

Inflation and Recession under Economic Crisis

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Abstract. This paper examines the macroeconomic impact on economies of recent crisis events, such as the coronavirus pandemic and the Russia-Ukraine conflict. The COVID-19 pandemic and the Russia-Ukraine conflict have led to unprecedented disruptions in supply, demand, and productivity, with catastrophic impacts on health, society and the economy across the globe. This paper compares the changes in the relevant economic data of the United States, Europe and China through a simple comparison of graphic data (all from Trading Economics), and explores the differences and causes. It is clear that all three regions have been hit hard, and unemployment rates in the United States and the European Union have risen sharply during the pandemic, reaching a peak in recent 10 years. Their core consumer price indices (core CPI, excluding volatile items such as food and energy) rose sharply after the pandemic and the Russia-Ukraine conflict. China's core CPI showed a V-shaped trend, which briefly fell after the epidemic in 2020, but began to rise sharply in 2021, which is due to the low consumer confidence in China in 2020. Consumption went sluggish, and market prices fell, which is reflected in the core CPI as a downward trend. In 2021, consumption picked up, then prices rose, and the core CPI also rebounded. China's unemployment rate has also changed significantly, rising during both crises.

Keywords: COVID-19 pandemic; Russia-Ukraine conflict; inflation, recession.

1. Introduction

Economic crisis has always been a matter of great concern. An economic crisis will affect all countries in the world and everyone involved in, and in serious cases will have irreparable bad consequences. The Great Depression of 1929, for example, spread throughout the capitalist world. The Great Depression was the longest economic depression in modern times, resulting in widespread long-term unemployment as well as changes in social relations, the overthrow of the established government, the rise of the Nazi Party and fascism, and ultimately the start of World War II. Another example is the 2008 financial crisis, which began as a Wall Street storm brought on by the subprime mortgage crisis in the United States and later spread to the rest of the world. This process was quick and had a significant, unexpected impact. It is the worst financial crisis since the Second World War that has dragged the economy of the time into a total recession. Therefore, the impact of the economic crisis cannot be underestimated, and must be always paid attention on.

Previous research has shown that the COVID-19 pandemic has dramatically increased the real economic uncertainty (REU) in countries to unprecedented levels [1]. "Uncertainty" is the word to delineate the global economic situation over the past few years. The current uncertainty in the global economy includes the accumulation, and also the sustainment of the uncertainty in the previous period, and the sudden rise and intensification of uncertainty caused by the global pandemic and the Russia-Ukraine issue. Economic uncertainty refers to the inability to predict the possibility of future events in the economic field, and this indicator has a negative impact on macroeconomic operation and places heavy restrictions on economic actions like production, consumption, and investment. It also influences the behavior of macroeconomic policy departments and micro-market organizations [2]. Simply put, the greater the economic uncertainty, the worse the state of the economy. It is universally agreed that the global financial crisis of 2008 was the first instance of the 21st century's typical global economic uncertainty event. REUs during the pandemic have exceeded their values during the 2008 financial crisis. The decline in industrial production (IP) in countries during the pandemic was also similar to that observed during the 2008 Global Financial Crisis (GFC) [1].

There are also studies that show that the unprecedented COVID-19 pandemic followed by the Russia-Ukraine conflict, dragged down the global economy and also led to a series of crises. The Russia-Ukraine conflict has significantly raised market prices for important commodities, including gold, palladium and wheat. The price began to rise a few weeks before the actual hostilities, peaked around March 7-9, 2022, and then retraced some of the gains over the next three weeks [3]. But supply disruptions and high prices for many essential commodities continue to pose serious risks to actual activity, despite these partial retracements. The Russia-Ukraine conflict has also led to a sharp increase in the daily futures price of Brent crude oil and the weekly price of US regular gasoline. Since the beginning of the year, crude oil prices have risen more than 65% at their peak, and weekly retail gasoline prices in the United States have risen more than 30% at their peak [3]. Fears of conflict caused oil futures prices to start rising nearly two months before the war began. This increase in oil prices is very worrisome, as higher oil prices can be an important cause of recessions, including those of 1973-1975, 1980, 1990 and even 2007-09.

All in all, there are many indications that the coronavirus pandemic and the subsequent Russia-Ukraine conflict are two important factors that have led to the economic crisis in recent years. This article will explore the macroeconomic impact of these two crises with GDP, core CPI and the unemployment rate.

