Quantitative easing in the United States in 2020 after the covid-19: effects on U.S. economy and implications from historical policy about how to improve the policy

Shengshihua Yuan *

Ulink College of Shanghai, Shanghai, 201615, China

*Corresponding author: wangzuoer@ntu.edu.cn

Abstract. The quantitative easing program, an unconventional monetary policy, was implemented in the U.S. for four rounds till 2020 to stimulate the economy during some recessionary times. This paper discussed the instrument and the objective of the four rounds of quantitative easing policy and the similarity of the aims. The paper focused on the impacts on the U.S. economy of the policy, both the positive and the negative. The policy led to economic growth, combating the recession and possibly induced inflation. They also lead to the depreciation of the U.S. dollar in different periods and increase income inequality and wealth inequality. Then this paper discusses the policies that can be used to deal with the problem that may happen during the fourth round of the quantitative easing program, which mainly focuses on supply-side policies.

Keywords: United States, Covid-19, Quantitative easing, Effects, Historical policy.

1. Introduction

1.1 Research background

During the covid-19 pandemic, many industries experienced a hard time and suffered a loss due to the slumped consumption and the unavailability of carrying production. Thus these companies were unwilling to make investments due to the lowered profits and the lack of confidence in the whole market. This is especially due to the uncertainty of production and earnings caused by the covid-19 lockdown. The aggregate demand also falls the aggregate supply. As a result, This unexpected catastrophe triggered a deep economic downtown in the United States.

The U.S. federal reserve carried out quantitative easing, unconventional monetary policy in response to the recession. The Fed purchases longer-term securities from the open market to increase the money supply and encourage lending and investment. Such policy will add new money to the economy and lower the interest rate by bidding up fixed-income securities. The U.S. Fed Reserve had carried out such policy several times to stimulate the economy, for example, during the financial crisis in 2008. By December 2008, the Fed had lowered the Fed funds rate from 5.25% in September 2007 to near zero. The GDP eventually rose after falling into the crisis [1]. Quantitative easing is an effective tool for the economy to conquer the recession and prevent the economy plummet into depression. The short-term interest rate could be lowered by some expansionary monetary policies, such as increasing the money supply by decreasing the required reserve ratio or opening market purchases. However, if the liquidity trap happens, the monetary policy becomes ineffective due to the very low-interest rates, and the quantitative easing seemed to stimulate the economy greatly. But it is also important for humans to consider the potential longer-term adverse impact of these policies and the difference in the effectiveness of the policy under different economic conditions that distinct factors induce the recessions. So it is necessary to make some complementary policies simultaneously with the policy according to the drawbacks, which may generate more benefits for the economy as a whole and compensate for some adverse impacts of the policy.

1.2 Literature review

Rubino proposed that the quantitative easing has increased the monetary base and the inflationary effect is remarkable, but not all programs will increase inflation. Also, not all the programs will not result in a rise in a certain amount of consumer loans from commercial banks, but the consumers'

consumption expenditure did increase. He suggested that it is hard to judge whether the Fed's policies are optimal or not [2].

Montecino and Epstein found that quantitative easing led to a rise in the general net income inequality in the United States. This paper analyzed three channels: employment, financial returns, and mortgage, respectively. It showed that even though employment increased since the price of equity rises and the returns on short-term assets fell, people who belonged to the low-income level were strongly influenced. Thus the income inequality increased [3].

1.3 Research gap

Some researchers studied the quantitative easing's advantages and disadvantages to certain economic issues using theoretical models and researched and analyzed the first three quantitative easing programs. In contrast, few people researched the policies that can cooperate with the quantitative easing policy to combat the recession. It can compensate for the policy's adverse impacts and the latest quantitative policy implemented under covid-19, suggesting a relatively different economic condition than the first three.

