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Research on the Inflation and Unemployment under COVID-19 and Ukraine Conflict

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Abstract: The global economy has been under a lot of stress and volatility since the COVID-19 virus broke out in 2020. The Russian-Ukrainian war that broke out in early 2022 not only escalated regional tensions but also brought more instability factors to the global economic development in the post-epidemic era. A symbiotic system of various nations has been created by the growth of economic globalization, and because the industrial, supply, capital, and service chains are all intertwined and have a strong linkage effect, the financial effects of emergencies like epidemics and wars will be greater. This article examines the development of the world economy under the dual impact of the epidemic and local wars through the analysis of major economic indicators of the United States, the European Union, and China from 2019 to 2023, including GDP, unemployment, and inflation. In addition, we will systematically analyze the monetary policies adopted by the three countries in response to economic shocks, evaluate their effects, and predict future economic development trends.

Keywords: inflation, unemployment, global economy

1. Introduction

The COVID-19 epidemic, which swept the globe at the start of 2020, not only resulted in a significant number of deaths but also made the already unstable global economy considerably more so [1]. Global economic and social activity is constrained, in a condition of stagnation, semi-stagnation, or slowness, and both the supply and demand sides are contracting. Global panic and risk aversion are rampant, cross-border commerce and investment are struggling, commodity prices, including oil, are fluctuating, the financial markets have responded particularly aggressively, and the possibility of global economic instability has increased. Countries are thinking about actions to reduce the effects of the epidemic and the economic downturn. Interest rates were lowered by the central banks of the United States, Canada, and the United Kingdom; the euro zone finance ministers said they would use every tool at their disposal to stimulate the euro zone economy; and the International Monetary Fund and the World Bank both promised loans or other forms of financial assistance. However, the policies of countries around the world have not stopped the world economy from being affected by the epidemic, and even after the epidemic has eased, it has continued to decline. The United Nations' "World Economic Situation and Prospects 2022" study states that following 5.5% economic growth in 2021, just 4.0% growth is anticipated for 2022, and growth could slow to 3.5% in 2023 [2]. A considerable slowdown in global growth is also predicted in the Global Economic Prospects report of the World Bank [3]. Due to the pandemic, persistent labor market difficulties, unresolved supply chain problems, and heightened inflationary pressures, the global economic recovery is currently experiencing major headwinds.

The aftermath of the pandemic may continue for a long time, but world economic growth has come under a new threat. Since Russia's invasion of Ukraine in March 2022, there have been sharp increases in global geopolitical risks. The GPR index, which was created by US Federal Reserve economists Dario Caldara and Matteo Iacoviello, spiked after Russia's invasion of Ukraine in May 2022, reaching one of its highest values in decades, comparable to similar peaks during the Gulf and Iraq wars [4, 5]. The negative effects of the war have worked through lower consumer confidence, higher commodity prices, and tighter financial conditions. Investors, market participants, and decision-makers anticipate that the war will have a negative impact on the global economy, increase inflation, dramatically increase the risk of uncertainty, and have serious negative outcomes. Economic statistics predict that the war's effects on the international economy will result in a 1.5% decline in worldwide GDP and a 1.3 percentage point increase in global inflation. In the analysis of Chinese economists from a third-party perspective, the huge impact of the Russia-Ukraine conflict on Europe's energy security may also stimulate countries around the world to strengthen their awareness of energy security, build a modern energy system characterized by improving the ability to balance in situ and bring about the adaptive adjustment of international food production and trade patterns [6].

2. Global Economy

2.1. The US

Real GDP numbers better capture the evolution of real productivity in the United States over time because they reflect the actual worth of all output produced over time while maintaining the same price or currency value. As can be seen from Figure 1, the real GDP of the United States decreased by 10% in the first and second quarters of 2020, when the COVID-19 epidemic was particularly severe. It was not until late 2020 that it gradually returned to pre-pandemic levels. However, in the first and second quarters of 2022, when the Russian-Ukrainian war broke out, real GDP in the United States fell only slightly and quickly recovered. It can be concluded that the impact of the epidemic on the real GDP of the United States is greater, while the Russian-Ukrainian war has also had a certain impact on the overall US economy, but the impact is limited.