2. The U.S. Market

2.1 Impact of the COVID-19 Pandemic

Nobody anticipated that the US economy would experience its worst recession since the Great Depression at the beginning of 2020, and the coronavirus pandemic was the main culprit in the US recession. The sudden increase in unemployment has been the pandemic's most noticeable effect on the US economy (see Figure 1). Prior to the pandemic's impact on the American economy, in February 2020, the country's unemployment rate was 3.5%. It's still quite low. That percentage rose to 14.8% by April 2020, the highest amount recorded since data collection began in 1948. The good news is that the US unemployment rate started to steadily fall from April 2020 and continued to do so for the remainder of the year. For instance, the unemployment rate decreased from 8.4% in April 2020 to 6.4% in August 2020, then getting down to 5.8% in May 2021. Although still high, the rate of ongoing decline demonstrates a year-round slow but steady recovery in the US economy [4].

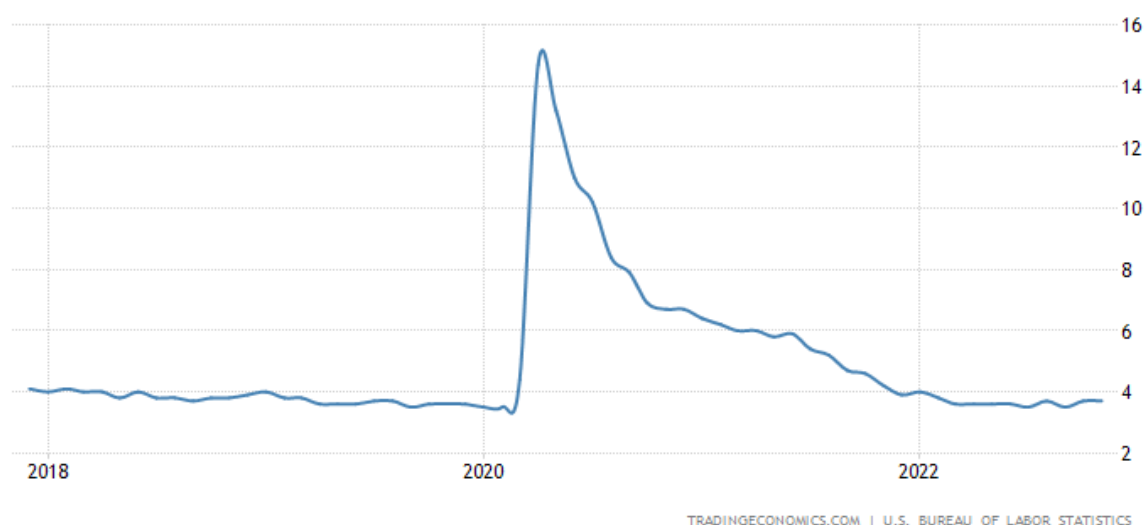


Fig 1. The U.S. unemployment rate from 2018 to 2022 [5].

The United States' gross domestic product shrank in 2020, the most since World War II and the first time since the 2008 Great Recession (see Figure 2). Although 3.9 percent may not sound like

much, it was the worst performance in consumer spending since the Great Depression of 1932. Since two-thirds of the American economy is composed of consumer spending, the suffering of regular Americans is the reflection of the whole economy [4]. Lower incomes are an important reason for Americans' reduced consumption. When only market revenue streams are considered, the impact of the COVID-19 recession is far more severe than the Great Recession. Research shows that in 2020, 33% of working-age adults with previous year's income were in tax units, and real market income declined by at least 10% per year. This matches the frequency of large declines in market revenues during the Great Recession. In 2009, 33 percent of working-age adults experienced a similar decline in earnings. In fact, income fluctuates greatly from year to year, resulting in a large proportion of adults having a large increase or decrease in income. However, recessions do show more market revenue declines than non-recession years. For example, 33% of working-age adults saw a decline of at least 10% in 2020, far exceeding the 26% who experienced this decline in 2019 [6].