1.4 Research framework

So this paper will not only analyze the effect of quantitative easing policy on the united states, including the merits and potential dangers to the U.S. economy. However, it includes what policy could cooperate with this expansionary monetary policy to magnify its expected effect or diminish the possible harms to the economy based on the experience to maximize the stimulation of the economy in the special time of Covid-19. Firstly this paper will analyze the motives for the Fed to carry out this policy and the expected results from the policy based on an analysis of historical data of the past three implementations. Then we would focus on the benefits to the economy brought by this measure, including a boost in investment, an increase in employment, and GDP growth. However, increasing government debt, inflation, and income inequity will be the major drawback of such a policy. So in the next part of the analysis, the focus will be on the past policies utilized by the U.S. government to solve such issues and comparisons of the effectiveness of such policies. The combined policy's cost and benefit analysis would also be involved and would be made to find out the relatively more efficient and cost-effective policy. Every policy has its drawbacks, so it is hard to find a flawlessly combined policy.

2. Methods

2.1 Literature analysis method

Literature research methodology is to read through, analyze, and sort literature to identify the essential attribute of materials. Its significant difference from other methodologies is that it does not directly deal with the object under study. Still, it indirectly accesses information from various literature, generally referred to as the "non-contact method" [4]. In this paper, through the research of different periods' of quantitative easing policy, we will find the common similarities between the economic conditions and the major objective of the policy. Analysis of data on economic changes in the United States will reveal the general benefits and cost of such policy on the economy. For example, whether the level of investment or GDP falls or rises through this measure? And why does the same measure in different periods generate contradictory consequences, or why the level of change differs a lot? Also, by analyzing the severity of the detrimental impact of the policy under different economic conditions, it can trace the specific causes of these flaws by comparing these economic situations. It can enable us to find the similarity of characteristics of these periods to the covid-19 in 2020 and to design the most suitable policies to mitigate the adverse impact of the 2020 quantitative easing, which may help avoid some wrong policies carried out before.

2.2 Comparative analysis

A comparative analysis compares items to one another and distinguishes their similarities and differences [5]. This paper will compare the combination of the quantitative policy and different macroeconomic policies, such as the fiscal policy, including the change in government spending and the tax rate, or the supply-side policy that involves training and education, privatization, and cut in income or corporation tax. The combined effects would be judged through different aspects, such as the influence on income equality and GDP, to design several policy combinations that would generate minimum costs like inflationary pressure or unemployment to maximize the economic benefits.

3. Result

3.1 Three Quantitative Easings

In November 2008, the Federal Reserve announced the implementation of a large-scale asset purchase program. This officially started in March 2009 and ended in March 2010, purchasing assets totaling 1.75 trillion dollars, including 1.25 trillion dollars of MBS, 200 billion dollars of GSE bonds, and 300 billion dollars of Treasury bonds. The main purpose of QE1 is to purchase the problem financial assets guaranteed by the state, rebuild financial institutions' credit, and inject liquidity into the credit market, aiming at stabilizing the credit market rather than stimulating the economy. On November 4, 2010, the Federal Reserve announced the start of the second round of quantitative easing, which plans to purchase a further $600 billion of longer-term Treasury bonds by the second quarter of 2011. The QE2 program ended in June 2011, buying only U.S. Treasuries. The connotation of QE2 is U.S. Treasury bonds. It is to solve the financial crisis of the U.S. government by increasing the supply of base money. In September 2012, the Fed announced QE3, an additional open-ended bond purchasing program of $40 billion a month of agency MBS. The Fed also indicated it would keep short-term interest rates (the fed funds rate) near zero through at least 2015. QE3 aims to stimulate demand, thus reducing unemployment. Also, its other objective is to keep the long-term yield flatter and support the housing market [6].

Quantitative policies implemented at different times are meant to achieve different macroeconomic aims and outcomes. But the common objective is to stimulate the economy and thus lower unemployment. The fourth Q.E. policy also has these two purposes under the recession and the job reduction caused by COVID-19.

3.2 The Importance of Quantitative Policy

3.2.1 Economic expansion

The measure of quantitative easing policy undoubtedly contributed a lot to the recession's recovery during some difficult times. Because of the zero nominal interest rate, the cost of borrowing was reduced a lot. Thus, consumers may purchase cars and houses due to the low cost of loans. Similarly, businesses may borrow more from commercial banks to increase their investment and research and development. As consumption and investment are core components of GDP, the quantitative easing policy induces the economic growth of the U.S., As shown in Figure 1. Nominal GDP increased steadily from 3588212.5 million dollars to 5436848.5 million dollars by the end of 2019, approximately 51.5 percent. Considering the inflation issue, the real GDP is also important. The real GDP showed that the growth rate was positive between 2010 and 2020 until the breakout of COVID-19 [7]. By analyzing these two aspects, the quantitative easing policy helped boost the economy during hard times.