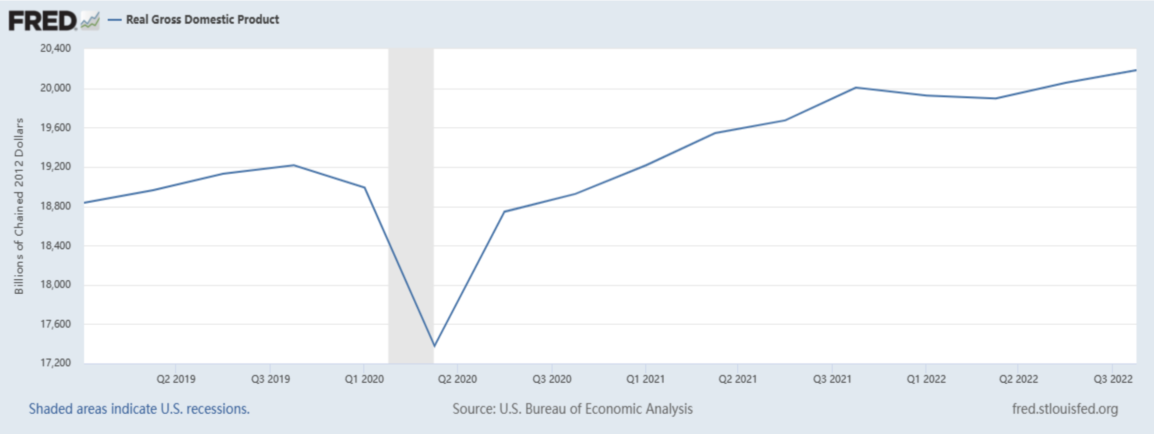

Figure 1: Real GDP of the US from 2019 to 2022 [7].

As can be seen from Figure 2, once the COVID-19 epidemic begins in 2020, US interest rates fell below the baseline line, and continued until mid-2021 before gradually fluctuating back above the zero percent. It can be seen that the COVID-19 epidemic has dealt a serious blow to the overall economic situation in the United States, and the US government has actively responded to the severe economic situation, trying to promote the full recovery of the economy after the epidemic through the strategy of reducing theory and promoting consumption. At the outbreak of the Russian-Ukrainian war, US interest rates experienced the first rate hike in the first quarter of 2022, rising from around 0.5% to a range of 1.0%-1.5%, and in July 2022, the second rate hike was carried out after a slight decline in interest rates, and interest rates continued to rise to the range of 1.5%-1.75%. By constantly raising interest rates, the US government hopes to curb the inflation brought about by the war.

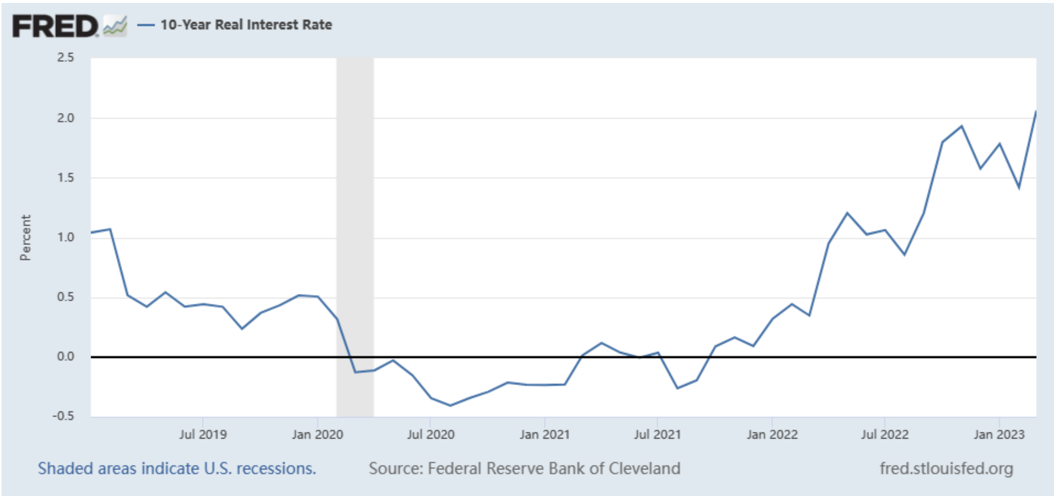

Figure 2: The 10-year real interest rate of the US from 2019 to 2022 [7].

The unemployment rate in the United States experienced a sharp increase in early 2020 after the outbreak of the COVID-19 epidemic, soaring from below 5% to nearly 15% (see Figure 3), which shows that the impact of the COVID-19 epidemic has caused widespread unemployment in society. Since then, the unemployment rate has fallen rapidly below 7.5% at the end of 2020, and by 2023 it has fluctuated to a level comparable to the pre-pandemic unemployment level. Even during the outbreak of the Russian-Ukrainian war in 2022, it has not experienced significant changes, which shows that the impact of the war is small.