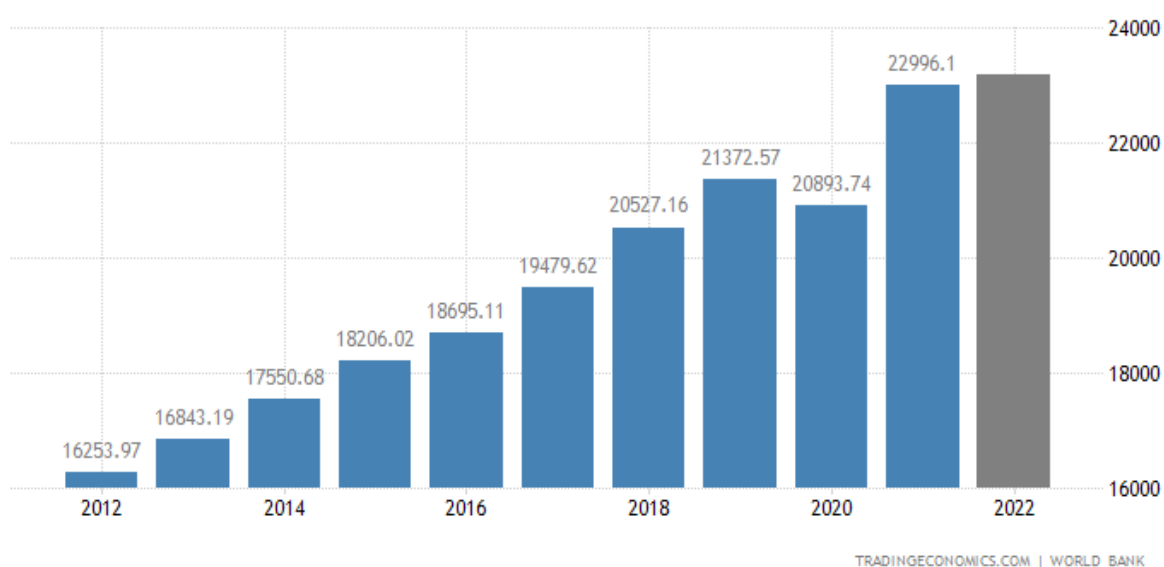


Fig 2. The total annual GDP of the United States from 2012 to 2022 [5].

2.2 Impact of the Russia-Ukraine Conflict

The Russia-Ukraine issue completely broke out in February 2022, when the COVID-19 epidemic broke out for more than two years, and the world economy has been hit hard. In response to the impact of the pandemic, countries around the world have launched stimulus packages and monetary easing policies to stimulate the economy, and to mitigate the negative impact of the COVID-19 epidemic on the economy. However, the Russia-Ukraine conflict has led to an international energy supply crisis, and the prices of commodities such as oil and gas remain high, aggravating global inflation and delaying global economic recovery. Manufacturing is most impacted by changes in the price of bulk commodities because it is so tightly entwined with the global economy. Construction, mining, some professional service sectors, and agriculture will all be negatively impacted. However, compared to nations in Europe, Africa, and the Middle East, the United States has significantly fewer direct economic ties with Russia and the Ukraine, therefore it is less influenced by the war. So restricting Russian oil imports won't significantly affect the U.S. energy market's supply of energy. U.S. energy production has gradually increased since the 90s of the 20th century, and oil imports have been decreasing since 2000. U.S. import dependence is low, and oil and gas imports from Russia account for less than 0.5% of total U.S. demand [7]. Energy prices had already begun to rise before the Russian acted and will remain high in the short term. On February 24, the spot price of U.S. crude oil exceeded \$100 for the first time in seven years, reaching nearly \$125 on March 8. Yet, the futures market showed that the price of U.S. crude oil fell for the rest of 2022, with the price around \$95 in December [7]. This indicates that the war's effects on U.S. energy prices will only be short-term.

