

**Economic impacts of the Russia-Ukraine Conflict on Developing Countries: A focus on  
Agriculture, Industry, and Food Security**

\* Prof. Dr. Abdourahman Aljounaidi, Associate Professor (HOD)

\*\* Dr. Muhammad Ali, Senior Lecturer

\*\*\* Dr. Soomro Shabbir, Scholars Hub Khi

**Abstract**



**Background:** The Russia-Ukraine conflict, a geopolitical struggle with global ramifications, has instigated profound economic implications, especially for developing countries. This research delves into the specific impacts on Agriculture, Industry, and Food Security in these vulnerable economies. The conflict has also exacerbated existing challenges such as climate change, environmental pollution, and health system weaknesses. Developing countries, such as Pakistan and Ethiopia, have been particularly affected, as they depend on Russia and Ukraine for essential products.

**Objectives:** The objective is to provide a comprehensive understanding of the multifaceted challenges and opportunities arising from the conflict, guiding policy responses and international collaboration.

**Methodology:** Employing a mixed-methods approach, using developing countries sample Pakistan and Ethiopia the research incorporates a thorough literature review, quantitative analysis, and case studies. Quantitative analysis involves a statistical SPI sensitivity price indicators examination to quantify the direct and indirect effects on the selected sectors. In-depth case studies of representative developing countries provide qualitative insights, while expert interviews contribute nuanced perspectives on geopolitical intricacies and potential mitigation strategies.

**Results:** Indicate significant disruptions in global trade, increased inflation, unemployment, supply chains, and resource availability, affecting agricultural production, industrial activities, food security in developing countries, and food shortages, as well. The research also underscores the importance of international cooperation, humanitarian considerations, and long-term resilience building.

**In conclusion,** this research not only sheds light on the intricate economic impacts of the Russia-Ukraine conflict on developing countries but also offers practical insights to inform policy decisions and foster sustainable development in the face of ongoing geopolitical challenges.

**Keywords:** Russia-Ukraine war, Economic Impact, Developing Countries, SPI Analysis

**JEL Classification:** A13, D00, B41

**Introduction**

The ongoing conflict between Russia and Ukraine has had far-reaching economic repercussions, particularly for developing countries. The impact has been felt across various sectors, including agriculture, industry, and food security, leading to increased inflation, unemployment, and disruptions in supply chains. This has exacerbated existing challenges such as climate change, environmental pollution, and weaknesses in health systems, further straining the economies of developing nations (Ali et al., 2022).

Developing countries, such as Pakistan and Ethiopia, heavily rely on Russia and Ukraine for essential products, particularly wheat. The surge in commodity prices and damage to different sectors, such as agriculture and industry, has led to an overall increase in inflation of 15% to 45% on edible consumer goods, significantly affecting the urban middle class and rural poor. The conflict has also resulted in a humanitarian crisis, with millions of people at risk of hunger and poverty (Ali et al., 2022).

In response to these challenges, it is imperative for developing countries to revisit their policies and invest in new agricultural technology to increase production and reduce dependence on

\* Department of Business Management, Al-Madinah International University MEDIU, Kuala Lumpur, Malaysia Email: [abdulrahman.ramez@mediu.edu.my](mailto:abdulrahman.ramez@mediu.edu.my)

\*\* Department of Economics, Al-Madinah International University MEDIU, Kuala Lumpur – Malaysia. Email: [alimuhammad1447@gmail.com](mailto:alimuhammad1447@gmail.com)

\*\*\* Email: [shabbir\\_ahmed24@hotmail.com](mailto:shabbir_ahmed24@hotmail.com)

imports. Good governance and small-scale projects for innovation in agriculture and industry are also recommended. Efforts to reduce food waste and transition to sustainable dietary systems are crucial for long-term food security and resilience to future crises, before another disaster, COVID-19, has also badly affected the economy of the whole world (Ali et al., 2022).

This research aims to comprehensively analyze the economic impact of the Russia-Ukraine conflict on developing countries, with a specific focus on the agricultural, service, and industrial sectors. It also seeks to propose strategic interventions to mitigate the devastating effects of the conflict and build resilience in vulnerable economies, developing countries continue to be victims of small disasters like the flood in Pakistan in 2022 which brought the entire country to the brink of economic collapse (Ali et al., 2022) so developing countries no longer have the power to deal with the major calamities.

The Russia-Ukraine conflict, a geopolitical struggle that emerged in the early 21st century, has had far-reaching consequences beyond the immediate region. While the direct implications for Russia and Ukraine are evident, the economic repercussions extend globally, particularly affecting developing countries. This research delves into the multifaceted economic impacts of the Russia-Ukraine conflict on developing nations, with a specific emphasis on three critical sectors: Agriculture, Industry, and Food Security countries like Pakistan and Ethiopia are already suffering and struggling from economic collapse due to unemployment and inflation (Ali et al., 2022).

The conflict, marked by political tensions, territorial disputes, and military engagements, has disrupted established trade routes, geopolitical alliances, and economic stability. As a result, developing countries, already vulnerable to external shocks, find themselves grappling with the spillover effects of this protracted conflict. This study seeks to analyze the nuanced ways in which the agricultural, industrial, and food security sectors in these nations are being influenced, with the ultimate goal of providing insights that can inform policy responses and international cooperation trade in Pakistan and its neighboring countries India and Bangladesh already disturbed due to geopolitical and socioeconomic reasons (Ali et al., 2022).

The interconnectedness of the global economy implies that disturbances in key sectors can have cascading effects, amplifying challenges for developing countries that rely heavily on international trade and cooperation. By focusing on agriculture, industry, and food security, this research aims to uncover the specific challenges and opportunities emerging in the wake of the Russia-Ukraine conflict, offering a comprehensive understanding of how these vital sectors are shaping the economic landscape of developing nations. As the world grapples with the ongoing repercussions of geopolitical conflicts, a nuanced examination of their impact on vulnerable economies is imperative for fostering informed decision-making and sustainable development (Azizzadeh et al., 2021).