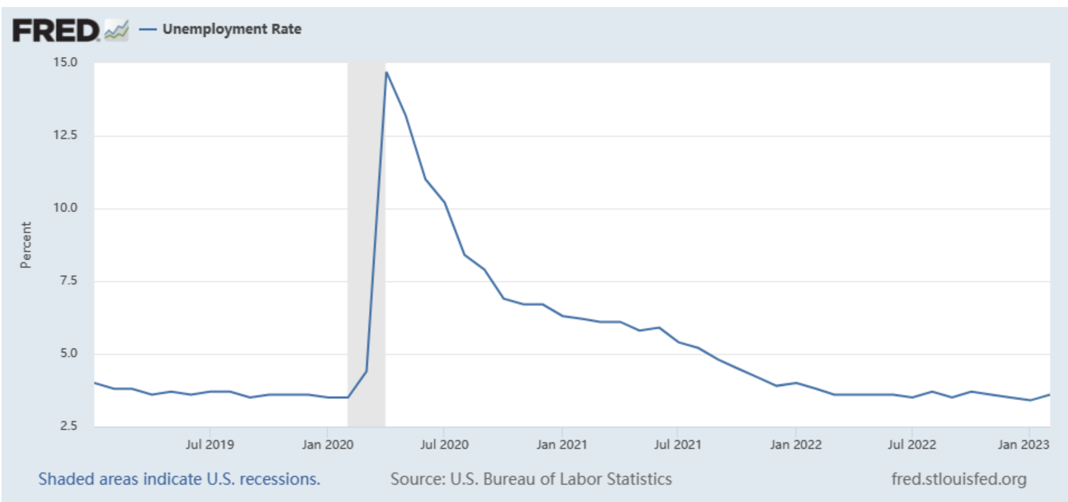

Figure 3: Unemployment rate of the US from 2019 to 2022 [7].

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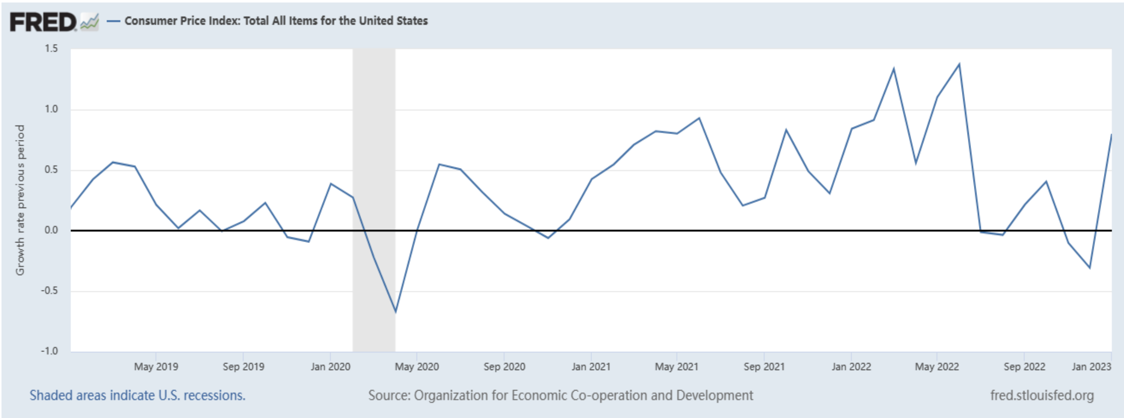

Figure 4: Consumer Price Index of the US from 2019 to 2022 [7].

In 2020, the overall CPI index in the United States experienced a sharp decline, while the core-CPI decline was more moderate, indicating that the impact of the COVID-19 on the activity of the US economy occurred more in the food and energy sectors. After the outbreak of the Russian-Ukrainian war in 2022, both the overall CPI and the core-CPI have experienced rapid growth, which shows that the Russian-Ukrainian war has triggered inflation in the United States, not only in the food and energy sectors but also in other sectors. In Figure 4, the two sharp declines in the CPI index in 2022 correspond to the timing of the Fed's two interest rate hikes, and by comparing with Figure 5 in the same time period, it can be found that the Fed's interest rate hike on inflation control effect is more significant in energy and other sectors closely related to the Russian-Ukrainian war.

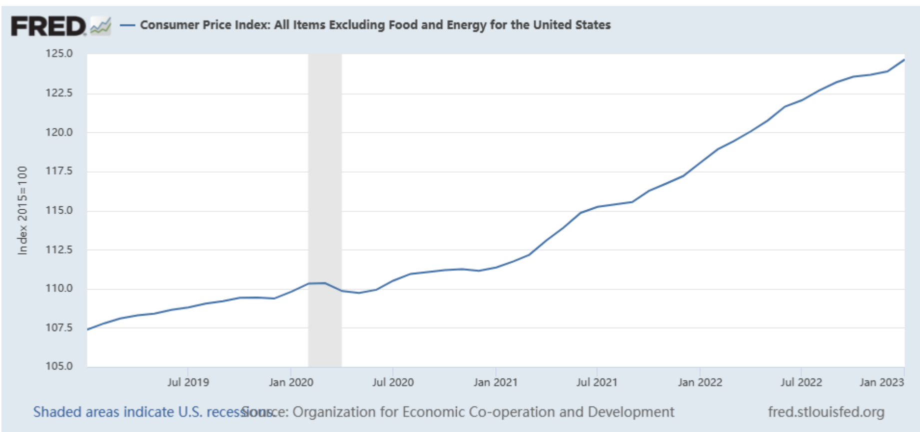

Figure 5: CPI Excluding Food and Energy of the US from 2019 to 2022 [7].

2.2. EU

Europe's GDP growth rate fell below negative growth when the pandemic broke out in 2020 (see Figure 6), which shows that the impact of the pandemic on economic growth is a global phenomenon. In 2020, Europe's economic growth has reversed from negative growth to positive growth of more than 10% and returned to normal growth at the end of the year. It shows that although Europe has been hit hard by the COVID-19 epidemic, it has also recovered very quickly. In 2022, Europe's GDP growth did not experience large fluctuations, which shows that the Russia-Ukraine war has less impact on Europe's overall GDP.

