceries per month.

 <table border="1"> <caption>Monthly Income</caption> <thead> <tr> <th>Income Category</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>5,000 - 10,000</td> <td>23.9%</td> </tr> <tr> <td>10,000 - 25,000</td> <td>52.2%</td> </tr> <tr> <td>26,000 - 40,000</td> <td>17.9%</td> </tr> <tr> <td>> 40,000</td> <td>6.0%</td> </tr> </tbody> </table>	Income Category	Percentage	5,000 - 10,000	23.9%	10,000 - 25,000	52.2%	26,000 - 40,000	17.9%	> 40,000	6.0%	 <table border="1"> <caption>Shopping for groceries a month</caption> <thead> <tr> <th>Shopping Frequency</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>Only once</td> <td>4.3%</td> </tr> <tr> <td>2-3 times</td> <td>52.9%</td> </tr> <tr> <td>More than 3 times</td> <td>42.9%</td> </tr> </tbody> </table>	Shopping Frequency	Percentage	Only once	4.3%	2-3 times	52.9%	More than 3 times	42.9%
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More than 3 times	42.9%																		
<p align="center">Figure 13. Monthly Income</p> <p>The majority 52.2% of respondents get monthly income between 10,000 and 25,000 EGP, 23.9% get monthly income between 5,000 and 10,000 EGP, while 23.9% get monthly income that is above 25,000 EGP, see Figure 13.</p>	<p align="center">Figure 14. Shopping frequency</p> <p>The majority 52.9% of respondents go for shopping 2-3 times a month, 42.9% go shopping more than three times a month, while only three respondents go shopping only once a month, see Figure 14.</p>																		

Prices Behavior in the Egyptian Market

Almost all respondents responded with “yes” to this question, except one respondent who did not notice that prices in the Egyptian market have been rising aggressively lately. The majority 80.0% of respondents believe that the reason for the aggressive increase in prices in the Egyptian market lately is due to the Egyptian pound devaluation against other currencies (USD), see Figure 15. The second top reason chosen by 62.9% of respondents is the increase in the inflation rate. The least selected reason, by only three respondents, is the increase in demand for strategic product.

