

Impact of COVID-19: Inflation Rate & CPI

Luke Zhenyang He^{1,*,†}, Yuwei Huang^{2,†}

¹Shanghai American School, Shanghai, China

²High school affiliated to Shanghai Jiao Tong University, Shanghai, China

*Corresponding author: luke02px2023@saschina.org

†These authors contributed equally.

Abstract. This paper investigated in the topic of inflation under the event of COVID-19. To what extent did COVID-19 have impact on the inflation in these economies through the indexes like inflation rate and CPI. Through research it is concluded that COVID-19 had the largest impact on the US economy with an experience of high inflation, based on inflation rate and CPI. Especially areas like energy, retails, and services were impacted the most with the price of goods increasing rapidly. Similar, the EU economy also experienced a high inflation with import being restricted because of COVID lockdown and energy price rising. However, even though China experienced continuous lockdowns under the zero COVID-19 policy implementation and industries closed also consuming goods and services being put off. But China's economy still maintained a low and stable inflation from investigating in the inflation rate and CPI, with China's economy having a strong ability to self-repair.

Keywords: Inflation; COVID-19; CPI.

1. Introduction

From January, 2020 the outbreak of COVID-19 has become a global situation that is affecting all human beings. According to the World Health Organization up until October 17,2020 there is more than 620 million cases globally from being infected by COVID-19 [1]. It has become a disaster for countries around the world effecting the lives of people and economies facing challenges as countries took emergency measures towards preventing and controlling the pandemic. As COVID-19 was first found and spread in China, it caused cities in China to enable emergency measures. The national emergency response for COVID-19 prevention and response was at first level. Many places implemented going out restrictions, many cities were shut down and stopping production. COVID-19 had enormous impact on the global economy and inflation. Shutdowns caused a great decline in productivity. The global unemployment rate is rising day by day, which may lead to production stagnation. Especially in economic developed areas, Covid-19 was like a financial storm that erodes the world. The impact of COVID-19 is small to individuals on peoples live and large to national entities and its economy.

Inflation is an important macroeconomic objective, linked to a country's economic growth and distribution. For country's its goal is to maintain a low and stable inflation rate that correlated to a high and sustained economic growth. Inflation can be defined as the increase in general price level given a period of time. Inflation is measured by the consumer price index. From recent events there are three main causes of inflation:

First, the reasons for demand expansion (pull up or excess). Pull of demand Inflation is defined as the increase in the price level of consumer goods. When total social demand exceeds total social supply, there will be a shortage of goods in the entire society, resulting in inflation. The second reason is financial. Cost push theory states that inflation is caused by cost push. This theory connects the rate of wage growth to the rate of inflation [2]. When full employment is not achieved, that is, when resources are idle, increasing total demand will only increase national income, not price level. In other words, inflation will not occur without full employment [3]. After reaching full employment, that is, when all resources have been fully utilized, an increase in total demand will not increase national income but will only cause prices to rise. Third, structural reasons. Structural inflation is the ongoing

increase in the general price level brought on by factors affecting the changing economic structure without regard to demand or cost.

2. Analysis on the COVID-19 Impact

To find out how the outbreak of COVID-19 has effect on inflation in the economy, this paper chose to research on the three largest economies: US, EU, and China, analyzing inflation through the inflation rate and consumer price index. Inflation rate is the change in price level over the year, and it is calculated by $(CPI_{x+1} - CPI_x)/CPI_x$, where CPI_x is the consumer price index of the initial year.

2.1 Inflation Rate

From January, 2020 COVID-19 first broke out in China, in just two weeks virus was spread across the whole country. China launched a first-level response to a public health emergency immediately in order to stop the virus from spreading further. The nation went into high alert, many locations stopped producing, and productivity dropped. Some people have become increasingly concerned about the epidemic's damaging effects on the domestic economy. The short-term and phased effects of COVID-19 on China's economy won't change the fundamentals of China's long-term economic growth. China is a developing nation that is still industrializing and urbanizing, so the economy has a significant capacity for self-healing. Since a small portion of the foreign capital economy does not significantly support China's economy, which is primarily made up of our national economy. As a result of the withdrawal of foreign capital enterprises, China's economy will not experience a significant economic impact during the COVID outbreak. As a result, China's economy has a strong capacity for self-repair during the industrialization and urbanization processes, as evidenced by a low and stable inflation rate of around 2%, as Figure 1 shown.