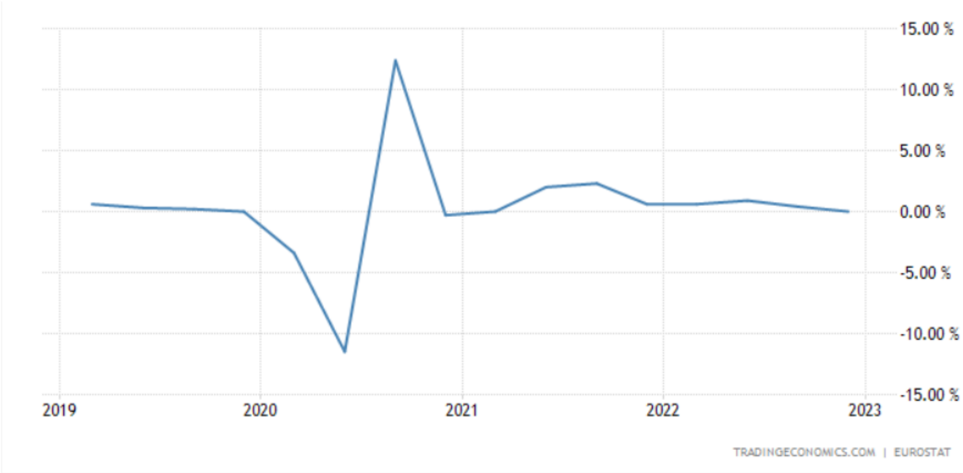

Figure 6: GDP growth rate of the EU from 2019 to 2022 [8].

European interest rates remained at a low and stable level before the outbreak of the Russian-Ukrainian war in 2022, and even the COVID-19 epidemic in 2020 did not cause changes in European interest rate policy, as shown in Figure 7. Under the impact of the Russian-Ukrainian war in 2022, European governments changed their interest rate policies that had been maintained for many years and tried to curb inflation caused by the Russian-Ukrainian war by continuously raising interest rates to 3.5% in 2023.

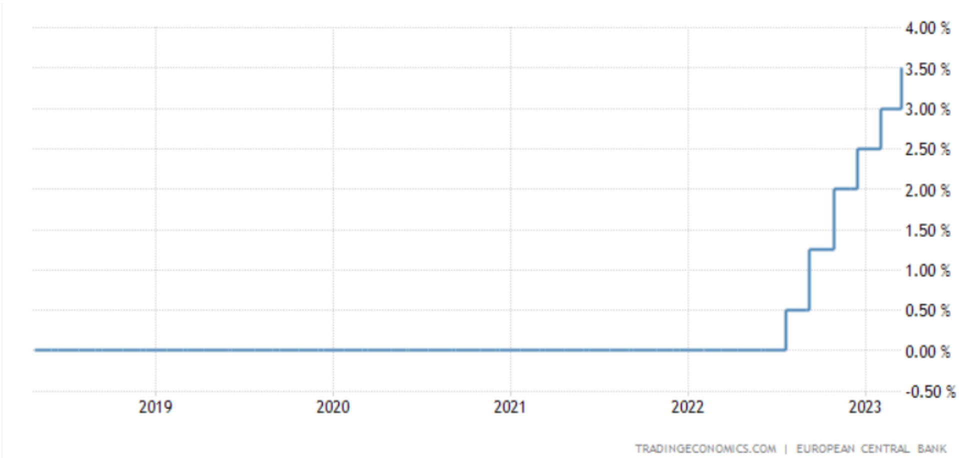

Figure 7: The interest rate of the EU from 2019 to 2022 [8].

Europe's unemployment rate showed a gradual downward trend until 2020, but after the outbreak of the COVID-19 in 2020, the unemployment rate in Europe rose rapidly to more than 8.5% and remained high until the beginning of 2021, as Figure 8 shown. It can be seen that the impact of the COVID-19 epidemic on European labor employment is more significant and long-lasting, and the impact will continue after GDP returns to normal levels. By the outbreak of the Russian-Ukrainian war in 2022, the unemployment rate in Europe fell to a lower level than before the epidemic, and even after the outbreak of the war, it did not cause widespread unemployment in European society.

Figure 8: Unemployment rate of the EU from 2019 to 2022 [8].

Through the comparative analysis of the below Figures 9, 10, and 11, it can be found that the outbreak of the COVID-19 has caused a certain impact on Core-Inflation and Energy-Inflation, but it is relatively limited, and there is no obvious performance in Figure 9. The Russian-Ukrainian war in 2022 led to a sharp rise in European energy inflation, which once reached a high of 40%, which shows the impact of the Russian-Ukrainian war on the European energy crisis. Inflation in the energy sector, which has also led to the rise of core-inflation, has contributed to the widespread inflation experienced by the European socio-economy, adversely affecting people's normal consumer life.