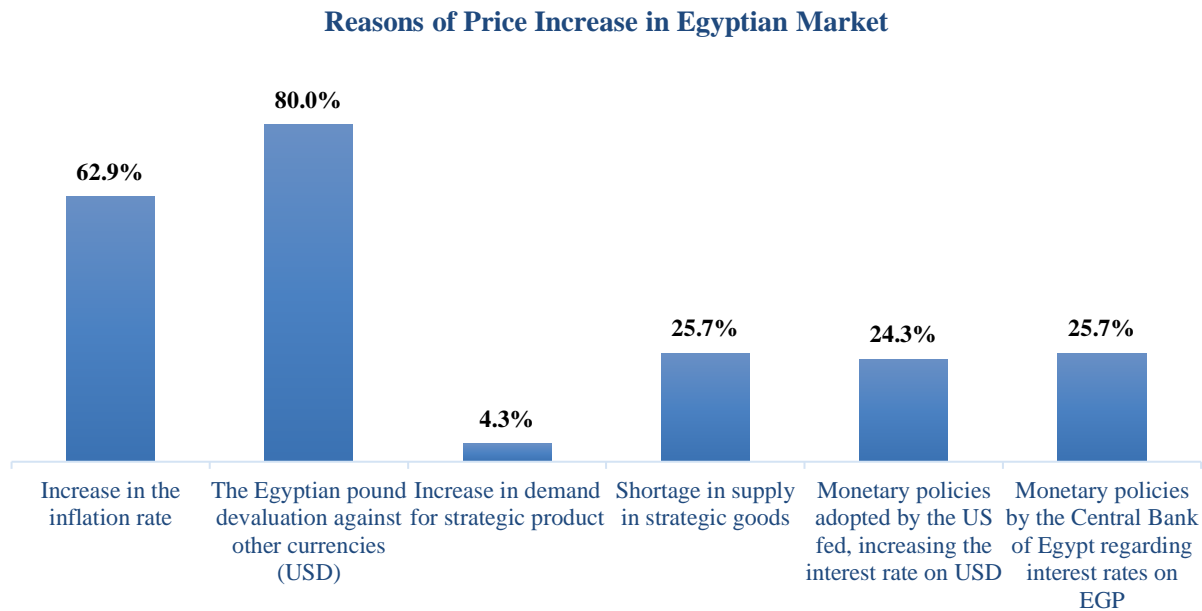


Figure 15. Reasons of price increase in the Egyptian market

Increase in Demand

The majority 56.5% of respondents believe that anticipated increase in prices of goods and restrictions implied on importing activities are reasons of the increase in demand in the Egyptian market, while 53.6% believe that the reason is the expected shortage in supply of strategic goods as a result of Ukraine-Russia war. Two respondents provided other responses; one stated that there is no increase in demand, and another stated that “irrational purchasing culture” can be the reason, shown in Figure 16.

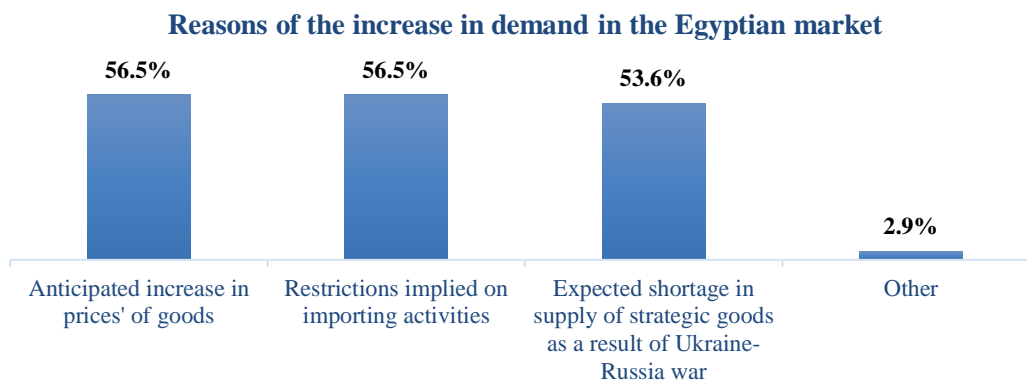


Figure 16. Increase in demand

Fear of Supply Shortage

The majority 69.6% of respondents showed that “world trade disruption as a result of Ukraine-Russia war” was the main reason of supply shortage in the Egyptian market. The second reason might be “monopoly activity that is restricting supply to raise prices and generate more profits”, selected by 46.4% of respondents. Three respondents provided other answers, which included: “import’s new policies”, “lack of industry, export, self-sufficiency of basic commodities, and attention to non-priority matters”, and “import restrictions”, See Figure 17.