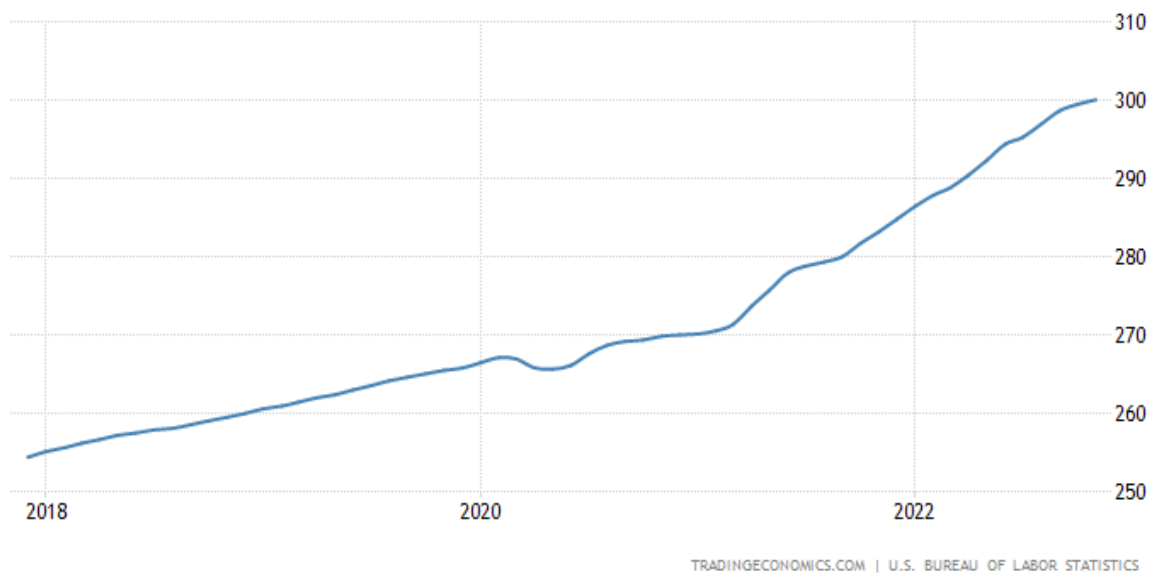


Fig 3. U.S. core CPI from 2018 to 2022 [5].

As Figure 3 shown, the core CPI in the United States has risen by leaps and bounds since 2020, and the core CPI generally reflects more fundamental inflationary pressures in the economy, so it has received more attention. At the same time, overseas investors are paying more attention to seasonally adjusted month-on-month data than year-on-year data, because month-on-month data better reflects the trend of price changes (Momentum) [8]. Therefore, the first thing needed to focus on is the month-to-month trend of the core CPI. Over the past few months, the month-on-month growth of U.S. core CPI has been significantly higher than the performance of the past 5 years, which largely means that inflationary pressures remain high. From the specific level, the average core CPI growth rate in the first 9 months of this year was 0.53% month-on-month, and the annualized level exceeded 6%, which is not optimistic, and it also means that the core CPI is still far from the "desirable range" of about 2% [8]. From this point of view, the epidemic and the Russia-Ukraine conflict have indeed had an immeasurable impact on U.S. inflation. However, it should be noted that in the core CPI, the service industry occupies a large weight. Except for some goods needed by the service industry, it can roughly think that wages largely determine the price of the service industry. Therefore, there are a lot of inflationary effects in the core CPI statistics in the United States that may be caused by rising wages, and even if the inflationary pressure in the United States is still very large, it is not all from negative factors accumulation.

3. EU Market

3.1 Impact of the COVID-19 Pandemic

At the same time when the COVID-19 pandemic has not completely subsided, the appearing of the crisis in Ukraine has seriously hindered the process of economic recovery in Europe. As a result, Europe's economy, mired in high inflation, is shifting from driving at a low speed to "hitting the brakes", and the risk of recession is further intensified. As Figure 4 shown, the core CPI in Europe continued to rise, even exceeding 112 points in the second half of 2022, setting a record in past decade. Amid rising inflation, the ECB's pressure has increased sharply. To prevent further deterioration in inflation, the ECB had to launch its first interest rate hike in recent years and stop net asset purchases from July 1 [9]. However, as the ECB ends its bond purchases, the cost of financing for debt-burdened euro area countries will rise sharply, which in turn poses a risk of a debt crisis. At the same time, the ECB needs to minimize the risk of a recession due to monetary policy adjustments.