3.2.2 Inflation

One issue that quantitative easing may cause is the pressure of inflation. According to the classic quantity theory of money and the theory of money neutrality, inflation is almost proportional to the growth rate of the money supply in the long run. During the quantitative easing periods, the money

supply expands greatly, exerting inflation pressure on the economy. Due to the increased aggregate demand after the program's implementation, the price level would also rise if there was not a simultaneous rise in the aggregate supply. But as observed in figure 1., throughout the whole period, the CPI fluctuates but does not show a constant increase during the quantitative easing times, which does not reveal an obvious relationship to the program. As a result, inflation appears to be uncertain during quantitative easing.

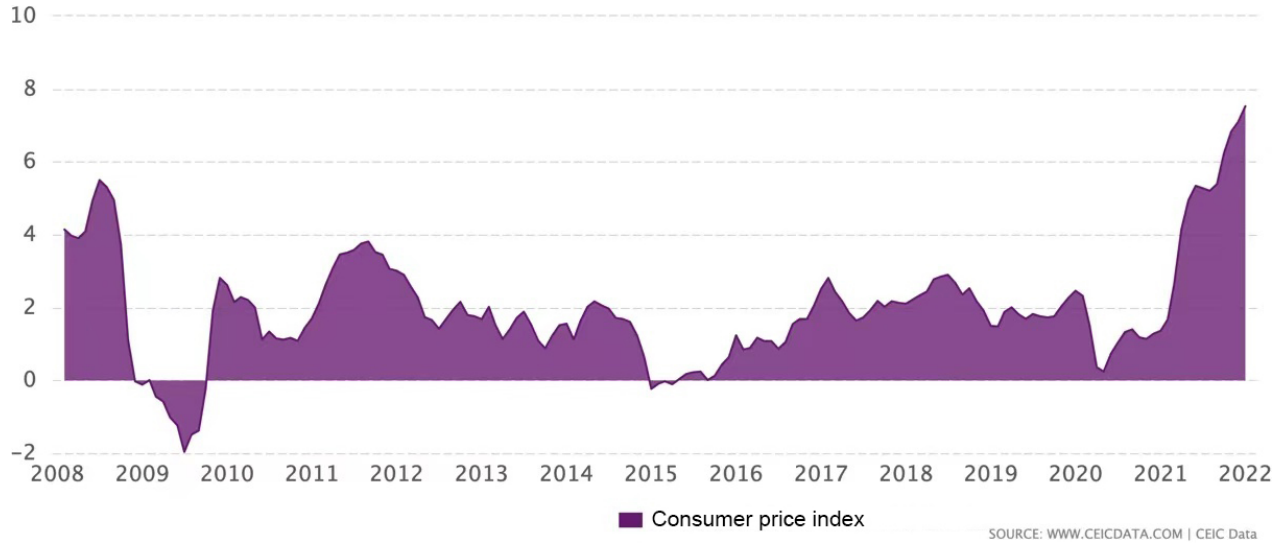

Figure 1. CPI in the US

3.2.3 The U.S. dollar's depreciation

The U.S. dollar experienced a persistent depreciation after the launch of quantitative easing policies. The zero interest rate caused hot money to outflow to other countries to take advantage of the relatively higher interest rate. Such action increased the supply of domestic currency, which resulted in the dollar's depreciation. Figure 2 illustrates the fluctuation of the euro's value against the dollar from 2008 to 2021. From this figure, after implementing quantitative easing policies, the euro greatly appreciated while the dollar declined. The dollar depreciation would significantly influence the trade balance of the U.S. As the dollar depreciated, the price of exports decreased while the price of imports from other countries increased. Thus, American products will become more internationally competitive in price, and their exports will increase from over 80 billion dollars to over 14 billion dollars in 2021 [8]. However, the depreciation of the U.S. dollar would cause the price of imported raw materials to increase, which would lead to an increase in the cost of production for some particular industries and hurt economic growth.