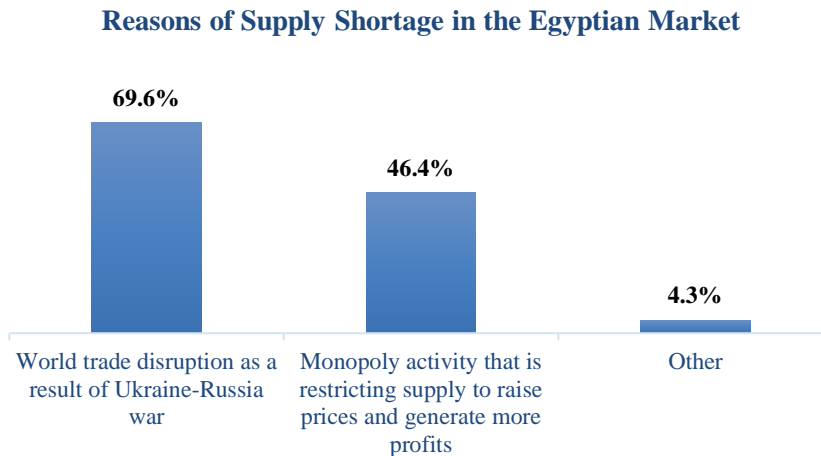


Figure 17. Reasons of supply shortage

Causes of Monetary Decisions

The majority 69.8% of respondents agreed with the recent decisions taken by the Central Bank of Egypt regarding the interest rates, with 27.0% disagreements and two respondents did not know whether to agree or disagree. Not all agreeing respondents explained the reason of their agreement; however, 41.4% of total respondents provided explanations and reasons, listed in Table 3. Respondent who supported the decision stated that the CBE was obliged to take this decision as per the following reasons: to keep and encourage foreign investments, collect foreign currency (USD) to pay the due loans from the federal bank, relief pressure on EGP and minimize dollarization, control inflation rates, to balance between needs and purchases, and finally, for the importance of imports. On the other hand, 12.9% of total respondents explained why they disagreed with this decision through the following. They believed that this decision was not good as it would discourage people for doing businesses and consequently more unemployment, prices and interest rates would increase, and inflation would also increase.

Table 3. Respondents’ opinions about recent decisions taken by the CBE regarding the interest rates.

Agree	Disagree
<ul style="list-style-type: none"> • CBE is obliged to do so. Otherwise, situation will become worse. It is a late action but coming late is better than no show. CBE decisions aim at keeping the foreign investments and to minimize or eliminate dollarization. • Decisions imposed on the Central Bank to confront raising the Federal Bank interest, relieving pressure on the Egyptian pound and burning foreign currency reserves. • Economically agree as the first way to absorb the inflation is raising the interest rates in order to decrease the cash liquidity in the market which will lead us to decrease the demand which will affect the goods price to be lower. • The increase in interest rate led to inflation but I think the aim behind the increase of interest is to collect dollars to provide it to importers & to pay due loans from 	<ul style="list-style-type: none"> • No, as economic activity will only be achieved through real domestic production. • No, as they encourage people not to do businesses just put money in bank. • No, because it will affect the prices and the lending interest. • No, because the central bank when the interest rate and the dollar price were fixed after the Eid holiday, the market was surprised and therefore expectations changed, but when it responded and increased the interest, expectations became more. • No, because this means suffering for investors due to the increase in the interest rate and therefore the decrease in investment rates. • No, it led to the weakness of the pound against the

<p>the federal bank.</p> <ul style="list-style-type: none"> • The increase in interest rate will decrease the money supply which will control the increase in the inflation rate. • To reduce the rate of inflation. • Yes, they are trying to make people make CDs and TDs to control the cash flow. • Yes, because we have to balance between what we buy and what we need. • Yes, best of the worse. • Yes, but not all. The delay in taking measures and the deterioration of economic matters. • Yes, for short term to compensate EGP devaluation against other currencies. • Yes, I agree to import according to the relative importance of the imported commodity. • Yes, I agree, provided that iron control is imposed on merchants, so as not to exaggerate prices. • Yes, in a try to stop/ decrease the inflation. • Yes, in order not to lose investors. • Yes, it is a necessary evil so that we do not fall into the abyss. • Yes, it will control the inflation rate. • Yes, it's good step. • Yes, it's the usual most effective monetary policies to face inflation. • Yes, reducing money supply. • Yes, there's no any other way. • Yes, to attract liquidity. • Yes, to control the money supply and meet the inflation rise. • Yes, to decrease inflation. • Yes, to motivate the people for investing in Egypt and not to lose the hot money opportunities. • Yes, to control the effect of inflation and to save the currency at the country. • Yes, to reduce it inflation eff. • Yes, totally agree to save foreign currency (reserve) • Yes. To limit the inflation. 	<p>currencies, which led to an increase in prices.</p> <ul style="list-style-type: none"> • No, that's a lot. Everything is more expensive and the prices are more expensive. • No, as this will lead to increase in lending rates so will decrease investment and increase unemployment. • No, this will increase inflation.
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Ukraine-Russia War

The vast majority 92.6% of respondents think that the ongoing conflict between Russia and Ukraine has affected the world trade and the supply of strategic goods such as wheat, barley, sunflowers, and maize. Similarly, 85.5% of respondents think that the Ukraine-Russia war crisis has affected the prices' increase in Egypt, and some of them provided explanation of why they thought so, listed below.