Smooth Transition: Ensure a smooth transition between the geopolitical context of the Russia-Ukraine conflict and its global economic repercussions. Link the political tensions and military engagements to the disruptions in trade routes, alliances, and economic stability, emphasizing the impact on developing nations. Connection to Neighboring Countries When mentioning disturbances in trade involving Pakistan, India, and Bangladesh, provide a brief explanation or reference to the geopolitical and socioeconomic reasons affecting these neighboring countries. In the conclusion, reiterate the theme of global interconnectedness and highlight the importance of understanding the impacts of geopolitical conflicts on vulnerable economies. Emphasize the need for informed decision-making and sustainable development in the face of ongoing repercussions.

### **Literature Review**

The war between Russia and Ukraine has had many effects on the world. For example, digital currency investors respond to the war by seeking liquidity, which leads to lower prices of digital currencies. This theorem explains why the value of digital currencies has decreased significantly recently (Khalfaoui, Gozgor & Goodell, 2022).

Before started the Russia-Ukraine conflict the world just come back to its normal position after facing a natural calamity in the form of COVID-19. Many developing countries' economies already derailed & detracted during the pandemic many industries completely collapsed & suffered billions of dollars in losses e.g. Aviation industry, the tourism Industry & food industry (Ali, et, al, 2022).

Financial markets reacted strongly to the shock caused by the war (Lo et al., 2022). Also, there is a negative relationship between the Ukraine-Russia war and the world stock market returns (Boungou & Yatié, 2022).

Many experts, academics, bureaucrats, and journalists have discussed the impact of the Russia-Ukraine war on food (Benton et al., 2022). The countries with the highest percentage of imports from Russia are mostly located in Europe and Asia. They may easily be affected by the Russia-Ukraine war. The Russia-Ukraine war has affected and further affected global energy and food security. However, the exact penetration degree, key vulnerabilities, and penetration process are still unclear at present. Global international organizations are also required to strengthen the balancing function of global energy and food security demand between large countries and small countries. We need to pay more attention to small countries in Africa and Asia to deal with this danger (Zhao et al., 2023).

This world is in a fragile state under the long-term pressure of the COVID-19 pandemic (Azizzadeh & Hosseini, 2021) in every field such as food and economy (Kruczkiewicz et al., 2021). Russia's attack on Ukraine, which took place between two major food and energy exporters in the world, will worsen global energy and food security (Mbah & Wasum, 2022). This war has caused an increase in grain and oil prices and global inflation (Deng et al., 2022). The war between Russia and Ukraine leads to economic consequences such as inflation, restriction of service debt, and supply shortages for developing countries (Khudaykulova, Yuanqiong & Khudaykulov, 2022).

Due to the globalization of the economy, food supply and demand are interrelated in each country (Gaupp, 2020). The Russia-Ukraine war dramatically affected the global economy and food security. Ukraine has some of the most fertile soils in the world which affects food production.

The war is still ongoing and there is significant uncertainty about its effects (Pereira et al., 2022). Although the consequences of this crisis have had a detrimental effect on the Russian economy, the global economy & developing countries like Asia & Africa have also felt the impact of this crisis (Mbah & Wasem, 2022). The preview results present the challenging economic impact of the Russian-Ukraine war (Deng et al., 2022).

Russia and Ukraine are known as the world's largest suppliers of wheat, both countries supplying almost a quarter of the world's wheat supply (Cohen and Ewing, 2022). Experts from many countries around the world suggest that European countries will face supply chain disruptions due to Russia's attack on Ukraine in 2022 (Lanktree, 2022).

This crisis led to higher inflation, reduction in household consumption due to higher prices (oil, gas, wheat, and minerals), disruption in the supply chain, uncertainty, a hindrance to economic growth, reduction in investment, and stock fluctuations globally. Especially in Europe. Because both Russia and Ukraine are significant exporters to Europe (Mbah & Wasem, 2022).

The Russian invasion of Ukraine has caused a humanitarian disaster while also disrupting global agricultural markets. Ukraine and Russia are major global producers of wheat, corn, oilseeds, and fertilizer. Due to war, exports are likely to be severely disrupted. Middle East Asia and Africa are highly dependent on imported grains from the region and accept the most impact. Increasing grain prices can lead millions of people in these areas to poverty and hunger. Ukraine and Russia are major exporters of global grains and oilseeds. Increasing food insecurity for millions of imported people in the Middle East Asia and Africa is an issue that has raised many concerns with the start of the war. There are countries in the world where their wheat needs come from Ukraine and Russia like Pakistan, India & African countries. The affected population that may lead to acute hunger is estimated at 47 million (Pörtner et al., 2022).

Fig 1 shows the rise in commodity price from the period 22 Jan to 22 December. The world is increasingly unstable and thus exposed to shock, it is necessary to confirm the systemic nature of the food system and strengthen its resistance (Gaupp, 2020).