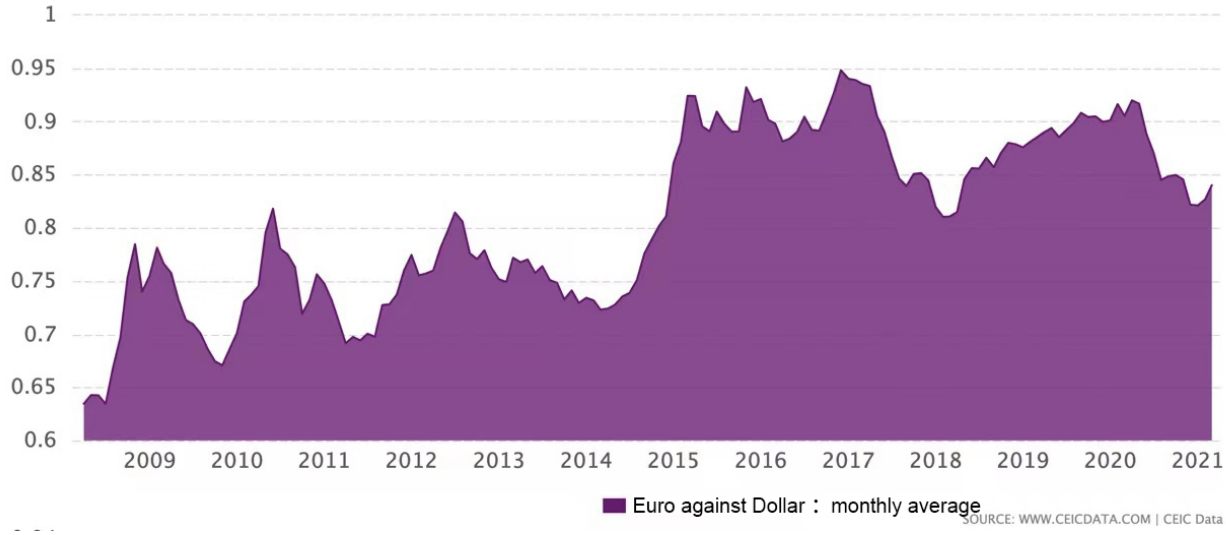

Figure 2. Euro against Dollar

3.2.4 Inequality of income

The economic growth of the U.S. due to the implementation of the quantitative easing policy also boosted employment in the U.S. Since the expansion of production enterprises, these firms have recruited more workers, and the unemployment rate falls every year. After the financial crisis, the U.S. unemployment rate rose drastically between 2008 and 2010 from less than 5% to around 10% [9]. But it decreased until 2020 as the breakout of COVID-19. However, the drop in unemployment rates is accompanied by the issue of aggravating income inequality. The U.S.'s Gini coefficient showed a reverse relationship to the unemployment rate, which rose from 40.4 in 2010 to 41.5 by 2016 [10]. The increase in income equality comes from inflation and the increase in the value of some assets. The aggregate demand increased because of the zero interest rate, which boosted investment, borrowing, and consumption. So did the price level, which led to a distribution of wealth from the creditors to the debtors. Furthermore, the quantitative easing policy reduced mortgage interest rates and short- and long-term interest rates. Consequently, the value of long-term treasury bonds and mortgage-backed securities (MBS) increases, and the holders of these assets benefit from the quantitative easing policy.

3.3 The potential problems of the QE4

The fourth round of quantitative easing was carried out after the breakout of COVID-19, aiming to stimulate the economy. However, based on analysis of the previous three rounds of quantitative easing and recent data, several issues tend to happen with implementing the fourth round of quantitative easing policy: inflation, exchange rate, and unemployment.

4. Discussion

4.1. Inflation

After the quantitative easing policy, the CPI of the U.S. represented a growing trend, and until January 2022, the growth rate reached over 7.5 percent [11]. Short-term inflation is not a significant issue since inflation in the short term could restore the price level before the recessionary periods. But the possible hyperinflation that the increasing supply of money may cause requires attention.

