

The Rising Impacts of the COVID-19 Pandemic and Ukraine Conflict: Inflation and Energy Crisis

Zile Wang^{1, †}, Yi Wei^{2, *, †}

¹Hangzhou Foreign Language School, Hangzhou, China

²School of Business, University of Wisconsin-Eau Claire, Eau Claire, the United States

*Corresponding author: weiy9835@uwec.edu

[†]These authors contributed equally.

Abstract. This paper examines the inflation and energy crises in various countries during the epidemic and the Russia-Ukraine conflict. This paper focuses on the fluctuations of inflation and energy CPI indices in the European market, the US market, and the Chinese market during the epidemic and under the influence of the Russia-Ukraine conflict. Through research and studies, it found that the Russian-Ukrainian conflict was the direct cause of high inflation in the European economy and the epidemic had less impact on the European market. However, the situation in the US market is very different. The US market was mainly affected by the epidemic and was less affected by the Russian-Ukrainian conflict. Finally, the epidemic had a relatively large impact on the inflation rate in China and the Russian-Ukrainian conflict had a minor impact on the Chinese market. Ukraine conflict may contribute to the dangerous divergence between advanced and emerging market and developing economies. More broadly, it risks fragmenting the global economy into geopolitical blocs with distinct technology standards, cross-border payment systems, and reserve currencies.

Keywords: COVID-19 pandemic; Ukraine conflict; Inflation; Energy crisis.

1. Introduction

Nearly three years after the outbreak of the new crown epidemic and almost a year after the Russian-Ukrainian conflict, the economies and energy supplies of various countries have been affected to varying degrees, with a significant impact on people's lives. According to the US Wall Street Journal website on 20 November 2022, data shows that US consumers and businesses have scaled back spending plans for gifts, charitable donations, and holiday events [1]. With the outbreak of the new crown epidemic in the US, the US market has seen a gradual increase in inflation from a low in the 1st quarter of 2020, all the way up to a high of 9.1% in June 2022 in the end, with rising prices leading to a higher cost of living in the US. A survey of households conducted by the US Census Bureau in early October found that 41% of US households said they had difficulty paying for necessary household expenses, compared to 29% a year ago [2].

Bruno Le Maire, the French economy minister, said in an interview on September 27: "You will not see me wearing a tie anymore, but will be wearing a crew neck jumper." He also posted a picture of himself working in his office in a turtleneck jumper on his official social media account [3]. In a video posted on 3 October, French President Emmanuel Macron also ditched his "shirt under a suit" habit and wore a turtleneck jumper in the same color as his suit [3]. In the European market, the CPI increases gradually from 2021, with inflation exceeding 10% by the end of 2022, and energy shortages, leading to high costs of living for the European population. Until the end of November 2022, China has been implementing a strict epidemic control policy, which has led to some companies having difficulties in their operations and having to lay off staff or close, most people have reduced their consumption, the economy has gradually declined and inflation has gradually fallen.

This paper looks at the impact of the New Crown epidemic and the Russia-Ukraine conflict on the economies of the three main markets, analyzing the causes of inflation and the CPI, the government's response policies, and whether an energy crisis will arise through the impact on energy prices.

2. The U.S. Market

The U.S. inflation index maintained relatively stable fluctuations at the end of the year when the epidemic began. In February 2020, when the epidemic was first introduced to the United States, the inflation rate was affected by a sharp drop. After reaching the trough of the inflation rate in May, it gradually rises steadily. During the same period, the energy CPI index also declined in February 2020, and continued to rise after May. As shown in Figure 1, fuel oil and other fuels in the United States maintained a downward trend between February and May, and generally maintained an upward trend after May until May 2022 when they encountered a downward trend again.