Fig. 1 China inflation rate [4]

Considering the facts, China has the second-largest economy. China's economy is extremely large and has some resilience to economic shock. China already holds the top spot in terms of manufacturing, trade in goods, and foreign exchange holdings. The size of China's foreign exchange reserves as of the end of April 2020 is \$3091.5 billion. The resistance of China's economy is notable under a system this size. The scale of China's manufacturing and export industries is extremely beneficial to the country's economy. China's export industry and manufacturing capacity will soon be incomparable on the global stage. As a result, COVID-19's effects on China's exports and foreign trade will also be gradual and short-lived. The epidemic's effects on the national economy are temporary and phased, but the fundamentals of China's long-term economic growth will remain the

same. The national economy will gradually recover from the effects of COVID-19. However, because the COVID will directly impact China's foreign trade and has had varying degrees of impact on the economies of other nations, the recovery process may take some time.

According to objective data, COVID-19 has significantly altered the outlook for the European economy since the global pandemic. Since the EU's founding, this economic shock has caused the most serious and severe economic recession. With a surge in inflation rate as COVID-19 outbreak inflation rate in EU has reached double digit for the first time in history (see Figure 2). The current economic recession is more severe than its financial crisis, which lasted from 2008 to 2009. Only Germany, Austria, Croatia, Slovakia, and Poland are expected to be able to resume their previous levels of economic activity in the fourth quarter of 2019. All EU nations have experienced economic hardships to varying degrees as a result of the pandemic, but popular tourist destinations will be particularly hard hit.



Fig. 2 EU inflation rate [4]

The pandemic's negative economic effects are particularly severe in emerging market nations. Internal and external consumption fell during the COVID-19-induced economic downturn, and the factory's output rate did too. Due to this circumstance, local employees will likely receive lower pay or even be fired. Their income is impacted, and since the labor force is declining, there will be less social demand and less consumer demand, which will cause the economy to spiral into a vicious cycle. Attacks of this nature have a significant negative effect on the economies of emerging market nations. Investor confidence in the markets of emerging market countries declines as a result of the global economic turmoil. Investors typically withdraw their money right away, which has an unavoidable effect on emerging market economies and causes their inflation rates to continue to rise. If there is a decline in the amount of money coming in, there will be a corresponding decline in the amount of money that can leave the country, which will negatively affect the economy and, typically, cause the currency to depreciate even more. The cost of living will increase as a result of the currency's devaluation. The epidemic situation is challenging for developed nations as well. According to the IMF forecast, the combined economies of European nations and the United States will both experience significant declines.

The US economy has also been hugely impacted by COVID-19 (see Figure 3). The American stock market experienced a sharp decline in March 2020 and four circuit breakers in the preceding ten years. During the pandemic, the NASDAQ index fell by more than 5% [5]. By the afternoon of May 12, the unemployment rate in the US had risen to 25%, and the inflation rate had risen as well, reaching a peak of 9.1% in June 2022. Social tensions and crime rates rise as unemployment rates rise. Some people might be jobless for a while, while others might be jobless for good. For ten years, the epidemic will prevent the labor market from improving.

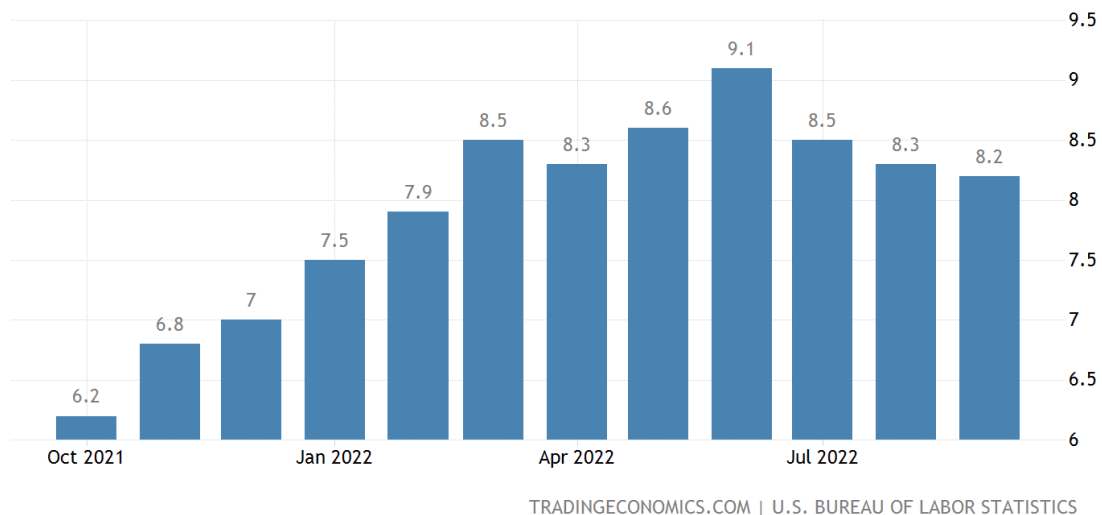


Fig. 3 US inflation rate [4]