To tackle the inflation issue caused by the large expansion of the money supply and the increasing aggregate demand, there are two approaches to achieve the aim of mild long-term inflation. The first approach is to implement specific supply-side policies, such as the privatization of some firms and deregulation. Due to the COVID-19, many businesses were strongly harmed since they ceased

production, and some of them even could not cover the fixed cost, forcing them to leave the market. Appropriate deregulation would let these firms increase the quantity and quality of their products, thus contributing to an increase in the aggregate supply. Privatization would increase the competition in the markets and the efficiency of some firms, which would promote products as well. The U.S. government could also increase spending on infrastructures such as roads and airports to reduce the transportation costs of firms and thus increase their production efficiency. But the increase in government spending would simultaneously increase aggregate demand, so it must be prudent for the government to determine the amount of money to spend. However, the effectiveness of supply-side policies would be seen in the long run since they aim to increase the long-term competitiveness and productivity, and there is no guarantee that they would successfully reduce inflation. Then comes the second method, which is through monetary policy. The nominal interest rate is zero during the quantitative easing periods, which greatly increases economic growth and employment. However, the extremely low interest rate appears unnecessary now that the economy has recovered from the relatively deep recession. As a result, the Fed could gradually raise interest rates to the general level of recent normal years while decreasing its purchases of government bonds. Private consumption and investment would decrease since borrowing costs now increase, so the speed of increasing aggregate demand may be slower and thus reduce inflationary pressure.

4.2 Depreciation

The U.S. dollar has depreciated by 4.2 percent. The real exchange rate of the U.S. constantly decreased after the fourth round of the quantitative easing policy, and by the end of May 2021, it decreased to 104 [12].

There are several ways to deal with the continuous depreciation of the U.S. dollar. The first is to increase the demand for U.S. exports. Even though the depreciation could increase the U.S.'s product price competitiveness and thus boost exports, the depreciation effect may be much stronger than the compensation effect, so it needs some intervention. Through supply-side policies, for example, the education and training of the workers, the quality of the products may be higher, which will attract more foreign consumers, and the demand for the U.S. dollar would be higher. But the increase in exports will result in the inflationary pressure mentioned above since it will increase aggregate demand. Another measure is that the Fed also gradually increases the interest rate to attract the hot money flowing out of the country in search of higher interest rates and expects that other currencies may rise in value due to the increasing interest rate. Even though higher interest rates impede investment and consumption, they partly relieve the pressure of inflation.

4.3 Unemployment

During the quantitative easing times, banks lend easy money to businesses. They then use this money to expand, which creates many more jobs, and thus the employment level rises rapidly. But quantitative easing may only create jobs in the short run. However, the economy became accustomed to developing solely after getting monetary injections from the central bank during this period. As a result, bond purchases cease, bank financing ceases, and firms begin to contract. It is common knowledge that as firms contract, the number of staff they can hire decreases. People are fired as a result, and job numbers collapse. Especially during COVID-19, the workers in the firms that invest a lot in producing the products needed only during pandemics, such as masks or nucleic acid test paper.

So, to solve this problem, the supply-side policy mentioned above may be helpful. For low-skilled or single-skilled workers, education and training could improve their skills or allow them to gain new skills to avoid being structurally unemployed. They may only experience a period of frictional unemployment and later find a new job in a new industry.

5. Conclusion

5.1 Key findings

The quantitative easing policy has its merits but also drawbacks. It can effectively stimulate the economy due to the increase in investment and consumption caused by the reduced cost of borrowing. Still, the growth of aggregate demand will result in inflationary pressure. The dollar depreciation would result since the very low-interest rate leads to the outflow of hot money to other countries with relatively higher interest rates to earn a profit. Inflation may result in the redistribution of income, leading to an increase in income inequality.

The solution to the fourth round of quantitative easing policies involved the supply-side policies of deregulation and privatization, which could increase competition in the market and production. The education and training of the labor force are also helpful.

Overall, the quantitative easing policy is an effective tool for boosting the economy. However, there should be cooperating policies to compensate for some detrimental impacts.

5.2 Limitation and future study

This paper mainly explores the consumption effects of the fourth round of the Q.E. program based on the recent data and the data from the three previous programs. So in the future, after gaining more information on the exact impact caused by the fourth round of the quantitative policy, it would be able to improve the suggested policy.

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