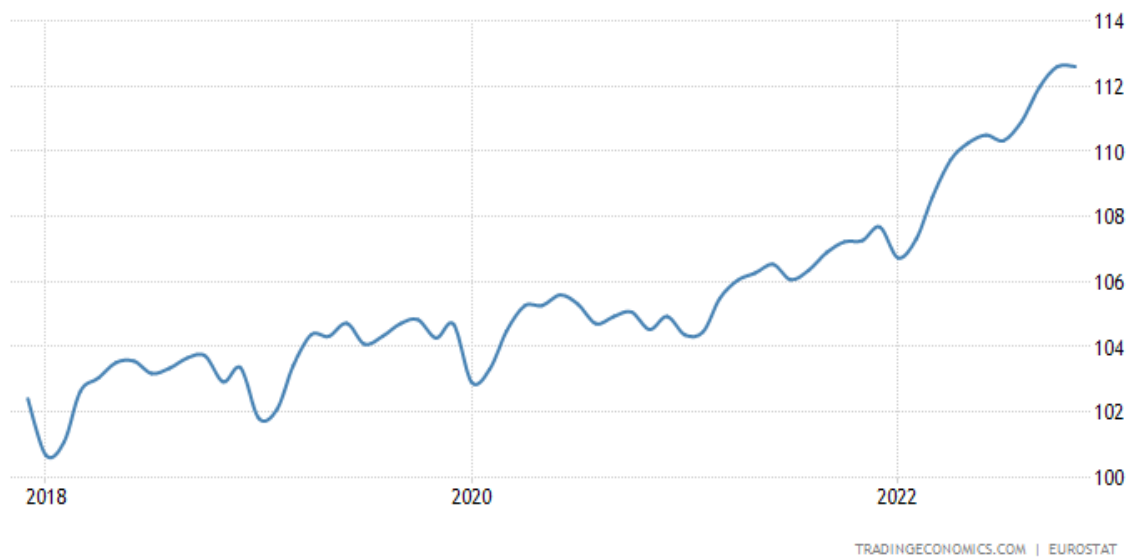


Fig 4. Core CPI of Euro area from 2018 to 2022 [5].

The pandemic has had a huge negative impact on economies around the world, but it has been particularly severe in Europe, where suffer from structural imbalances, highly dependent on trade and services. The euro area's services-led economic development model in recent years has raised the risk of countries being hit by the pandemic. Previously, continued healthy growth in the service sector had been a bright spot in the euro area, but the pandemic turned this advantage into a disadvantage. The euro area's services sector came to a standstill because of the government's lockdowns to stop the spread of the pandemic, forcing factories, shops and restaurants to close, and entertainment to stop. The pandemic has caused enormous economic and social harm to the EU. The International Monetary Fund estimates that the world economy contracted by 3.5% in 2020. Spain's GDP is estimated to have fallen by 12.4% and Italy by 9.9%. Overall EU GDP is estimated to have fallen by 7.4% [9]. EU member states have one of the largest economic contractions, and far more than that during the 2009 global financial crisis.

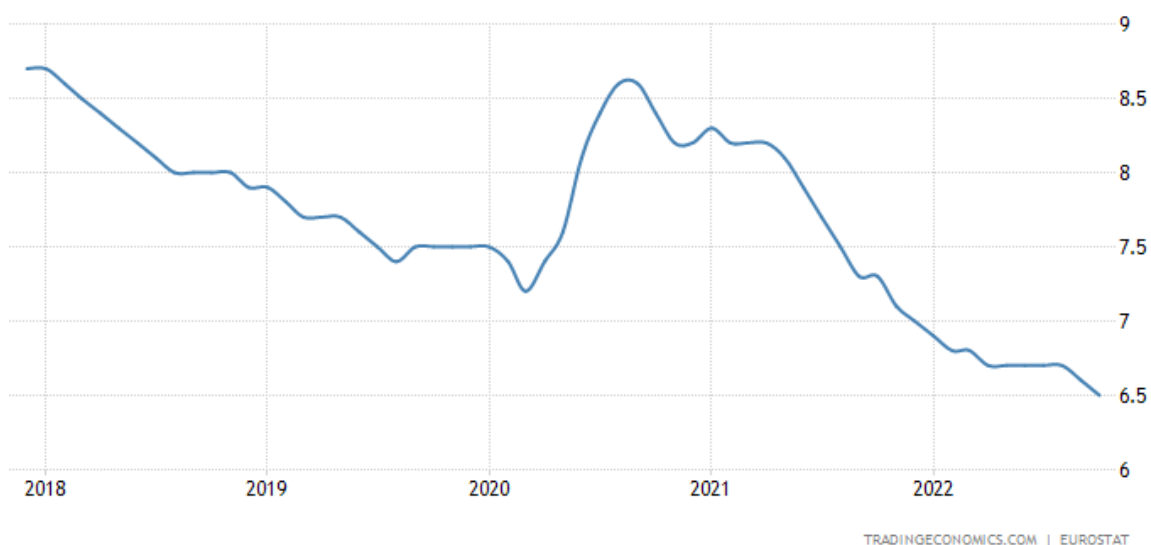


Fig 5. Unemployment rate in Euro area from 2018 to 2022 [5].