From Figure 4, The retail sales growth in March was - 8.7%, which set a record low; the industrial output value increased by - 6.3%, the worst since 1946. As can be seen from the US retail sales data on April 15, the US economic data has essentially broken the historical negative growth record. Even worse data was found in April. The New York Federal Reserve's manufacturing index decreased to - 78.2 at the fastest rate ever recorded, exceeding market expectations by twice as much; There was also the biggest monthly drop in the confidence index for real estate manufacturers in 30 years; it is anticipated that at least 6 million additional people will apply for unemployment benefits. As retail sale industry was effected by COVID-19, facing situations like factories closing down. This is the same for most industries, and because of not only facing COVID-19 but also from the Ukraine war import has become restricted. US relies on import from Russia on oil and energy, also import from China. As a lot of the low level industries had been transferred to cheap labour countries like China, the Zero Covid policy in China has had huge impact on US, with factories closed down, flights being banned and perilous conditions in the shipping industry. The cost of production in US market increase with declining productivity because of closed closed factory it caused price level of goods and services to jump up, causing a continuous high inflation rate that is around to 8%, far from the target inflation rate of 2% announced by the Federal Reserve.

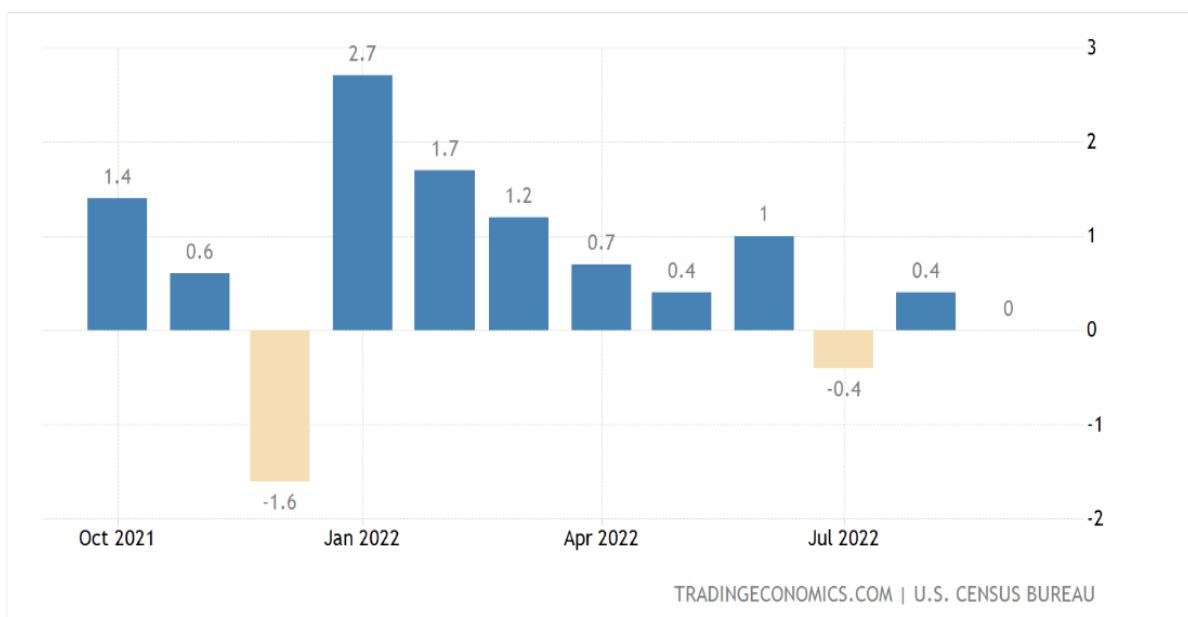


Fig. 4 US retail sales [4]

2.2 Consumer Price Index

According to the CPI, it shows that the three largest economies are all experience an inflation to certain extend. US economy is experiencing a high inflation with a CPI going up from 276,589 in October, 2021 to 296.808 in September, 2022 (see Figure 5). This has a significant effect particularly on consumers and firms as the price of good rises in the basket of goods that are being measured including four areas: food, energy, commodity, and retail and services. Housing price as apart of retail and service has been increasing rapidly after the outbreak of COVID-19. Pushing the CPI for housing on a rapid speed at the end of 2021 and a year-to-year growth. Energy price has also been rising because of the Russia Ukraine crisis contributing to the high inflation rate in the US economy [6]. Also, another reason that caused a spike in inflation in US was because COVID paralyzed the economy. Lockdown happened and business were closed, consumers stayed home and consuming goods and services were put off during the period. Employers slashed 22 million jobs causing the economic output to plummet at 31% at annual rate in the April-June quarter in 2020 [7]. Affecting the inflation rate to peak as price increased because of a shortage in supply. But by spring 2021, as restrictions were lifted and people could travel out it. A recovery in economic output still did not lead the inflation rate to decrease instead, it continued spiking up with the CPI also as the supply chain was being disrupted during the lockdown. Demand exceeding supply causing the price level continue rising in the economy and a high inflation.