**Increase prices in Pakistan during Russia-Ukraine Conflict**

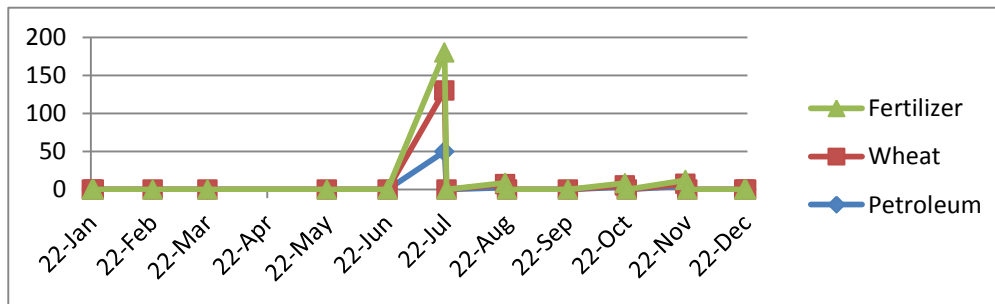


Fig 1: Source Author Research

Rising trend of commodity prices in Pakistan in the year 2022 to until Jan 2023

**Research Objective**

This research aims to systematically investigate the economic ramifications of the Russia-Ukraine conflict on developing countries, specifically concentrating on the pivotal domains of Agriculture, Industry, and Food Security. By employing a comprehensive approach, the study seeks to analyze how disruptions in global trade, resource availability, and geopolitical dynamics resulting from the conflict impact the economic landscapes of vulnerable nations. The objectives include assessing the direct and indirect consequences on agricultural production, industrial activities, and the overall food security situation in developing countries. Furthermore, the research aims to identify potential mitigating measures and policy recommendations to aid these nations in navigating the challenges posed by the conflict. Through a focused examination of these sectors, this study aspires to contribute valuable insights that inform policymaking, foster international cooperation, and facilitate the development of resilient strategies for nations grappling with the far-reaching consequences of the Russia-Ukraine conflict.

**Research Methodology**

The research methodology for this study involves a multi-faceted approach to comprehensively analyze the economic impact of the Russia-Ukraine conflict on developing countries, with a specific focus on the agricultural, service, and industrial sectors.

**Data Collection and Analysis:** The study will involve the collection of data from various sources including government reports, international organizations, and academic publications to gather information on the economic impact of the conflict on developing countries. This will include data on inflation rates, unemployment, food shortages, and disruptions in supply chains.

**Comparative Analysis:** A comparative analysis will be conducted to assess the impact of the conflict on different developing countries, with a specific focus on countries such as Pakistan and Ethiopia, which depend on Russia and Ukraine for essential products like wheat. This analysis will involve examining the specific economic challenges faced by these countries and the extent of their dependencies on the conflicting nations.

**Regression Analysis:** Multiple regression analysis will be employed to assess the impact of the conflict on the economies of developing countries. This will involve using relevant economic indicators to analyze the changes in GDP, unemployment rates, and inflation levels before and after the conflict.

**Policy Analysis and Recommendations:** The study will also involve an analysis of existing policies in developing countries and propose strategic interventions to mitigate the economic effects of the conflict. This will include recommendations for small-scale projects for innovation in agriculture and industry, as well as the adoption of new agricultural technology to reduce dependence on imports.

**Environmental and Health Impact Assessment:** The research will also assess the environmental and health impacts of the conflict on developing countries, including the effects of climate change, environmental pollution, and challenges to the health system. This assessment will provide a comprehensive understanding of the broader consequences of the conflict.

**Price Sensitivity Analysis:** A price sensitivity analysis will be conducted to understand the changes in consumption patterns and the impact of price fluctuations on essential items in developing countries. This analysis will provide insights into the direct impact of the conflict on consumer behavior and market volatility (Pakistan Bureau of Statistics and Ethiopian Statistical Agency).

By employing these methodologies, the research aims to provide a comprehensive analysis of the economic impact of the Russia-Ukraine conflict on developing countries and propose strategic interventions to mitigate the devastating effects and build resilience in vulnerable economies.

**The Aftermath of the Russia-Ukraine Conflict**

As the effect of the pandemic subsided, the war between Russia & Ukraine began which continues to this day & the effects of this war are long-lasting & unending, this conflict created big trouble for developing countries although the war impacted the entire world developing countries suffered more in terms of commodity prices inflation rate, unemployment & many other big challenges. As the US & Europe imposed sanctions on Russia due to these sanctions developing countries suffered a lot in terms of exports & imports.

Due to supply chain disruption, prices of all edible food items have doubled or more, and inflation has become so high that people are dying of hunger. Governments have failed to curb inflation & unemployment has risen to high levels. People have been forced to starve & commit suicide. The rich became very rich, the middle or mediocre class reached the poverty line & the poor became completely destitute. In this research, we will analyze two developing countries & examine their conditions in terms of different commodity prices edible things & energy prices one country is from Asia Pakistan other is Ethiopia from South Africa region. These two suffered a lot in terms of commodity prices energy prices, inflation & unemployment & many other factors which destroyed the countries' economies entirely. So it was a very important cross-sectional & cross-cultural analysis because both of these countries recently suffered from the COVID-19 Pandemic as well. Both these countries depend on Russia & Ukraine regarding wheat, fertilizer nitrogen phosphate metal & metal-made products defense weapons, etc.

**Surge in commodity prices and export**

Russia is considered the biggest exporter of Fertilizer products Nitrogen Phosphate, Potassium DAP Fertilizer, etc., and also 4th biggest exporter of petroleum LNG gas & defense weapons in the world, especially to India, India is a developing country they almost exports most of the products from Russia. Russia exports wheat to Pakistan and other Asian and African countries. Now due to the Russia-Ukraine conflict developing countries have started suffering from a wheat gain shortage, In Pakistan wheat flour disappeared from the market people have been waiting for wheat flour for hours & hours even a few people died during the chaos. The price of wheat flour before the Russia-Ukraine conflict in Pakistan was 50 per/kg PKR (Pakistan Currency) which is now an almost tipple time high of 150 per/kg PKR. In Ethiopia, the prices of wheat are 50%, petroleum prices by 68% & other commodity prices of metal & metal products increased by 51% respectively overall the inflation & unemployment increased by 86% & 80% respectively. During the conflict between Russia, three sectors suffered very badly, the Agricultural Sector, Industry Sector & Service Sector. In Fig 2 it can be easily analyzed how negatively 3 industries have suffered.