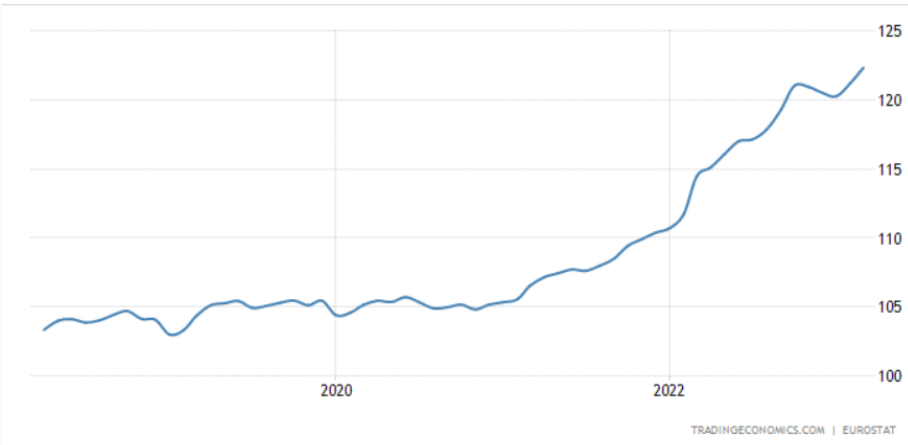

Figure 9: Consumer Price Index of the EU from 2019 to 2022 [8].

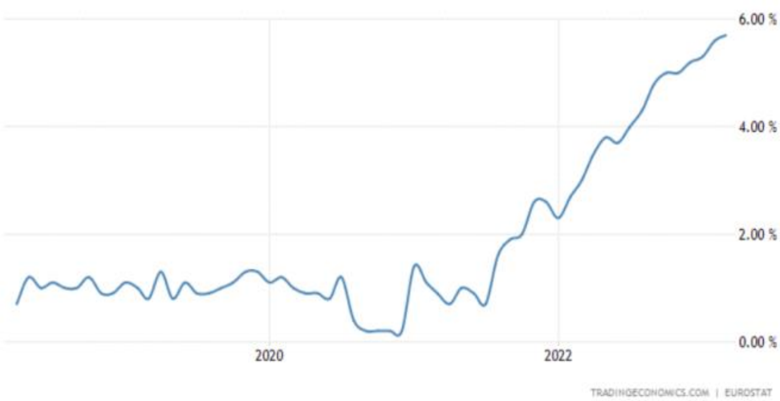

Figure 10: Core-inflation of the EU from 2019 to 2022 [8].

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Figure 11: Energy-inflation of the EU from 2019 to 2022 [8].

2.3. China

China's GDP growth rate experienced a sharp decline during the pandemic (see Figure 12), as did the US and other countries in Europe, because it was one of the countries that were severely ravaged in the early stage of the COVID-19 epidemic, and China's GDP growth rate experienced a decline earlier, and it was already beginning to appear in late 2019. In mid-2020, China's GDP recovered through a series of epidemic prevention and control measures and economic recovery measures by the Chinese government and has remained generally stable and fluctuated slightly around 0% since then.

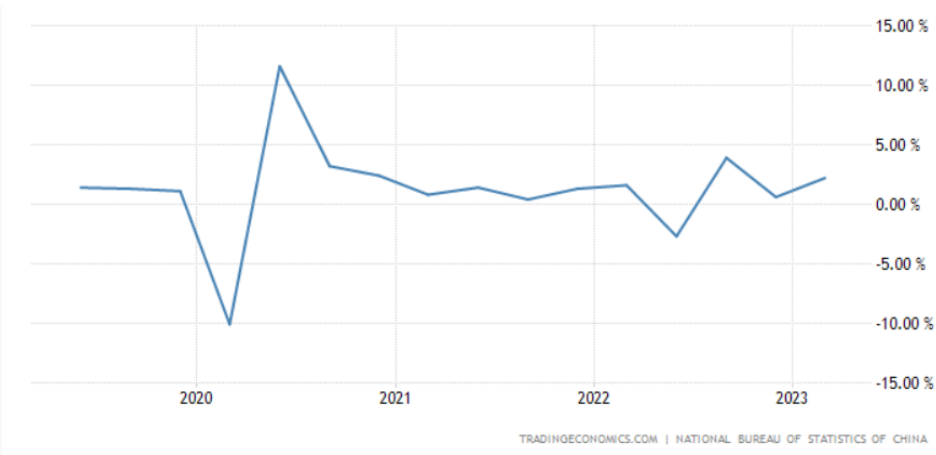

Figure 12: The GDP growth rate of China from 2019 to 2022 [8].

By analyzing China's interest rates in the past five years, it can be found that interest rates have undergone continuous small reductions, especially frequently around 2020, decreasing from above 4.3% to below 3.9% (see Figure 13). On the one hand, in response to the impact of the COVID-19 on social and economic vitality, and on the other hand, in response to the current pressure of "demand contraction, supply shock, and weakening expectations".