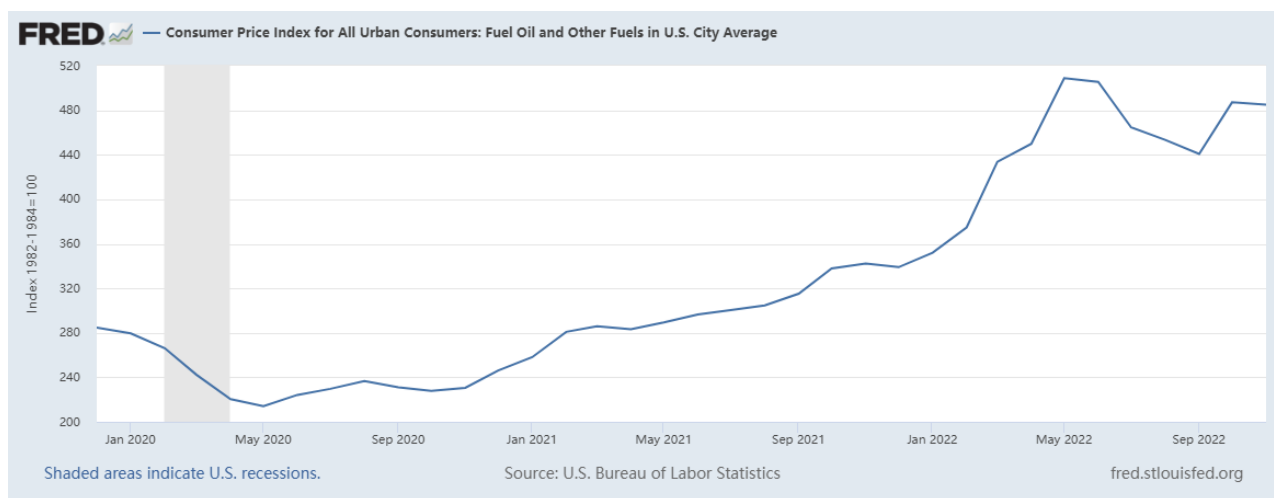


Fig 1. Fuel CPI in the United States from December 2019 to November 2022 [4]

The American people did not pay attention to how contagious the new crown was when they first encountered the epidemic. Most people choose to stay at home until the symptoms disappear, and then they can move freely. In the Figure 1, it can be clearly seen that the period from February to May is the peak period of the outbreak of the new crown. The employees of most companies are quarantined at home or the behavior of layoffs in some companies has caused some people to reduce consumption. The economic form of oversupply leads to economic recession, and once the total demand for goods falls, it will pull down the price level. After May 2020, the American people began to get used to the existence of the new crown virus, even if it was still in the outbreak period, people no longer panicked like before. And with school holidays in May, the spread of the virus slowed down. People began to return to normal life, and the economy gradually picked up. Therefore, the impact of COVID-19 on both US inflation and energy is relatively small.

Affected by the conflict between Russia and Ukraine, the international crude oil market has been greatly impacted, and the price of global natural gas has risen greatly. Typically, such economic conditions lead to severe inflation. But the U.S. imports fewer goods from Russia, and the economic turmoil isn't as bad as it might seem. As shown in the Figure 2, since the beginning of the Russia-Ukraine conflict, the energy CPI index first rose and then fell. U.S. energy costs are up 13.1% year-over-year so far, the slowest month in years. This also shows that the impact of the Russia-Ukraine conflict on the energy crisis in the United States is becoming smaller and smaller.



Fig 2. US energy inflation from January 2022 to November 2022 [5]

In response to Russia's war of aggression, the United States and other Western countries have adopted severe economic sanctions as countermeasures. This also led to a situation where the national crude oil price rose to more than 120 US dollars per barrel, and the oil price in the United States also rose accordingly. But the U.S. has recalled most of its foreign oil reserves for the U.S. market because of higher gasoline prices. After the contradiction between energy supply and demand has eased, the rise in energy prices has also been effectively controlled. In addition, the United States, as the world's second largest energy-consuming country, mainly consumes oil, natural gas, and coal, but the United States does not completely rely on imports. The oil reserves in the United States alone are already a large number. In terms of imported energy, most of the United States imports oil from Canada, and imports natural gas and coal from neighboring countries. The remaining energy dependence on foreign countries has been hardly affected by the war in Ukraine. Overall, the Ukraine conflict has had little impact on US inflation and the energy crisis. Conversely, the conflict between Russia and Ukraine has moderated uncontrollable inflation in the United States. It was the lowest reading for gasoline prices since March 2021 [6].

In terms of timing, COVID-19 has had an indirect impact on inflation. COVID-19 has caused a short-term economic depression and suppressed household consumption. But as time goes by, the impact of COVID-19 on the economy is becoming smaller and smaller. Until now, the inflation rate will still be affected by many factors, but COVID-19 is no longer the main influence. In terms of energy, related to the inflation rate CPI index, energy inventory pressure also returned to normal levels after a short-term rise and did not affect the long-term energy supply status of the United States. All in all, COVID-19 has only led to some short-term negative factors, such as unemployment waves and economic factors such as increased medical expenses. The impact of COVID-19 on the United States has been weakening.