**Impact of Russia-Ukraine conflict on three sectors Pakistan**



Fig 2: Source Author Research

*Impacts of Russia-Ukraine conflict in three sectors of Pakistan, Agriculture, and Service & Industrial Sector respectively with -7.8%, Service -15% & -9% respectively*

**Impacts of conflict on three sectors**

The Russia-Ukraine conflict left many impacts on developing countries, but its impact on the three sectors has been more severe & devastating on the agricultural sector service sector & industry sector. Recently Pakistan has suffered from 2 natural disasters & calamities COVID-19 & flood disasters in three provinces of Pakistan because of these 2 natural calamities Pakistan suffered almost 49\$ billion loss in terms of finance & 3 hundred thousand goats died 7, 50,000 cattle lost more than 1200 human loss during flood disaster overall the condition of the country is very bad almost on the verge of destruction (Ali, et, al .2022). In the industry sector, almost 1600 Textile mills are shut down in Pakistan because of energy prices & high inflation rates more than half a million 5M people lost their jobs & became unemployed & they don't have even any alternate way of income. In Ethiopia, the prices of Petroleum increased by 88% compared with the 2021-22 price of edible things, wheat & fertilizer products increased by 100% 104%, 12% & 84% respectively. Petroleum prices would increase by 86% compared to their value in 2021-22. Similarly, prices of wheat, edible oil, DAP fertilizer, and metal products would increase by 100%, 11%, 108%, and 82% respectively. Figure 3 below displays the overall negative impacts in Ethiopia on the major economic sectors – agriculture, industry, and services.

**Impact of Russia-Ukraine conflict on three sectors Ethiopia**

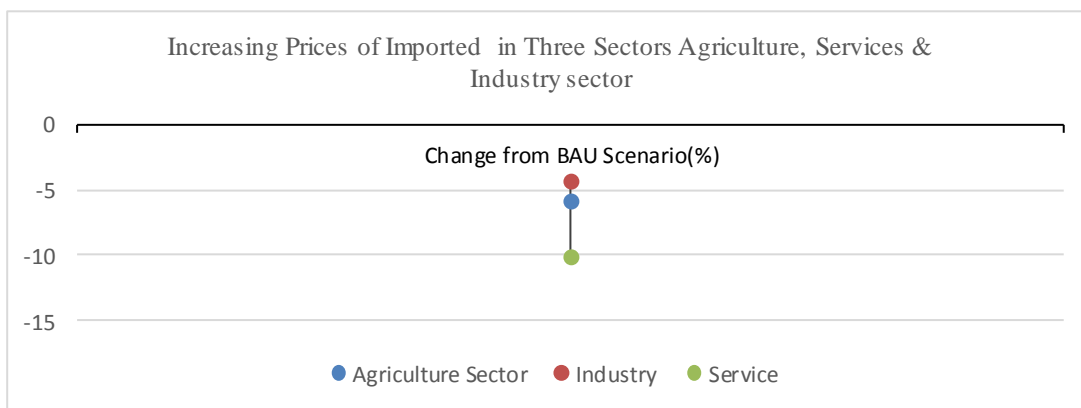


Fig 3: Source Author Research

The negative impact of the Russia-Ukraine conflict on three sectors of Ethiopia Agriculture -5.8, Industry -4.3 & Service Sector -10.1 respectively. The service sector was hit worse than others.

**Comparative Analysis of Pakistan & Ethiopia Unemployment & GDP Loss**

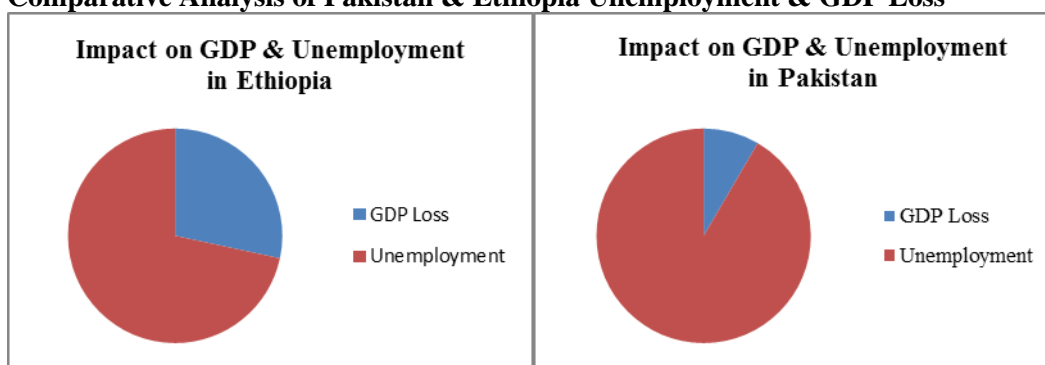


Fig 4: Source Author Research

Data collected by State Bank & Statistical agencies from relevant countries.

**Statistical Analysis**

**SPI Sensitivity Price Indicator Analysis & effect of Demand Supply on Food Shortage & Inflation Rate,**

We will compare the prices of the essential items in Pakistan that are the basic needs of the public without these things impossible to live, we will compare the prices in Pakistan from March 2022 to December 2022 check the price indicator & put a sensitivity analysis for the inflation rate in Pakistan Table 1 & Table 2 shows the price contrast from March-December period year 2022.



**Table 1**

The average monthly price for 21 essential items for March 2022 before the Russo-Ukraine conflict:  
Source Pakistan Bureau of Statistic

Serial Number	Item Description	Unit	Old Price Capital Islamabad	City	PKR Currency	Pakistan
1	Wheat Flour Bag	20Kg	1100.00		PKR	
2	Rice Basmati	1kg	112.36		PKR	
3	Rice-IRRI-6-9	1kg	76.52		PKR	
4	Bread Plain	Each	70.00		PKR	
5	Beef with bone	1kg	715.31		PKR	
6	Mutton Average Quality	1kg	1430.42		PKR	
7	Broiler Chicken	1kg	274.76		PKR	
8	Milk Fresh	1Ltr	137.26		PKR	
9	Curd (Dahi)	1kg	146.25		PKR	
10	Egg	1 Dozen	133.76		PKR	
11	Cooking Oil	Each	2287.77		PKR	
12	Vegetable Ghee	Each 2.5KG	1166.95		PKR	
13	Pulse	1kg	165.00		PKR	
14	Potato	1kg	49.12		PKR	
15	Tomato	1kg	97.01		PKR	
16	Onion	1kg	50.82		PKR	
17	Sugar	1kg	89.14		PKR	
18	Salt	Each	35.00		PKR	
19	Tea	Each 190 g	260.00		PKR	
20	Ordinary Prepare Tea	1 cup	39.12		PKR	
21	Petrol	Per Liter	150.35		PKR	