- Affects supply chain and reduce supply and result inflation
- Any war affects the economy in general, especially if countries export important goods
- As Egypt import a lot of main goods
- As it is affecting essential goods prices
- As we depend on other countries to provide strategic goods. He who does not have his own food does not have his freedom
- Because Egypt depends by 90% on these countries to import many important commodities and raw materials
- Because Egypt is an importing country, Gas price surge all over the world that means prices will increase, not to mention we are the world largest country consuming bread and we import the wheat/flour from Ukraine.
- Because of insufficient supply of basic commodities, global inflation, and the Fed's tendency to raise rates
- Because of the lack of clarity in the vision for many goods that were coming from Russia and Ukraine
- Due to decrease the petroleum exportation with increase the value of it
- Due to the lack of supply that is imported from Egypt
- Economic war between Russia and Europe and USA is fluctuating the currency market which affect the trade around the world.
- Egypt imports about 60% of wheat from Ukraine & Russia
- Egypt imports Wheat from Ukraine and Russia and the War affected that and let to significant increase in wheat prices and this affected the prices in Egypt
- Fear
- Find alternatives
- Import from both countries was impacted suddenly which affected the inventory here and merchants assumed decrease in this cargo for the long run-in front of the demand based on the fear of people intending to stock in case of any crisis which led to prices increase
- In Egypt prices are not governed so increase is not justified due to realistic reasons
- Inflation
- It's mainly in suppling wheats but some company tried to find alternatives as bring from Brazil & India
- Rise issue and inflation in USA
- Russia and Ukraine are the main suppliers for wheat and corn, both are involved in many industries such animal feeds and human foods and accordingly the price fluctuation will impact prices
- Since Egypt is the biggest importer of wheat and used to depends on both Russia and Ukraine to secure more than 70% of its needs, the prices of all bakery products will increase and put pressure on government especially in the subsidized bread leading to big deafest in government budget. Also, in terms of sunflower oils, situation is bad same as the wheat.
- Strategic goods shortage
- Strategic imports
- The cessation of wheat and corn exports led to an insane rise in feed prices, and consequently an increase in the prices of dairy and meat products
- The decrease in the importing product from both countries causes increase in its prices all over the world
- The decrease on the supply of such products will definitely increase its price with a higher percentage due to the inelastic demand for such products
- The huge change in currency inflation that resulted from the war affected everything
- The limitations on Imports & Exports
- The rise in oil prices and therefore the increase in all prices
- The Russian war it's economic war which is made a huge demand on wheat and energy and as long as Egypt considered one of the largest wheat importers and another reason is Russia converted its reserve from USD to gold

which will make a price shock to USD another reason OBEC refused to increase production and this will lead to increase the international oil price

- The war affects all world
- The war crisis affected the decline in import rates and the exit of investors from Egypt made the greater dependence on Egyptian goods and the increase in the imported price, which also led to an increase in the price of the Egyptian product.
- The war directly affected the prices of goods imported from Europe, as well as the importer's exploitation of the state of global confusion in raising prices, either on the pretext of liberalizing exchange rates or on the pretext of a shortage of supply.
- There must be basic commodities. It is necessary to be self-sufficient during a period of time, to increase industrial cities, and to seize industries in the canal area, such as assembling cars and aircraft engines, with encouraging temptations.
- Ukraine -Russia war increases the fear of the governments all over the world
- Ukraine and Russia are the biggest source of world strategic goods, for Egypt they are the main source of food, so as a result Egypt will suffer from this war with no doubt
- War affects all countries of the world
- We were certainly affected by the war, but in a simpler way than what was announced
- What the Fed announced to increase the yield to 1.9 by the end of the year has a greater impact
- World trade movement

Hypothesis Testing

The current study main research question is to define the real determinant of the prices' behavior in the Egyptian market. This can be done by answer the following questions:

Does the anticipated shortage of supply in strategic goods affect prices behavior in all market industries?

Does the increase in demand of strategic goods, not only for the sake of usage but also to stock, affect prices' behavior?

Is it possible that merchants/traders are only taking advantage of the situation to generate more profits and manipulate prices' behavior?