The pandemic has also brought massive unemployment to Europe (see Figure 5), but it is worth noting that comparing the changes in the unemployment rate in Europe and the United States in 2020, it is not difficult to find that the unemployment rate in Europe is almost half that of the United States.

The reason is that European governments have implemented "generous leave schemes" to subsidize employees who temporarily stay home from work. Companies can thus retain more employees, thereby reducing the vicious cycle that triggers "soaring unemployment and a severe decline in domestic demand." As the economy gradually recovers, companies no longer have to go through the long and expensive process of "re-hiring and training employees" [10]. But such generosity also has some drawbacks, such high-welfare subsidy schemes in European countries are costly and may provide inappropriate incentives for businesses and workers to procrastinate starting working again. This explains why, as can be seen from the unemployment curves, the US unemployment rate has fallen significantly faster than in European countries.

3.2 Impact of the Russia-Ukraine Conflict

The energy crisis is the EU's biggest difficulty right now. Unlike the United States, the EU is highly dependent on Russian fossil fuels, and the Ukraine crisis has brought overall inflation in Europe to record highs. Among the major European economies, inflation in Germany was 8.2% in June, 6.5% in France, 8.5% in Italy and 10% in Spain, all at high levels. Besides, inflation in the three Baltic countries is higher, around 20% [11].

Recently, Russia has drastically reduced its gas supply to Europe. Two branch lines of the main gas pipeline, Nord Stream-1, were also temporarily closed, starting a 10-day routine maintenance, adding to Europe's worries and unease. Analysts expect that if Russia continues to restrict gas supplies when many European countries are doing their best to store gas this winter after experiencing high temperatures this summer, it will lead to an aggravation of Europe's "gas shortage". A further surge in natural gas prices will put pressure on inflation in Europe, erode household purchasing power and close some energy-intensive businesses. The ECB expects the euro area economy to grow by only 1.3% in 2022 and contract by 1.7% in 2023 amid severe disruptions in energy supplies and further price surges [11]. With an across-the-board reduction in imports of Russian gas that is difficult to replace in the short term, the EU economy fell into recession in the second half of 2022, and economic activity will be subdued next year. Studies have pointed out that the impact of the current conflict seems to be more concentrated in the commodity production sector, with the automobile industry bearing the brunt, followed by the capital and consumer goods industry, then energy and food, and finally the least affected service sector. According to reports, some industries had experienced bottlenecks even before the Russia-Ukraine conflict actually happened. The proportion of European car companies harmed by the conflict is about 80% [12]. At the same time, however, industries less affected by supply disruptions, such as services, are less likely to express concern about war.

4. China Market

4.1 Impact of the COVID-19 Pandemic

Early in 2020, the epidemic had a significant impact on China's economy, which saw a 6.8% year-over-year decline in the first quarter, marking the first quarterly negative growth since the quarterly GDP accounting system was introduced in 1992. But as the epidemic was controlled in a relatively short period of time, the second quarter quickly returned to positive growth. The third quarter recovered steadily to 4.9% and the fourth quarter achieved a better-than-expected growth of 6.5%, even 0.7% more than the same period in 2019. As a consequence, China's total GDP growth in 2020 reach a positive growth of 2.3%, making China one of the few countries to achieve positive economic growth during the epidemic [13].

As Figure 6 shown, although China's GDP growth rate achieved positive in 2020, it actually fell sharply for the first time since the 2008 financial crisis, which obviously shows the negative impact of the epidemic on China's economy. During the epidemic, China's strict control has had remarkable results, but it has also brought drawbacks. With consumers staying at home and their purchasing power declining, traditional industries experience a decline in demand for labor and raw materials as well as a reduction in the size of their production facilities. This change will be reflected to upstream

companies, resulting in product backlogs and some unemployment [14]. The impact of the epidemic is particularly pronounced for small-sized and even some medium-sized enterprises in traditional industries, whose profitability is unstable and capital chain is fragile. They are easily affected by the change of the economic environment. Since the epidemic has had such an impact, many small and micro companies have been forced to reduce their production scale, make staff reductions, or even stop production due to the decline in operating income and the increase in production costs.