**Table 2**

The average monthly price for 21 essential items for December 2022 after the Russo-Ukraine conflict:  
Source Pakistan Bureau of Statistic

Serial Number	Item Description	Unit	Inflated Price Capital Islamabad	City	PKR Currency	Pakistan
1	Wheat Flour Bag	20Kg	1295.00		PKR	
2	Rice Basmati	1kg	153.57		PKR	
3	Rice-IRRI-6-9	1kg	101.60		PKR	
4	Bread Plain	Each	90.00		PKR	
5	Beef with bone	1kg	808.12		PKR	
6	Mutton Average Quality	1kg	1657.50		PKR	
7	Broiler Chicken	1kg	450.76		PKR	
8	Milk Fresh	1Ltr	180.80		PKR	
9	Curd (Dahi)	1kg	200.25		PKR	
10	Egg	1 Dozen	280.76		PKR	
11	Cooking Oil	Each	3000.77		PKR	
12	Vegetable Ghee	Each 2.5KG	1500.95		PKR	
13	Pulse	1kg	250.00		PKR	
14	Potato	1kg	150.12		PKR	
15	Tomato	1kg	200.01		PKR	
16	Onion	1kg	150.82		PKR	
17	Sugar	1kg	100.14		PKR	
18	Salt	Each	50.00		PKR	
19	Tea	Each 190 g	420.00		PKR	
20	Ordinary Prepare Tea	1 cup	50.12		PKR	
21	Petrol	Per Liter	240.35		PKR	

Prices above mentioned in Table 2 belong to the period March 2022 in normal position and after the Russia-Ukraine conflict April to December 2022. Almost entire prices of every essential item increased with single or two times, even not a single item had the same price before & after the conflict. So it is indicated that war has a direct impact on developing countries regarding inflation unemployment & the energy crisis increase in hunger & many other problems & challenges. The prices of entire things remain unchanged & still changing with high prices.

**Table 3:**

Sensitivity Price Analysis in consumption from Q1 to Q4 Changing in percentage in each quarter corresponding Quarter with last year: Source Author Research

PERIOD	SPI - Q1 (lowest Consumption Quintile)	Percentage change over the previous quarter	Percentage Change over the corresponding quarter of the previous year
Q1: 1st quarter (Jan-March)	150.97	1.68	12.75
Q2: 2nd quarter (Apr-June)	159.43	5.61	19.52
Q3: 3rd quarter (July-Sep)	164.49	3.17	16.24
Q4: 4th quarter (Oct-Dec)	175.27	6.55	18.05

**Table 4:** Source Pakistan Bureau of Statistics

Calculated prices using sensitivity analysis from year to year

Consumption Quintiles	Q1	Q2	Q3	Q4	Combined
Year on Year change (%)	-0.18	-0.17	-0.19	-0.11	0.00
Year on Year change (%)	31.51	32.50	30.96	33.99	32.35

Here is a detail of the consumption of essential items in Pakistan yearly for 2022 throughout the year the CPI Consumer Price Index trend was negative according to the Pakistan Bureau of Statistics. So until now, there have been 8 months of the Russia-Ukraine war so the trend is still negative on how much it will affect if the war continues for a long time.

The formula used to support the results<sup>1</sup>,

The equation is as:

CPI Consumer Price Index = Old Price - Present Price (Increased in Item Price) × %

CPI item = op - pp (ip) ×%

Where ip\* is increased value in price

**Table 5:**

Essential Food Item Prices in Ethiopia for the year 2022 before Russia-Ukraine War

Serial Number	Item Description	Unit	Old Price	Price in Birr / Ethiopia Currency
	Wheat Flour Bag	1 kg	39	Birr
	Rice Basmati	1 kg	45	Birr
	Loaf of Bread Plain	500 g	30	Birr
	Beef Round	1 kg	35.37	Birr
	Goat	Head	5060	Birr
	Chicken Fillets	1 kg	300	Birr
	Milk Fresh	1 Litre	40	Birr
	Local Cheese	1 kg	200	Birr
	Egg	1 Dozen	80.72	Birr
	Cooking Oil	1 kg	150	Birr
	Fava Bean	1 kg	33	Birr
	Pulse	1 kg	30	Birr
	Potato	1 kg	30	Birr
	Tomato	1 kg	25	Birr
	Onion	1 kg	32	Birr
	Apple	1 kg	107	Birr
	Water	1.5 Litre	15	Birr
	coke	0.33 Litre	27.89	Birr
	Cappuccino	Regular	36.47	Birr
	Petrol Super	1 Litre	53.33	Birr

Source: WFP World Food Policy, ESS Ethiopian Statistical Services, CSA Central Statistical Agency Ethiopia. Tables 5 & 6 indicate the change in price from the March-December period for the year 2022 before & after the Russo-Ukraine conflict.

**Table 6:**

Essential Food Item Prices in Ethiopia for year 2022 after Russia-Ukraine War

Source: WFP World Food Policy, ESS Ethiopian Statistical Services, CSA Central Statistical Agency Ethiopia:



Serial Number	Item Description	Unit	Inflated Price	Price in Birr/Ethiopia Currency
1	Wheat Flour Bag	1 kg	60	Birr
2	Rice Basmati	1 kg	82	Birr
3	Loaf of Bread Plain	500 g	55	Birr
4	Beef Round	1 kg	45.78	Birr
5	Goat	Head	7200	Birr
6	Chicken Fillets	1 kg	550	Birr
7	Milk Fresh	1 Litre	85	Birr
8	Local Cheese	1 kg	350	Birr
9	Egg	1 Dozen	150.55	Birr
10	Cooking Oil	1 kg	250	Birr
11	Fava Bean	1 kg	70	Birr
12	Pulse	1 kg	65	Birr
13	Potato	1 kg	60	Birr
14	Tomato	1 kg	45	Birr
15	Onion	1 kg	48	Birr
16	Apple	1 kg	170	Birr
17	Water	1.5 Litre	18	Birr
18	coke	0.33 Litre	35.89	Birr
19	Cappuccino	Regular	50.47	Birr
20	Petrol Super	1 Litre	120	Birr