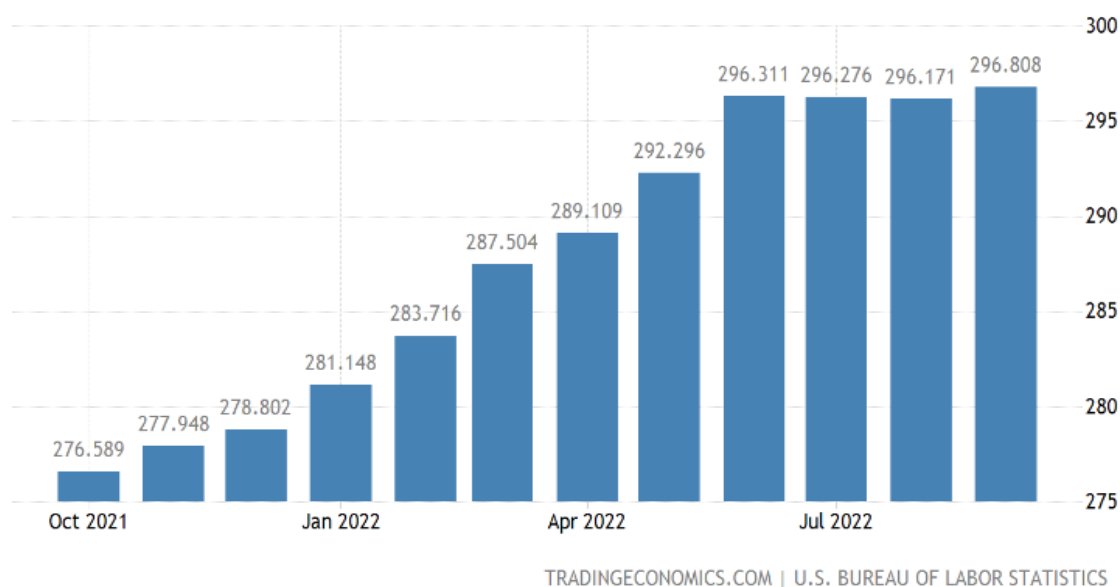


Fig. 5 US CPI [4]

EU has also experienced a high inflation with the rise in energy price because of Ukraine Russia Crisis and imposing economic sanction on Russian energy, oil, and key services. This highly contributed to the inflation in the EU economy. Firms are also affected because of the supply chain being hit by the COVID-19, and lockdown as a shortage in shipping and import and a shortage in supply causes a form of higher price. According to the European central bank, the pandemic has changed how people live and work, and their demands. So, consumers are buying more of a certain product for example electronics and home improvement supplies [8]. When firms cannot keep up with consumers demand, the price then rises. Because CPI only measures the spending on average and does not reflect the changes in price experienced by individual. So, there is still an increase in CPI from 109,41 in October, 2021 to 119.3 in September, 2022 (see Figure 6). With a hit in supply chain, it was difficult for firms to keep up with the rapid rise in demand, causing shortage and an increase in price for consumers.