The time of the Ukrainian conflict is relatively recent compared to COVID-19, and the impact still exists. The conflict in Ukraine and the United States have brought a certain degree of inflation and energy crisis. The economic sanctions imposed by the United States and its allies on Russia have eased the high inflation rate in the United States in recent years. In terms of energy, the United States is hardly affected. Only 7.9% of the natural gas imported by the United States comes from Russia. High reliance on imported energy from neighboring countries and the considerable energy reserves of its own owners make the United States suffer the least impact in the Ukrainian conflict.

3. EU Market

The European economy has suffered multiple shocks in the context of the epidemic and the conflict in Ukraine. The European energy index was not affected too much during the outbreak of COVID-

19, but instead fluctuated within a very normal range. When COVID-19 first entered European countries, the consumption patterns of residents have undergone tremendous changes. The European inflation rate maintained a downward trend, and the CPI index did not rise until December 2020. As shown in the Figure 3, the price index of all goods in 19 European countries began to decline from the growth rate in December 2019, until the price index in August 2020 showed negative growth, and then resumed rising after December 2020.

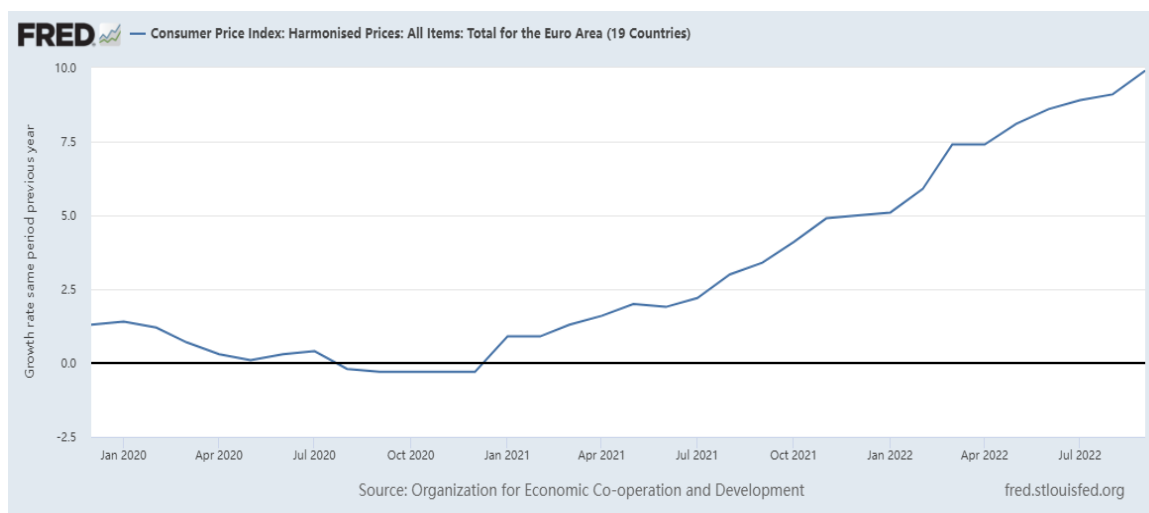


Fig 3. All consumer price inflation in the EU from December 2019 to November 2022 [5]

The impact of COVID-19 on Europe is continuous, and many European countries have different regulations on travel restrictions. Like the United States, the spending power of European residents is limited to a certain extent. At the beginning of the epidemic, most European countries chose to stop social operations, which was the phenomenon of closing cities or countries. The sudden emergence of COVID-19 has caused the already sluggish European economy to show a downward trend. Many enterprises have stopped working and production, and the service industry, manufacturing industry, and aviation industry have been greatly affected [7]. Many employees have lost their jobs, which has led to an economic recession, which will directly lower the price level. Especially between August 2020 and December 2020, the CPI index is negative, which also means that less money is circulating in the market, and the purchasing power of European residents is very low during this period. After January 2021, the CPI index has rebounded, various European institutions have successively opened control measures against COVID-19, and European governments have allocated funds to help companies restore employment. Therefore, the impact of COVID-19 on the European economy was severe at the beginning, but the impact of the epidemic has gradually weakened.