**Table 7:**

Sensitivity Price Analysis in consumption from Q1 to Q4 Changing in percentage in each quarter corresponding Quarter with last year: Source Author Research

PERIOD	SPI - Q1 (lowest Quintile)	Consumption	Percentage change over previous quarter	Percentage Change over corresponding quarter of previous year
Q1: 1st quarter (Jan-March)	89.05		0.89	8.75
Q2: 2nd quarter (Apr-June)	101.43		4.17	10.30
Q3: 3rd quarter (July-Sep)	120.54		5.02	12.54
Q4: 4th quarter (Oct-Dec)	143.38		7.25	14.38

Due to the increase in price & high inflation rate consumption level over every Quintile period is going less because of supply-chain demand disruption market volatile is still high CPI trend going upward & not stagnating so now the overall situation revealed that the Russo-Ukraine conflict directly impacts the developing country economies & also creating hurdles in the developing country economy.

**Table 8:** Source Ethiopia Statistical Services & Central Statistical Agency

Calculated prices using sensitivity analysis from year to year

Consumption Quintiles	Q1	Q2	Q3	Q4	Combined
Year on Year change (%)	-0.12	-0.11	-0.09	-0.10	0.00
Year on Year change (%)	21.40	20.6	23.89	23.99	23.00

### Increasing Price of Petrol & Benzene in Ethiopia

The formula used to support the results<sup>1</sup>,

The equation is as:

$$\text{CPI Consumer Price Index} = \text{Old Price} - \text{Present Price (Increased Item Price)} \times \%$$

$$\text{CPI item} = \text{op} - \text{pp (ip)} \times \%$$

Where ip\* is increased value in price

### Multiple Regression Analysis

In multiple regression analysis, we used 11 variables for Pakistan and 8 sample variables for Ethiopia for parametric results number of parameters we estimated are 2 old prices in Pakistan and Ethiopia and inflated prices respectively we used standard P-value  $P < 0.0001$  apart from this each variable have different variable, same like for t-test each variable have different value to generalize the results. Table 9 and Table 10 show the complete results regarding Pakistan.

**Table 9: Multiple Regression Analysis Results for Pakistan**

Parameter	Variable	Estimate	Standard error	95% CI (asymptotic)	t-test	P value	P value summary
$\beta_0$	Intercept	100.1	57.02	-28.88 to 229.1	1.756	0.1130	ns
$\beta_1$	Unit[1kg]	-121.9	57.28	-251.5 to 7.678	2.128	0.0622	ns
$\beta_2$	Unit[Each]	-110.9	58.58	-243.4 to 21.65	1.893	0.0910	ns
$\beta_3$	Unit[1 kg]	50.52	71.86	-112.0 to 213.1	0.7031	0.4998	ns
$\beta_4$	Unit[1 Liter]	-102.4	75.00	-272.1 to 67.21	1.366	0.2051	ns
$\beta_5$	Unit[(Dahi)]	-108.5	74.88	-277.9 to 60.92	1.449	0.1814	ns
$\beta_6$	Unit[1 Dozen]	-183.1	74.40	-351.4 to -14.80	2.461	0.0361	*
$\beta_7$	Unit[Each 2.5KG]	-92.07	71.60	-254.0 to 69.90	1.286	0.2306	ns
$\beta_8$	Unit[Each 190 g]	-164.4	73.67	-331.0 to 2.256	2.232	0.0526	ns
$\beta_9$	Unit[1 cup]	-99.68	75.84	-271.2 to 71.89	1.314	0.2213	ns
$\beta_{10}$	Unit[Per Liter]	-135.3	74.64	-304.2 to 33.51	1.813	0.1032	ns
$\beta_{11}$	Inflated Price	0.7721	0.02037	0.7260 to 0.8182	37.90	<0.0001	****

**Table 10: Multicollinearity and Results Variability**

Multicollinearity	Variable	VIF	R2 with other variables
$\beta_0$	Intercept		
$\beta_1$	Unit[1kg]	6.605	0.8486
$\beta_2$	Unit[Each]	3.454	0.7105
$\beta_3$	Unit[1 kg]	1.925	0.4805
$\beta_4$	Unit[1 Liter]	2.097	0.5231
$\beta_5$	Unit[(Dahi)]	2.090	0.5216
$\beta_6$	Unit[1 Dozen]	2.064	0.5155
$\beta_7$	Unit[Each 2.5KG]	1.911	0.4768
$\beta_8$	Unit[Each 190 g]	2.023	0.5057
$\beta_9$	Unit[1 cup]	2.145	0.5337
$\beta_{10}$	Unit[Per Liter]	2.077	0.5185
$\beta_{11}$	Inflated Price	1.790	0.4413