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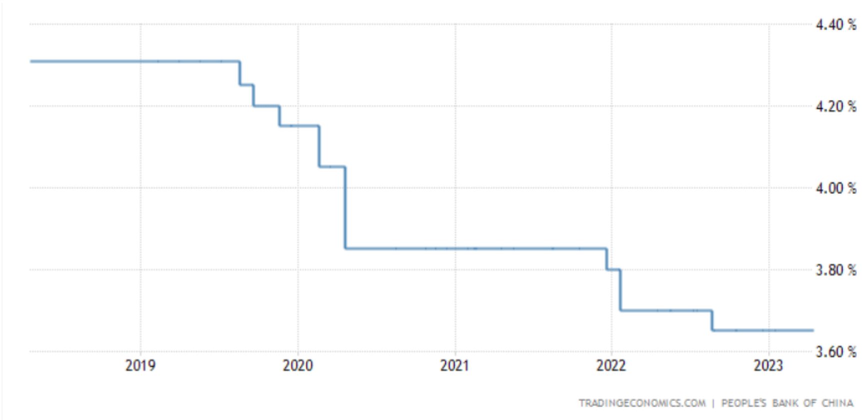

Figure 13: The interest rate of China from 2019 to 2022 [8].

China's unemployment rate increased significantly in early 2020 and early 2022, both increased above 6%, but the overall unemployment rate is low compared to the United States and European countries, as shown in Figure 14. The COVID-19 period in China coincides with the Lunar New Year, which is the most important in Chinese, and is the golden period of growth in the demand for services such as catering and entertainment. Home isolation, shut down, and production have undoubtedly caused great blows to these industries, and many enterprises have suffered a break in the capital chain during the anti-epidemic period, resulting in bankruptcy and bankruptcy, which in turn has led to the rise of unemployment in China during the same period [9]. By comparing with other economic indicators, it can be found that the rise in China's unemployment rate in 2022 is less related to the outbreak of the Russian-Ukrainian war, and is more likely to be the result of repeated COVID-19 epidemics and the strengthening of government epidemic prevention and control measures.

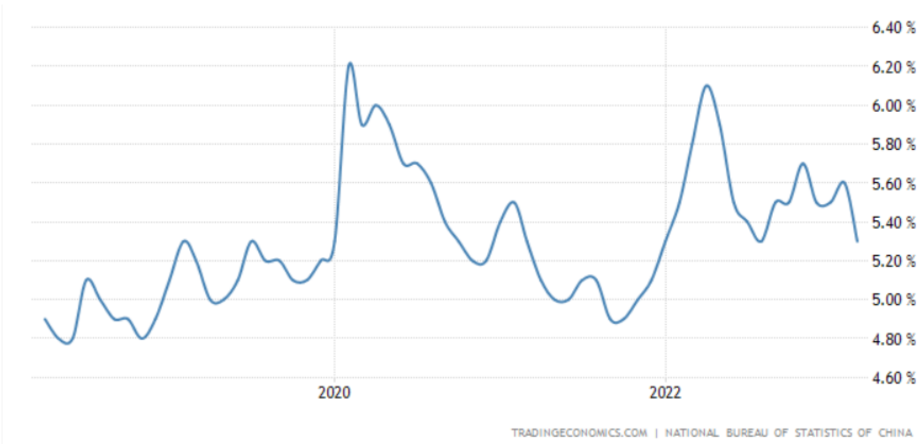

Figure 14: The unemployment rate of China from 2019 to 2022 [8].

China's CPI index and Core-Inflation Rate both experienced a relatively large decline between 2020 and 2022, the CPI index decreased by about 10% (see Figure 15) while the Core Inflation decreased to -0.50% (see Figure 16). The impression of the COVID-19 epidemic and the Chinese government's continuous epidemic prevention and control measures in the post-epidemic era has increased the downward pressure on the economy and the possibility of deflation. Before and after the outbreak of the Russian-Ukrainian war in 2022, China's neither CPI index nor Core-Inflation Rate fluctuated significantly. On the one hand, due to China's vast territory, abundant resources, and weak energy dependence, on the other hand, it is also because of the harmonious relationship between China and Russia, and Russia's energy sanctions policy is more aimed at European and American countries.

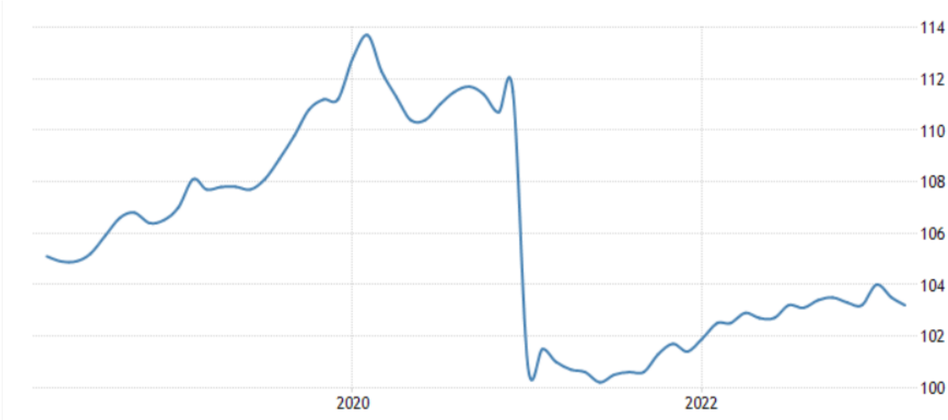

Figure 15: Consumer Price Index of China from 2019 to 2022 [8].