Does the war crisis between Ukraine and Russia have a moderating effect on the prices' behavior in Egypt?

In order to answer the research questions listed above, the following hypotheses can be formulated and test:

- H1: the anticipated shortage of supply in strategic goods significantly affects prices behavior.
- H2: the increase in demand of strategic goods significantly affects prices behavior.
- H3: Ukraine-Russia War significantly affects prices behavior.
- H4: Decisions taken by the Central Bank of Egypt regarding the monetary policy significantly affects prices behavior.
- H5: the Ukraine-Russia war has a moderating effect on the price's behavior in Egypt.

CATREG (Regression for Categorical Data with optimal scaling) was used to test the research hypotheses listed above. The categorical regression with optimal scaling is used to describe the relationship between a response variable and a set of predictors. By quantifying this relationship, values of the response can be predicted for any combination of predictors.

Research Variables

Prior to running the analysis, variables should be prepared. A composite variable is created for each measure in the questionnaire. The composite variable is created by creating a special code for each respondent using the response codes by using the CONCATENATE function, and finally recoding the new created string variables into numeric categorical variables to be used in the analysis. In

Table 4, the new composite variable codes, response combinations, frequencies, and percentages are presented, where Price Behavior is the response variable, and Increase in Demand, Fear of Supply Shortage, Monetary policies decisions, and Ukraine-Russia War are the predictor variables.

Table 4. Frequencies and percentages for composite variables

Code	Response Combinations	Frequency	Percent
<u>Price Behavior (Response)</u>			
000001	<ul style="list-style-type: none"> Monetary policies by the Central Bank of Egypt regarding interest rates on EGP 	2	2.9%
000010	<ul style="list-style-type: none"> Monetary policies adopted by the US fed, increasing the interest rate on USD 	1	1.4%
000100	<ul style="list-style-type: none"> Shortage in supply in strategic goods 	1	1.4%
010000	<ul style="list-style-type: none"> The Egyptian pound devaluation against other currencies (USD) 	17	24.3%
010010	<ul style="list-style-type: none"> The Egyptian pound devaluation against other currencies (USD) Monetary policies adopted by the US fed, increasing the interest rate on USD 	1	1.4%
010011	<ul style="list-style-type: none"> The Egyptian pound devaluation against other currencies (USD) Monetary policies adopted by the US fed, increasing the interest rate on USD Monetary policies by the Central Bank of Egypt regarding interest rates on EGP 	1	1.4%
010100	<ul style="list-style-type: none"> The Egyptian pound devaluation against other currencies (USD) Shortage in supply in strategic goods 	1	1.4%
010101	<ul style="list-style-type: none"> The Egyptian pound devaluation against other currencies (USD) Shortage in supply in strategic goods Monetary policies by the Central Bank of Egypt regarding interest rates on EGP 	2	2.9%
100000	<ul style="list-style-type: none"> Increase in the inflation rate 	5	7.1%
100001	<ul style="list-style-type: none"> Increase in the inflation rate Monetary policies by the Central Bank of Egypt regarding interest rates on EGP 	1	1.4%
100010	<ul style="list-style-type: none"> Increase in the inflation rate Monetary policies adopted by the US fed, increasing the interest rate on USD 	1	1.4%
100110	<ul style="list-style-type: none"> Increase in the inflation rate Shortage in supply in strategic goods Monetary policies adopted by the US fed, increasing the interest rate on USD 	3	4.3%
110000	<ul style="list-style-type: none"> Increase in the inflation rate The Egyptian pound devaluation against other currencies (USD) 	11	15.7%
110001	<ul style="list-style-type: none"> Increase in the inflation rate The Egyptian pound devaluation against other currencies (USD) Monetary policies by the Central Bank of Egypt regarding interest rates on EGP 	3	4.3%
110010	<ul style="list-style-type: none"> Increase in the inflation rate The Egyptian pound devaluation against other currencies (USD) Monetary policies adopted by the US fed, increasing the interest rate on USD 	2	2.9%
110011	<ul style="list-style-type: none"> Increase in the inflation rate The Egyptian pound devaluation against other currencies (USD) Monetary policies adopted by the US fed, increasing the interest rate on USD 	6	8.6%