**Fig 5: Parametric covariance multiple regression analysis graph for Pakistan sensitivity price analysis**

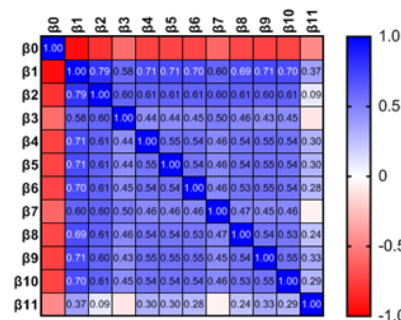


Fig 9: Source Author Research

**Table 11: Multiple Regression Analysis Results for Ethiopia**

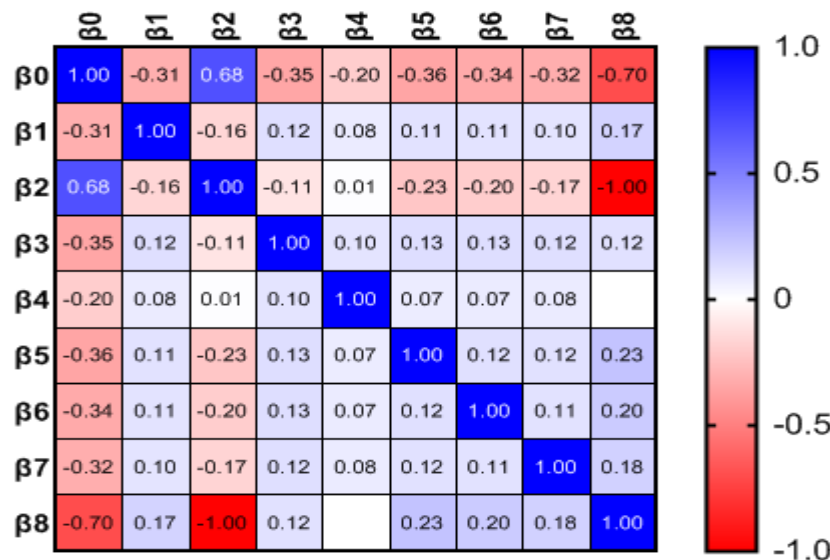
Parameter Estimates	Variable	Estimate	Standard error	95% CI (asymptotic)	t-test	P value	P value summary
$\beta_0$	Intercept	2.720	2.822	-3.491 to 8.931	0.9639	0.3558	ns
$\beta_1$	Unit[500 g]	-3.155	7.361	-19.36 to 13.05	0.4287	0.6764	ns
$\beta_2$	Unit[Head]	1073	93.51	867.2 to 1279	11.47	<0.0001	****
$\beta_3$	Unit[1 Litre]	-12.78	5.359	-24.57 to -0.9803	2.384	0.0362	*
$\beta_4$	Unit[1 Dozen]	-5.310	7.253	-21.27 to 10.65	0.7320	0.4795	ns
$\beta_5$	Unit[1.5 Litre]	2.319	7.459	-14.10 to 18.74	0.3109	0.7617	ns
$\beta_6$	Unit[0.33 Litre]	5.310	7.408	-10.99 to 21.61	0.7168	0.4885	ns
$\beta_7$	Unit[Regular]	5.821	7.371	-10.40 to 22.05	0.7898	0.4464	ns
$\beta_8$	Inflated Price	0.5534	0.01322	0.5243 to 0.5825	41.85	<0.0001	****

**Table 12: Multicollinearity and Results Variability**

Multicollinearity	Variable	VIF	R2 with other variables
$\beta_0$	Intercept		
$\beta_1$	Unit[1kg]	1.365	0.05643

$\beta_2$	Unit[Each]	4.352	0.9942
$\beta_3$	Unit[1 kg]	3.432	0.06051
$\beta_4$	Unit[1 Liter]	3.0197	0.02834
$\beta_5$	Unit[(Head)]	0.981	0.08126
$\beta_6$	Unit[1 Dozen]	1.204	0.06841
$\beta_7$	Unit[Each 2.5KG]	0.15	0.05910

Fig 6: Parametric co-variance multiple regression analysis for Ethiopia SPI sensitivity price indicator analysis, Source Author Research



Source: Author Research

### Results and Discussions

According to Impacts of Economic trends in 6 classes of Pakistan Urban & Rural areas Rural area impact is higher than urban area In Pakistan Rural Rich suffered with -16% & urban rich suffered with -18% Rural middle suffered -4.3% and urban middle suffered with -18% Rural poor suffered with -2.8% & Urban poor suffered with -7.9% overall the Urban Rich & Middle both class suffered more than other class & rural rich suffered more.

Ethiopia's Urban Rich suffered more than the rural rich & other classes Negatively -29.9% whereas their counterparts suffered -20.1%, Urban Middle suffered -18% its counterpart suffered less-15.1% negatively Urban poor suffered -4.2% counterpart suffered more with -16%, In overall case scenario Urban rich & Rural Poor suffered more than other class.

According to the above Fig 4 scenario, the GDP Loss & unemployment rate of Ethiopia decreased by -7.9% & -20.2% with a negative trend & in Pakistan GDP loss & unemployment with a negative trend is -3.4% & -37% respectively the situation is very tragic & alarming for the countries & for their administration & public.

From the Price sensitivity analysis in Table 1 and Table 2, it is indicated that every item's price compared to the previous year is changing rapidly with different ratios, Rice Basmati Broken (3.79%), Onions (4.50%), Chicken (4.21%), Bananas (4.04%), Rice Irri-6/9 (3.63%), Garlic (4.16%), Bread (2.45%), Cooked Beef (3.26%), Tea Prepared (2.22%) and Cooked Daal(Lentil) (1.12%), increase in Wheat Flour (8.98%), Tomatoes (9.87%), Potatoes (5.73%), Sugar (2.94%), Vegetable Ghee 1 Kg (2.50%), Vegetable Ghee 2.5 Kg (0.41%), Pulse Masoor (0.78%), Eggs (0.09%), Cooking Oil 5 Litre (0.57%), Pulse Gram (0.65%) Onions (20.07%), Chicken (108.93%), Tea Lipton (4.41%), Eggs (66.23%) petrol (100%). The entire year from the period March 2022-Dec 2022 depicts that the increase in prices is almost 50% some item prices increased by 100% also so the overall trend in the increase in prices is continued it's not going to until some measures should be taken the government on high levels.