The biggest impact of the Ukraine war is the European energy market. Russia is one of the world's largest exporters of natural gas and wheat, and the country with the largest dependence on natural gas imports in Europe is Russia. The direct impact of the war in Ukraine is the skyrocketing price of food and energy in Europe. As shown in the Figure 3, after the Ukrainian conflict in May 2022, Europe has maintained a high inflation that has not been seen in recent years, and the soaring energy prices have also increased the pressure on European family life. Due to the suspension of bilateral trade due to the economic sanctions imposed on Russia by Europe, energy prices remain high, and some high-energy-consuming industries cannot continue to operate and shut down. High-energy-consuming enterprises have saved expenses through layoffs and shutdowns, and the impact on European families who make a living on this is huge. Europe is the direct loser in the Ukrainian conflict, and it is also the most affected by the energy crisis.

In terms of time, the impact of COVID-19 on European countries lasted for a long time, but the major impact was maintained within the first year. Europe's own economy had some problems before the emergence of COVID-19, but COVID-19 has made these problems more severe. Overall,

COVID-19 has increased inflation uncertainty. In the data, the weight of food and energy is constantly rising, and the weight of transportation is constantly falling. The biggest problem of the European economy is that the weight of the economy is beginning to become unbalanced.

Compared with COVID-19, the conflict in Ukraine is the direct cause of high inflation in the European economy. Since the beginning of the epidemic, global energy and food have been stimulating inflation. The conflict in Ukraine has led to the collapse of trade relations between Europe and Russia, which has led to a more serious energy crisis and high inflation in food prices. Since nearly 40% of European natural gas supply comes from Russia, there is no alternative country in the global market that is willing to supply such a huge demand because the cost is not cheap. Europe is at the center of an energy crisis, and global trade restrictions from the war could have long-term effects.

4. China Market

Inflation and CPI gradually rise to a high point at the beginning of the epidemic starting at the end of 2019 and then gradually decrease, gradually recovering and maintaining an increase of around 2% after the end of 2021 (see Figure 4 and Figure 5). As Figure 6 shown, The Core-CPI maintains a downward trend over the same period until it gradually rises after the end of 2021 and stays between 100.5 and 101.5 (see Figure 4). Energy prices over the same period remain hovering in a certain range until the end of 2021, when oil prices start to rise gradually and remain stable at high levels (see Figure 7). It can be analyzed that the relatively strict epidemic control policy adopted by China at the beginning of COVID-19 led to a lack of smooth logistics and transportation, which affected the supply of food and triggered a rise in food prices for the masses, leading to a short-term rise in CPI prices and causing an increase in Inflation rate.



Fig 4. Inflation rate in China from 2018 to 2022 [5]

Due to the highly contagious nature of the virus, people have been quarantined at home, businesses that do not involve people's lives have been temporarily closed down or are unable to operate, and some businesses have had to lay off staff due to operational difficulties, as well as having to be quarantined at home due to the virus, thus not getting paid, and most people have reduced their consumption, resulting in supply exceeding consumption, the economy going down, and the CPI falling all the way down. Inflation rate declines until the end of 2021. In 2022, the virus becomes less virulent, the control measures are gradually relaxed, the economy gradually rises, and the CPI and Inflation rate gradually recover, but are still subject to fluctuations due to the control of the epidemic [8]. Therefore, COVID-19 has a relatively large impact on China's Inflation rate.

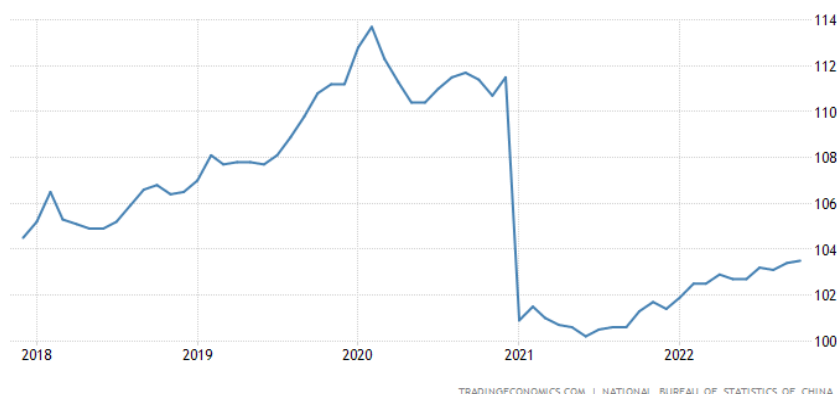


Fig 5. CPI in China from 2018 to 2022 [5]



Fig 6. Core-CPI in China from 2018 to 2022 [5]