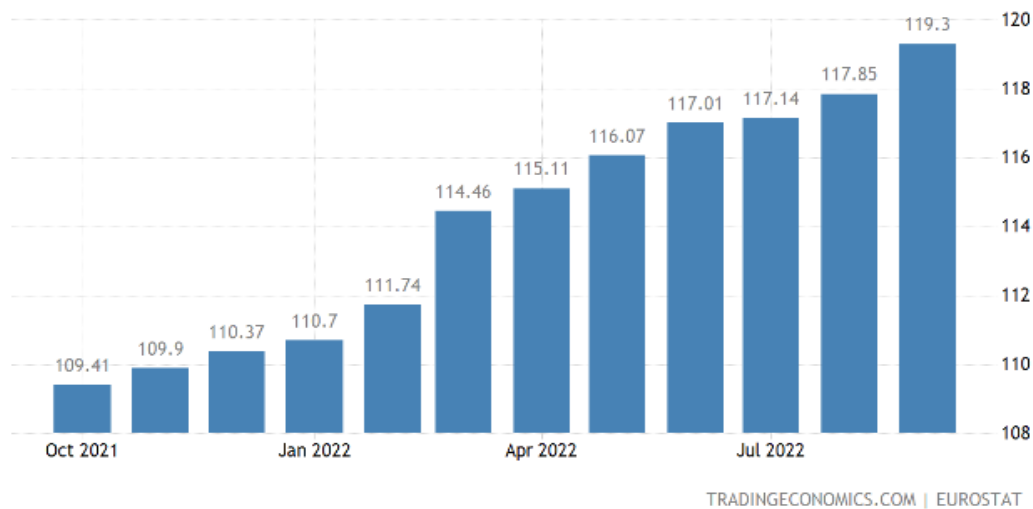


Fig. 6 EU CPI [4]

Business and factories were shut down in China's economy as a result of the government's implementation of the zero COVID policy lockdown, which also forbade the use of air freight routes and created hazardous conditions in the shipping sector, disrupting the supply chain. As there are more than 100 crafts still trapped at the Ukrainian port. Also, several techs manufactures and business shut down in Shenzhen, with delay in shipment on tech components [9]. But from the CPI index it shows that there is only a slight increase from 101.3 in October, 2021 to 103.4 in September 2022 (see Figure 7). Even though firms experienced lockdown, slashing jobs and economic output reducing especially for shipping industries in China, the amount of export reduced. But there was not a significant impact on the increase in price, as the CPI shows that increase in price is not as significant as the other two economies, and having slight impact on consumers on purchasing goods. The disruption of supply chain under the outbreak of COVID-19 did not bring a high inflation rate to China's economy compared to US and EU experiencing a high inflation.



Fig. 7 China CPI [4]

3. Suggestion

From the inflation rate and consumer price index, it concludes that all three economies are experiencing an extend of inflation under COVID-19. Especially US and EU are experiencing a high inflation, with the inflation rate in the EU economy jumping up to 10%, it the first time reaching double digit. It is not reasonable as EU's target for inflation rate is 2%. Also, for the US economy as their inflation rate has also reached up to 8.2%, while their target is also an inflation rate of 2%. To keep inflation low and stable is one of all governments' macroeconomic goals. Governments should use monetary policy and raise interest rates to lower the inflation rate. Increased demand is the primary cause of inflation, so the US Federal Reserve has been on a path of tightening monetary policy to reduce inflation to a targeted 2% by raising interest rates to increase the cost of borrowing from business loans to mortgages and credit cards. The Federal Open Market Committee started the process of raising interest rate by 0.25% in march,2021. Then a 0.5% raise in may following 0.75% hike both in June and July. The rise of 0.75% interest rate was the largest single hike in 28 years [10]. With commodities and energy price continue to raise it will bring impact to both the US and EU economy upon the Global supply chain. The US Federal reserve announced that they will continue to raise interest rate according to the US economic data like CPI. Since 1970, when the Federal Reserve started its program of money printing to stabilize the market, the purchasing power of the US dollar has dropped by 95%. When China increased its monetary and fiscal stimulus measures in response to COVID's continued spread, investors' confidence in their investments was restored. However, if China continues to print money carelessly, vicious inflation and currency devaluation will occur within the next three to five years. The epidemic had a small impact on the dollar index on the world financial market, and major countries' core assets increased.

4. Conclusion

The epidemic is having a particularly negative economic impact on emerging market nations. The new market nations' economies are susceptible to outside shocks. Internal and external consumption fell during the COVID-19-induced economic crisis, and the factory's output rate did too. Due to this circumstance, local employees will likely receive significantly lower pay or even be fired. Their income is impacted, and since the labor force is declining, there will be less social demand and less consumer demand, which will cause the economy to spiral into a vicious cycle. Attacks of this nature have a significant negative effect on the economies of emerging market nations. Investor confidence in the markets of emerging market countries declines as a result of the global economic turmoil. Investors usually withdraw their capital immediately, production declines in the market, the cost of production rises with the average price level for goods and services causing inflation rate to rise. Which high inflation will have an unavoidable impact on the economy of emerging market countries, and their economic growth rate.

The epidemic situation was mostly difficult for developing countries like US and EU countries, with severe outbreaks and restrictive policies set by the government on towards producers, the economic aggregate contracted significantly. The overall economic output is declining, factories and industries are effected by the COVID-19 and closing down, with also import and export being restricted. Especially US on import as their low level industries have all been transferred to cheap labor countries like China. They rely heavily on import. As the availability of resource in the market is declining, it means there is more scarcity and effects the average price level to rise causing high inflation in the economy.

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