Figure 16: Core-inflation of China from 2019 to 2022 [8].

3. Response

Since the outbreak of the pandemic in early 2020, it has spread rapidly around the world, and the economic development of many different countries around the world has dealt a huge blow. Governments have also developed different responses based on specific national circumstances. The U.S. government has rolled out a huge fiscal stimulus package to cushion the economic impact of the pandemic. The stimulus package includes measures such as direct-paid checks to individuals and families, additional unemployment benefits for the unemployed, relief loans for businesses and tax cuts. Among these, the $2.2 trillion CARES Act, passed in 2020, was the largest stimulus program. EU member states and the European Central Bank have joined forces to launch the €1.8 trillion European Recovery Plan, which aims to support the regions and sectors most affected by the pandemic. In addition, the EU has provided financial support to member states to help alleviate their economic difficulties.

The long-term impact of the coronavirus pandemic on the economy is most prominent in China due to the epidemic prevention and control policies that lasted until the end of 2022. On the one hand, in order to cope with the downward pressure of the economy in the epidemic era, in the process of expanding opening up, the Chinese government will promote the resumption of work and

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production, strive to stabilize foreign trade and foreign investment, open up various international markets, ensure the resumption of work and production of leading enterprises, and maintain the stability of the global supply chain [10]. The Chinese government has also taken a number of steps to encourage the swift development of the unmanned express delivery and online service sectors as well as to direct businesses and citizens in how to handle the new circumstances of online remote work in accordance with specific epidemic prevention and control policies. Therefore, even though China's long-term epidemic prevention and restriction policies have caused certain losses to the physical catering and tourism service industries, industries such as online shopping and express delivery services relying on online platforms have prospered, and the effective control of the spread of the COVID-19 epidemic has also enabled China's economy to maintain a stable state under the impact of the epidemic.

Unlike the coronavirus pandemic, the Russia-Ukraine war is a geopolitical risk. The regional nature of many geopolitical risks suggests that their economic impact may not be evenly distributed across the globe. American economists Dario Caldara and Sarah Conlisk have made a detailed analysis of the economic impact of the Russian-Ukrainian war on countries around the world. They measured a country's exposure to the current conflict based on the number of times a country's corporate headquarters mentioned Russia's invasion of Ukraine in quarterly earnings calls. In countries bordering Russia or Ukraine, such as Finland and Poland, about 80% of companies fear this war [11]. Countries such as Germany, which are highly exposed to conflict because they rely on Russian energy imports, mention conflict by 75 percent. This means that European countries, especially those close to conflict, are the most affected. Much of Asia is much less affected by the Russian-Ukrainian conflict. Because of the different degrees of impact of the Russian-Ukrainian war, the measures taken by each country to deal with economic pressures are also different.

3.1. The US

The war between Russia and Ukraine raises the possibility of stagflation returning to the American economy. On the one hand, the Russia-Ukraine conflict has had a significant impact on global supply lines for food, raw materials, and energy, driving up commodity prices. On the other hand, the US commodity supply chain is facing significant challenges as a result of the sharp impact on market expectations and the impact of export restrictions and financial sanctions. On the other hand, as a result of the conflict between Russia and Ukraine, the downward pressure on the global economy has gotten worse and has even resulted in a general recession due to supply chain disruptions, rising inflation, and a decline in the share of the labor force in developed nations. A recession in the world economic situation will also adversely affect the economic development of the United States. In response to the pressure on the US economy caused by the Russia-Ukraine war conflict, the Federal Reserve has hiked interest rates several times since March 2022.

However, the Fed's interest rate hike policy is not a panacea against the economic impact of the Russian-Ukrainian war, and may even have serious negative consequences. First, the Fed must choose between raising interest rates, shrinking its balance sheet, and stabilizing economic growth in the face of rising inflationary pressures. Second, the Fed must balance rate hikes with the sustainability of the nation's government debt, corporate debt, and household debt. At the same time, the difficulty or ambiguity of the Fed's policy adjustment is likely to play a significant role in the onset of a global recession given the enormous spillover effect of its monetary policy on the world financial market.