Fig 7. Oil price in China from 2018 to 2022 [5]

Due to the high proportion of Chinese crude oil extraction, China's oil prices are more influenced by crude oil prices in the international market. China's oil price adjustment strategy, based on the international market crude oil prices, takes 10 working days as a cycle to adjust the price of refined oil products. COVID-19 therefore affects the world economy, leading to a fall in international crude oil prices and a fall in oil prices in China, and a gradual recovery in the world economy and a gradual recovery in oil prices [9]. From the beginning of 2022, Ukraine Conflict affects crude oil prices in the international market, and international crude oil prices climb further, and oil prices in China also rise with it. Ukraine Conflict leads to a phase of rising inflation in China through the rise of energy and cereal prices, but the impact on the overall Chinese economy is relatively small, so the impact on China's CPI and Inflation rates the impact on China's CPI and Inflation rate is limited.

Coal accounts for 60% of China's energy mix, crude oil 17%, natural gas 7% and nuclear power 5%. Although China relies on imports for 70% of its oil and 45% of its natural gas, coal is China's most important energy resource and the country is self-sufficient in coal, so Chinese fossil energy can ensure China's economic stability and energy security [10]. And Russia is under Western sanctions, forcing it to strengthen its cooperation with the East and find new energy markets, which will further enhance China's energy security. And China is vigorously promoting the high-quality development of renewable energy and accelerating the implementation of renewable energy substitution, the rapid increase of clean energy will also effectively hedge and mitigate the external impact. Therefore, the impact of the Ukraine Conflict on China's energy security is relatively small.

5. Conclusion

The main factor contributing to the high economic inflation in Europe because of the Russia-Ukraine conflict is the fact that Russia is the main importer of natural gas to Europe. As a result of the economic sanctions imposed on Russia by Europe, Russia has stopped exporting natural gas to Europe, and the European market is in short supply of energy, with demand outstripping supply, prices remaining at extremely high levels and inflation reaching its highest rate in recent years. On the other hand, although the impact of the epidemic on the European market was not as great as that of the Russian-Ukrainian conflict, it was more lasting. The European market experienced a recession during the epidemic. This change was mainly due to the low consumer appetite during the epidemic and the fact that companies could not make ends meet and had to reduce production costs by laying off some employees. In contrast, the impact of COVID-19 on the US market was relatively short-lived. Since the peak of the COVID-19 outbreak, the US economy has gradually rebounded. At the same time, energy prices in the US did not increase very much with the deterioration of Russian-Ukrainian relations, the main reason for this being that the US is relatively less dependent on Russian gas imports. Finally, the Chinese market was mainly affected by the epidemic. The Chinese government took a series of strict control measures during the epidemic period such as quarantine, stopping trade flows and sealing off cities. While this has reduced the rate of infection, it has also caused a downward spiral in the Chinese economy.

References

- [1] High Inflation Keeps Americans from Spending Christmas Money.
http://www.cankaoxiaoxi.com/finance/20221122/2496296_2.shtml. Last accessed 2023/1/5.
- [2] Commerce Data Hub. <https://data.commerce.gov/>. Last accessed 2023/1/5.
- [3] French Economy Minister: EU Inflation is Temporary and will Ease in 2023.
<https://news.cctv.com/2022/03/28/ARTIH8DO5F9LdS4xIwuVXWAt220328.shtml>. Last accessed 2023/1/5.
- [4] Federal Reserve Economic Data. <https://fred.stlouisfed.org/>. Last accessed 2023/1/5.
- [5] Trading Economics. <https://tradingeconomics.com/>. Last accessed 2023/1/5.
- [6] Ronaghi, M., & Scorsone, E. (2022). The negative impact of the Ukraine War on the US economy. SSRN Electronic Journal.
- [7] Inflation Persistence in Europe: The Effects of the Covid-19 Pandemic and of the Russia-Ukraine War.
<https://www.cesifo.org/en/publications/2022/working-paper/inflation-persistence-europe-effects-covid-19-pandemic-and-russia>. Last accessed 2023/1/5.
- [8] World Bank Open Data. <https://data.worldbank.org/>. Last accessed 2023/1/5.
- [9] Asian Energy Markets Following the Russian Invasion of Ukraine.
<https://www.oxfordenergy.org/publications/asian-energy-markets-following-the-russian-invasion-of-ukraine/>. Last accessed 2023/1/5.
- [10] Oil Price. <https://oilprice.com/>. Last accessed 2023/1/5.