Fig 6. China's GDP growth rate in the past 25 years [5].

But how does China keep GDP growth positive? The answer may be the digital economy. The digital economy has been crucial in stabilizing growth, encouraging employment, and improving people's standard of living. With digital economy, corporate companies are more responsive, adaptable, and competitive to changes in the external environment thanks to the concomitant new model of networking, platformization, and crowdsourcing. And new consumer demand and economic growth has been sparked by new service models like mobile services, precision marketing, personalized customization, and online and offline integration. All those new development models are gradually changing the way China's economy grows.

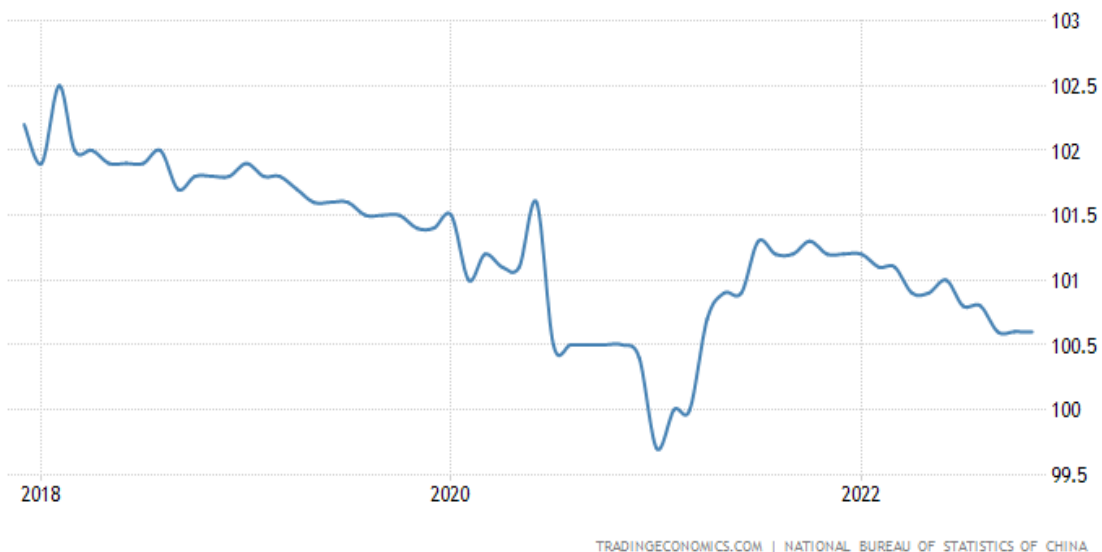


Fig 7. China's core CPI from 2018 to 2022 [5].

As Figure 7 above shown, only from the perspective of core CPI changes, China's inflationary pressures seem to be lighter than those in Europe and the United States. The small inflationary pressure may be due to a series of policies of the Chinese government. While many countries in Europe and the United States carried out the comparatively slack monetary policy and active fiscal policy at that time, the reason for the high inflation level. In contrast to the "open gates and release water" in Europe and the United States, the Chinese government has shown caution on comprehensive stimulus program, always avoiding overly loose monetary policy, and has not injected too much liquidity into the market [15]. However, the lower core CPI also reflects a major problem in China - weak consumer demand. The core CPI, which excludes food and energy items, is not affected by pork prices as well as oil prices, and is more reflective of the price level than the CPI. That is to say, low core CPI also means relatively low prices, low consumer demand, because Chinese government did not focus on stimulating consumption.

4.2 Impact of the Russia-Ukraine Conflict

As mentioned earlier, the Russia-Ukraine conflict has led to price fluctuations in the global energy market. The global supply order of food, minerals and energy has been shocked, and bulk commodity prices have quickly increased, from which some European countries have suffered deeply. By contraries, the situation in China seems different. It has a considerable trade surplus and industrial capacity, and it is basically self-sufficient in grain and coal. China therefore has plenty of room to deal with the increase in commodity prices. When facing with exotic burden, the Chinese government is able to digest imported inflation through various options such as capacity release and reserve adjustment, so as to weaken market fluctuations. But is that really the case? The actual situation may not be as good as expected.