One of the largest bank runs in the United States in more than ten years took place on March 9, 2023, when investors and depositors attempted to withdraw $42 billion from Silicon Valley institutions. Banks in Silicon Valley were forced to sell bonds in order to pay back principle and interest, which significantly reduced their profits and capital. The parent firm of Silicon Valley

Bank, Silicon Valley Bank Financial Group, saw its stock price fall more than 60% on September 9 and 68% on September 10, putting it in a suspended condition. On March 10, U.S. banking stocks plunged en masse, with the shares of JPMorgan, Bank of America, Wells Fargo, and Citigroup plummeting, losing about $50 billion in total market value. On the 11th, the Nasdaq index fell nearly 200 points or 1.76%; The Dow Jones fell below the 32,000-point integer mark, down 1.07%. The storm is also spreading to countries other than the United States. Britain's Treasury said Silicon Valley Bank UK Ltd. will go bankrupt. The Bank of Korea said it was closely monitoring any impact on interest rates, share prices, exchange rates, and capital flows.

Silicon Valley banks' demise was primarily caused by the Fed's ongoing interest rate increases, and the industry is now beginning to worry about whether other small and medium-sized US banks, which are also struggling with floating bond losses, will be able to withstand the pressure of interest rate increases. In order to avoid a greater impact on the financial system caused by crises such as runs and sell-offs caused by a lack of confidence, the Fed should be more cautious in policy formulation in the future, pay more attention to the impact on financial stability, and adjust the pace of interest rate hikes will be the task that needs the most attention at present.

3.2. EU

The war between Russia and Ukraine has a significant effect on the European economy, particularly because of Russia's energy exports. The main task of European governments now is to take corresponding measures to alleviate economic pressures and maintain a stable energy supply. In order to reduce dependence on Russia, Europe is vigorously promoting new energy technologies, including wind energy, solar energy, biomass, etc., while also strengthening the development and use of other energy resources, such as liquefied natural gas, shale gas, and so on. Europe will also further build gas pipelines and LNG ports, both aimed at diversifying its energy sources.

In terms of trade relations, Europe's import substitution policy is also a better strategy, which helps to reduce dependence on imported energy suppliers such as Russia, thereby easing the pressure of the Russian-Ukrainian war on the European economy. Europe, for example, is now stepping up its own shale gas extraction to compensate for energy shortages and turning to Asian, African, and Latin American markets for new energy suppliers. However, the time frame required for these fundamental initiatives to be effective is long. At the consumption level, companies and households have been forced by soaring prices to drastically reduce their energy consumption, and member countries have subsidized various energy uses for vulnerable groups and small and medium-sized enterprises affected by various energy uses.

In terms of monetary policy, given the continuation of the Russia-Ukraine conflict and the ECB's interest rate hike is still on the way, European economic growth will suffer from low growth in 2023, and the euro economy is expected to grow by 0.9% year-on-year; Despite low growth, euro inflation remains at a high level in 2023. On March 16, 2023, the ECB announced another 50 basis point rate hike, the sixth since July last year, pushing the ECB's main refinancing rate to now 3.5%.

3.3. The Asian Region Represented by China

Asia is affected by geopolitical tensions in the rest of the world from three main sources-oil commodity prices, financial conditions and business confidence, and trade. Among Asian countries, especially China, the likelihood of China's economy is affected by the conflict between Russia and Ukraine is greatly reduced due to the impact of better macro stability, low-interest rates, and controlled direct trade with Russia, which accounts for 2% of its exports and 3% of imports, and because of the stability of diplomatic relations between the two countries, policy easing of energy imports and exports is already underway. Its economic risks in 2023, according to Morgan Stanley's

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analysis, are mainly derived from geopolitical tensions, a liquidity crunch in the real estate market, and a potential surge in equity risk premiums triggered by the ongoing Omicron problem in Hong Kong [12].

China is not the main party to the Russian-Ukrainian contradiction and the Russian-American contradiction, but it can also learn from the huge impact of the Russian-Ukrainian war on the US and European economies. On the one hand, China should actively safeguard diversified trade partnerships and promote the continued development of the Belt and Road Initiative. To prevent important economic sectors from being badly impacted by global fluctuations, more care should be taken to ensure the security of domestic food and energy supplies.

4. Conclusion

The huge impact of the COVID-19 epidemic on the economy caused by the decline in the gross domestic product of various countries, the surge in unemployment, the weakening of consumption vitality, and other problems have eased with the passage of time and the introduction of recovery policies in various countries. The energy crisis caused by the Russian-Ukrainian war is more prominent in Europe and the United States, on the one hand, Western governments have diluted the impact of the crisis through sanctions against Russia and the adjustment of monetary policy, on the other hand, the risk of domestic financial markets has increased. The two successive sudden crises not only reflected the downward pressure on the world economy but also exposed the loopholes in maintaining macroeconomic stability and healthy development in various countries. The Fed's interest rate hike policy is a double-edged sword, and how to reduce its side effects is a question worth exploring in the future. The EU faces serious energy security challenges and urgently needs to find more efficient ways to move away from independence dependent on access to energy supplies. For China, which is still in the developing country stage, although the economic impact of the Russia-Ukraine war is far less obvious than the COVID-19 epidemic, it can still draw enlightenment, such as: how to reconcile government control and market freedom. How to adhere to an independent policy of opening up to the outside world in an increasingly complex international situation?

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