In the above both Table 5 and Table 6 essential item prices are mentioned from Jan 2022 to until now the CPI data collected from the Central Statistical Agency CSA & ESS Ethiopia Statistical Services & also from WFP World Food Policy because some prices are available on different platforms some are at different so while gathering the prices information we gathered these reliable

state sources & international source. The prices mentioned in the tables are from before the Russia-Ukraine conflict & after the Russia-Ukraine conflict in table 5 prices of all essential 20 items are less than comparatively from Table 6, In table 6 the CPI prices for entire essential items food & non-food are very high some increase with double some with a single time. Overall all essential item prices are still going up inflation rate is still increasing. Sometimes, it is also revealed that black market prices are higher than the prices shown internationally, which is also an alarming situation for the country's progress and development. Overall wheat price increased by (0.21%) Rice (0.37%), bread plain (0.25%), beef (0.1%), Goat and chicken Fillets (21.4%. & 2.50%) respectively, milk by (0.45%), Local cheese [ The supported statistical results obtained from Pakistan Bureau of Statistics and CSA Central Statistics Agency Ethiopia, results are changed with increase or decrease in inflation. In Pakistan, inflationary product data is uploaded every week in Ethiopia it's not available. The data we collected of Ethiopia from different world organizations like WFP World Food Policy Organization & Numbeo, ESS CSA & World Bank, etc.]with (1.50%), Egg (0.70%), Cooking Oil (1%), Fava bean (0.37%), Pulse (0.35%), Potato (0.30%), Tomato (0.20%), Onion (0.16%), Apple (0.63%), Water (0.03%), Coke with (0.08%) & Cappuccino coffee with (0.14%) and Super petrol increase with (0.66%) within the period before & after Russia-Ukraine conflict the SPI sensitivity price indicator shows that inflation & commodity prices are still going up even there is no market equilibrium & still the market is at the high volatile level.

The present research analysis of the Russo-Ukraine conflict impact indicates the war between both countries severely affected the developing country's economy also disturbed the supply chain for goods for the entire globe. War has negative impacts on different sectors, Agriculture, Service & Industrial sector due to different reasons & aspects. Import & export bills increased at a high level because of a shortage of goods within the countries that depend on Russia & Ukraine. Conflict also hurts climate change & environmental pollution which will further increase the problems of the entire world, Like recently Pakistan had a flood disaster because of climate change & the climate changed because of developed countries' pollution but suffered by Pakistan a developing country (Ali, et, al, 2022) so the current war will also directly & indirectly impact the entire world.

The conflict between Russo and Ukraine will also increase the world's challenges regarding environmental change because of the high use of ammunition weapons.

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The war also affects the health system & creates new challenges for the world and brings new diseases because of environmental pollution, in developing countries, the health system is very poor in Asian & African countries, so this would be another big challenge for developing countries to tackle the new disease weather is communicable or no communicable.

The inflation rate and unemployment rate are already going at a high level due to COVID-19 but now it's going upward because of conflict, The Industrial sector is badly affected & they do not have ample resources to pay the salaries of their employees so they are gonna shut down the industries. Developing countries like Pakistan & Ethiopia which are already suffering from an energy crisis with no electricity, petrol prices are high. This is also a big challenge, how to handle these tasks it's very tricky but in the overall scenario Russo-Ukraine war has maximum negative impacts.

### **Recommendation and Policy Option**

**Policy Formulation and Adjustment:** The findings of this research will have direct implications for policymakers in developing countries, offering insights into the necessary adjustments in economic policies to navigate the challenges posed by the Russia-Ukraine conflict. Recommendations may include trade diversification, enhanced diplomatic efforts, and targeted interventions to safeguard agricultural, industrial, and food security interests.

**International Cooperation:** The study underscores the need for enhanced international cooperation to mitigate the negative consequences of geopolitical conflicts on developing economies. Insights derived from this research can guide diplomatic efforts to foster collaboration, humanitarian aid, and strategic partnerships, promoting stability and resilience in the face of global disruptions.

**Sector-Specific Strategies:** The research provides sector-specific insights that can inform tailored strategies for mitigating economic impacts. For agriculture, recommendations may include sustainable farming practices and diversified crops. In the industrial sector, strategies for supply chain

resilience and technology adoption may be proposed. Additionally, the study may suggest measures to bolster food security, such as investment in local production and storage facilities.

**Investment Opportunities:** Identifying areas of potential growth and investment amidst the challenges, the research may highlight opportunities for developing countries to leverage emerging trends and capitalize on unmet needs in the wake of the conflict. Investors and businesses can use these insights to make informed decisions, contributing to economic recovery and development.

**Humanitarian Considerations:** The study sheds light on the humanitarian aspects of the economic impacts, emphasizing the importance of addressing potential food shortages and economic disparities. Implications may include the need for targeted aid, social safety nets, and community resilience programs to alleviate the human cost of the conflict on vulnerable populations.

**Long-Term Resilience Building:** Beyond immediate policy adjustments, the research implies the necessity for developing countries to invest in long-term resilience-building measures. This may involve diversification of economic activities, strengthening institutions, and fostering innovation to ensure sustained development despite ongoing geopolitical uncertainties.

Incorporating specific policy suggestions for Ethiopia would indeed enhance the practicality and actionability of the recommendations. For instance, proposing strategies such as diversifying import sources or investing in local agricultural technology would be valuable additions.

In conclusion, the implications drawn from this research extend beyond theoretical insights, offering practical guidance for policymakers, international stakeholders, and businesses to navigate the complex economic landscape shaped by the Russia-Ukraine conflict in the context of developing countries.

### **Conclusion**

In conclusion, the economic impact of the Russia-Ukraine conflict on developing countries is substantial and multifaceted, requiring a comprehensive and coordinated response. By implementing strategic interventions and investing in sustainable agricultural practices, developing countries can mitigate the devastating effects of the conflict and build resilience in their economies, ultimately ensuring long-term food security and economic stability.

Furthermore, the conflict has highlighted the interconnectedness of the global food system and the need for systemic resilience. It is essential for developing countries to revisit their policies and invest in new agricultural infrastructure to adapt to changing global dynamics. The impact of the conflict on food security and the economy underscores the urgency of addressing these challenges and building capacity to withstand future crises.

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### **Ethical Consideration**

Not Applicable.

### **Conflict of Interest Statement**

None.

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### **Author Contributions**

Principal investigator Muhammad Ali started this research project and participated in the analysis, reviewing, and writing, and the rest of the authors reviewed, wrote, and edited the manuscript.

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