	<ul style="list-style-type: none"> Monetary policies by the Central Bank of Egypt regarding interest rates on EGP 		
110100	<ul style="list-style-type: none"> Increase in the inflation rate The Egyptian pound devaluation against other currencies (USD) Shortage in supply in strategic goods 	7	10.0%
110101	<ul style="list-style-type: none"> Increase in the inflation rate The Egyptian pound devaluation against other currencies (USD) Shortage in supply in strategic goods Monetary policies by the Central Bank of Egypt regarding interest rates on EGP 	1	1.4%
110111	<ul style="list-style-type: none"> Increase in the inflation rate The Egyptian pound devaluation against other currencies (USD) Shortage in supply in strategic goods Monetary policies adopted by the US fed, increasing the interest rate on USD Monetary policies by the Central Bank of Egypt regarding interest rates on EGP 	1	1.4%
111000	<ul style="list-style-type: none"> Increase in the inflation rate The Egyptian pound devaluation against other currencies (USD) Increase in demand for strategic product 	1	1.4%
111100	<ul style="list-style-type: none"> Increase in the inflation rate The Egyptian pound devaluation against other currencies (USD) Increase in demand for strategic product Shortage in supply in strategic goods 	1	1.4%
111111	<ul style="list-style-type: none"> Increase in the inflation rate The Egyptian pound devaluation against other currencies (USD) Increase in demand for strategic product Shortage in supply in strategic goods Monetary policies adopted by the US fed, increasing the interest rate on USD Monetary policies by the Central Bank of Egypt regarding interest rates on EGP 	1	1.4%
<u>Increase in Demand (Predictor)</u>			
0000	None	1	1.4%
0001	<ul style="list-style-type: none"> Other 	2	2.9%
0010	<ul style="list-style-type: none"> Expected shortage in supply of strategic goods as a result of Ukraine-Russia war 	10	14.3%
0100	<ul style="list-style-type: none"> Restrictions implied on importing activities 	11	15.7%
0110	<ul style="list-style-type: none"> Restrictions implied on importing activities Expected shortage in supply of strategic goods as a result of Ukraine-Russia war 	7	10.0%
1000	<ul style="list-style-type: none"> Anticipated increase in prices of goods 	11	15.7%
1010	<ul style="list-style-type: none"> Anticipated increase in prices of goods Expected shortage in supply of strategic goods as a result of Ukraine-Russia war 	7	10.0%

1100	<ul style="list-style-type: none"> Anticipated increase in prices of goods Restrictions implied on importing activities 	8	11.4%
1110	<ul style="list-style-type: none"> Anticipated increase in prices of goods Restrictions implied on importing activities Expected shortage in supply of strategic goods as a result of Ukraine-Russia war 	13	18.6%
<u>Fear of Supply Shortage (Predictor)</u>			
000	None	1	1.4%
001	<ul style="list-style-type: none"> Other 	3	4.3%
010	<ul style="list-style-type: none"> Monopoly activity that is restricting supply to raise prices and generate more profits 	18	25.7%
100	<ul style="list-style-type: none"> World trade disruption as a result of Ukraine-Russia war 	34	48.6%
110	<ul style="list-style-type: none"> World trade disruption as a result of Ukraine-Russia war Monopoly activity that is restricting supply to raise prices and generate more profits 	14	20.0%
<u>Ukraine-Russia War (Predictor)</u>			
00	None	5	7.1%
01	<ul style="list-style-type: none"> Ukraine-Russia war crisis has affected the prices' increase in Egypt 	2	2.9%
10	<ul style="list-style-type: none"> Ukraine-Russia war crisis has affected the world trade and the supply of strategic goods such as wheat, barley, sunflowers, and maize 	6	8.6%
11	<ul style="list-style-type: none"> Ukraine-Russia war crisis has affected the world trade and the supply of strategic goods such as wheat, barley, sunflowers, and maize Ukraine-Russia war crisis has affected the prices' increase in Egypt 	57	81.4%

CATREG - Regression for Categorical Data with Optimal Scaling

CATREG was conducted using Price Behavior as the response variable, and Increase in Demand, Fear of Supply Shortage, agreement with the recent decisions taken by the Central Bank of Egypt regarding the interest rates and Ukraine-Russia War are the predictor variables. The moderating variable is the Ukraine-Russia War, entered into the regression model as two interaction terms: between Ukraine-Russia War and Increase in Demand, and between Ukraine-Russia War and Fear of Supply Shortage.