Fig 8. China's unemployment rate from 2018 to 2022 [5].

From Figure 8 above, it can find that China's unemployment rate rose sharply during the 2020 pandemic crisis and the 2022 Russia-Ukraine conflict. One plausible explanation is that, despite a series of policies implemented by the Chinese government, the economic pressures brought about by the two shocks have still made the Chinese people miserable. To be specific, even though China has a lot of grain and coal, China is a big manufacturing country, and industry occupies an important position in the national economy, at the same time many raw materials belong to heavy bulk commodities. Since the Ukraine crisis, international heavy bulk commodities have continued to rise, and raw material prices have also risen, which has still brought certain operating pressure and financing pressure to Chinese enterprises. What's more, rising commodity prices are ultimately

reflected in prices through the supply chain, increasing the cost of living and increasing unemployment.

5. Conclusion

The scope of the Russia-Ukraine conflict is limited, but the resulting inflation is spreading around the world, coupled with the biggest risk to the global economy in the past two years - the COVID-19. The two crises have affected all aspects of economic operation, leaving production and life difficult to maintain normally. The related global consumption, trade, industrial output and other data have all declined, and the unemployment rate has also risen rapidly. At present, the United States prints a large number of money, leaving serious sequelae and high inflation; European countries are mired in energy problems caused by the Russian-Ukrainian conflict; China's consumer demand continues to be low and the economy is sluggish. The crisis brings challenges to all countries, but also opportunities, and whoever can cope better, develop more advanced industries, and improve the current economic structure will be able to go further.

References

- [1] Global Real Economic Uncertainty and COVID-19. <https://www.federalreserve.gov/econres/notes/feds-notes/global-real-economic-uncertainty-and-covid-19-20220218.html>. Last accessed 2022/12/28.
- [2] Chinese Social Sciences Net. <http://english.cssn.cn>. Last accessed 2022/12/28.
- [3] The Russian Invasion, Oil and Gasoline Prices, and Recession. <https://research.stlouisfed.org/publications/economic-synopses/2022/04/27/the-russian-invasion-oil-and-gasoline-prices-and-recession>. Last accessed 2022/12/28.
- [4] How big is the impact of the new crown epidemic on the US economy? These aspects can be explained. https://www.sohu.com/a/475863149_125484. Last accessed 2022/12/28.
- [5] Trading economics. <https://tradingeconomics.com/>. Last accessed 2022/12/28.
- [6] Income Declines during COVID-19. <https://tradingeconomics.com/>. Last accessed 2022/12/28.
- [7] Economic Impact of the Russo-Ukrainian War on the United States. <https://idei.nju.edu.cn/a0/88/c26392a565384/page.htm>. Last accessed 2022/12/28.
- [8] How to understand US CPI. <https://new.qq.com/rain/a/20221110A019KB00>. Last accessed 2022/12/28.
- [9] Europe faces a double economic and political dilemma: the economic impact of the epidemic is the main reason. <https://finance.sina.com.cn/roll/2020-06-03/doc-iircuyvi6411755.shtml>. Last accessed 2022/12/28.
- [10] Western economies under the new crown crisis: why the unemployment rate in the EU is much lower than that in the United States? <https://new.qq.com/rain/a/20200713A0J5DX00>. Last accessed 2022/12/28.
- [11] The European economy is deeply inflated, and the recovery process is hindered. http://www.news.cn/fortune/2022-07/19/c_1128843553.htm. Last accessed 2022/12/28.
- [12] The Effect of the War in Ukraine on Global Activity and Inflation. <https://www.federalreserve.gov/econres/notes/feds-notes/the-effect-of-the-war-in-ukraine-on-global-activity-and-inflation-20220527.html>. Last accessed 2022/12/28.
- [13] Analysis of China's economic situation under the influence of the new crown epidemic. <https://zhuanlan.zhihu.com/p/488508327>. Last accessed 2022/12/28.
- [14] The Impact of the Epidemic on China's Economy. <https://baijiahao.baidu.com/s?id=1709878205463638566>. Last accessed 2022/12/28.
- [15] Just over 2% and over 8%: Why is China's inflation rate far lower than that of the US and Europe? <https://new.qq.com/rain/a/20220619A0721800>. Last accessed 2022/12/28.