The intercorrelations of the predictors for both the untransformed and transformed predictors are near 0, indicating that multicollinearity between individual variables is not a concern. The Categorical Regression procedure yields an R^2 of 0.285, indicating that 28.5% of the variance in the transformed Price Behavior is explained by the regression on the optimally transformed predictors. The analysis revealed a significant model with $F(6,56) = 3.649$ and $p = 0.004$.

In this analysis, the standardized coefficients are interpreted to reflect the importance of each predictor. According to the regression coefficients in Table 5, the interaction term Fear of supply shortage * Ukraine-Russia War, Fear of supply shortage, and Ukraine-Russia War were found to be significantly affecting Price Behavior, with p values below 0.05. The largest coefficient occurs for the interaction term "Fear of supply shortage * Ukraine-Russia War": $B = -2.703$ and $p < 0.001$, followed by "Fear of supply shortage": $B = 1.967$ and $p < 0.001$, and "Ukraine-Russia War": $B = 1.552$ and $p < 0.001$.

The impact of predictors cannot be fully described by regression coefficients, so the correlations, partial correlations, and part correlations should be inspected, see Table 6. The zero-order correlation is the correlation between the transformed predictor and the transformed response. For this data, the largest correlation occurs for the interaction term "Increase in demand * Ukraine-Russia War". The partial correlation coefficient removes the linear effects of other predictors from both the predictor and the response. The squared partial correlation corresponds to the proportion of the variance explained relative to the residual variance of the response remaining after removing the effects of the other variables. "Fear of supply shortage" has a partial correlation of 0.331. Removing the effects of the other variables, it

explains $(0.331)^2 = 0.110 = 11.0\%$ of the variation in the Price Behavior change. Similarly, the interaction term “Fear of Supply Shortage * Ukraine-Russia War” explains $(-0.315)^2 = 9.9\%$, while the “Ukraine-Russia War” explains $(0.290)^2 = 8.4\%$ of the variation in the Price Behavior change.

In addition to the regression coefficients and the correlations, Pratt’s measure of relative importance (Pratt, 1987) aids in interpreting predictor contributions to the regression. Large individual importance values relative to the other importance values correspond to predictors that are crucial to the regression. Therefore, the moderating effect of Ukraine-Russia War on the relationship between Fear of supply shortage and Price Behavior is the most important.

Finally, the individual predictors “Increase in Demand” and “the recent decisions taken by the Central Bank of Egypt regarding the monetary policies” did not significantly contribute to the model, and as a result they had no significant effect on Price Behavior changes.

Table 5. CATREG coefficients

	Standardized Coefficients		df	F	Sig.
	B	SE			
Increase in demand	-.766	.424	1	3.268	.075
Fear of supply shortage	.861	.320	1	7.243	.009**
Monopoly activity that is restricting supply to raise prices and generate more profits	-.147	.118	1	1.558	.217
Increase in demand * Ukraine-Russia War	1.205	.486	1	6.139	.016*
Fear of supply shortage * Ukraine-Russia War	-1.028	.466	1	4.877	.031*
<i>Dependent Variable: Price Behavior</i>					
*. Significant at 0.05.					
**. Significant at 0.01.					

Table 6. Correlations and tolerance

	Correlations			Importance
	Zero-Order	Partial	Part	
Increase in demand	.280	-.131	-.119	-1.130
Fear of supply shortage	.233	.224	.207	1.057
Monopoly activity that is restricting supply to raise prices and generate more profits	-.149	-.154	-.140	.115
Increase in demand * Ukraine-Russia War	.284	.176	.161	1.801
Fear of supply shortage * Ukraine-Russia War	.166	-.184	-.169	-.896

Residual plots for significant effects shown below in Figure 18

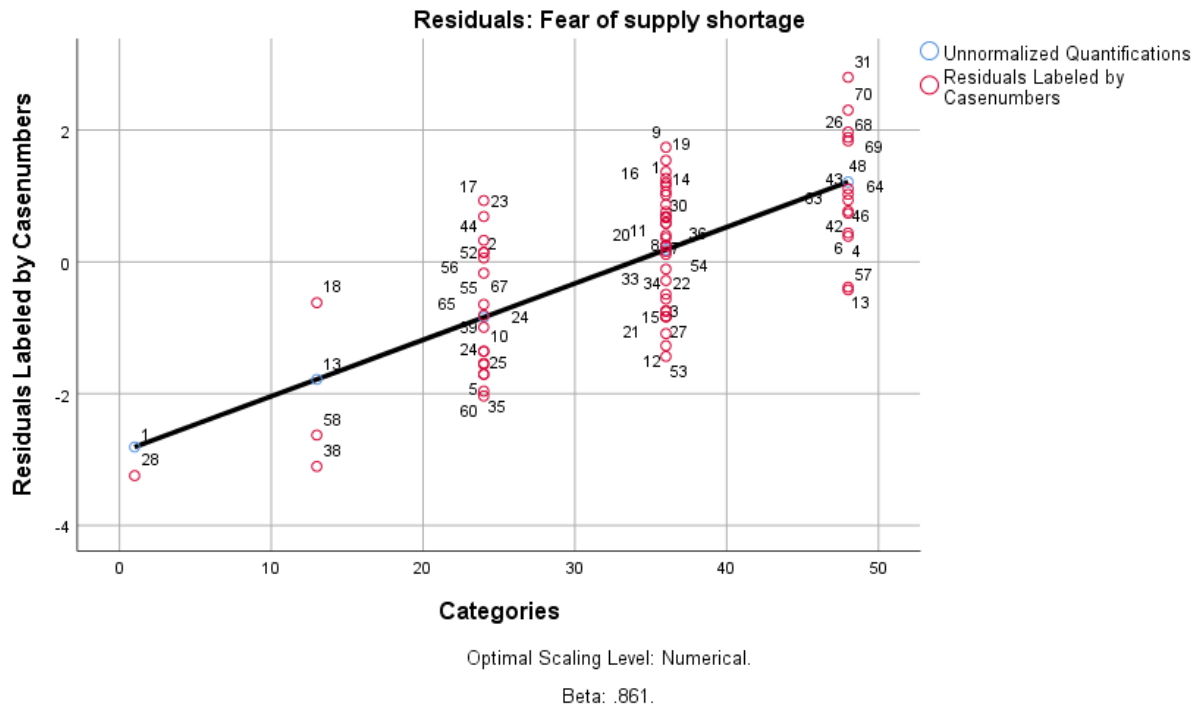


Figure 18. Residual plots for significant effects

Conclusion

To conclude, the results of CATREG revealed that the anticipated shortage of supply in strategic goods and Ukraine-Russia War significantly affect prices behavior. In addition, the Ukraine-Russia war has a moderating effect on the prices’ behavior in Egypt in relation to the fear of supply shortage. These results could support the three hypotheses: H2, H3, and H5; while H1 and H4 could not be retained. _

Recommendation

Although the macro and micro impacts of the Russia-Ukraine war better be assessed across longer time periods in future studies, the rise in the prices in the Egyptian market is believed to be as a result of various number of factors which are not all covered in this study. This paper revealed that the increase in demand of strategic goods significantly affects prices’ behavior, and the Ukraine-Russia war significantly has a moderating effect on the prices’ behavior in Egypt.

Limitation

There are certain limitations to the study. First and foremost, the study covers data from February 17th to May 15th, 2022. The acquired findings should be compared to the 5-day event window. This study may suffer from a limitation resulting from the sample size that is considered to be small, and might affect the reliability of its results. For future researchers it is suggested to use a larger sample size in order to get generalization for the results.

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