Analysis of the Impact of US Quantitative Easing Policy on China's Macro Economy

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Abstract. The 2008 financial crisis caused many large enterprises to go bankrupt. In order to revitalize the crumbling economy and inject liquidity into the financial markets, US has carried out four rounds of QE policy. Since the COVID-19, America has resorted to unlimited quantitative easing in hopes of saving economy. The United States' QE has an impact on China's economic development due to their frequent economic interactions, and this impact will unavoidably spread as a result of QE's spillover effects. This research examines the Fed's QE monetary policy influence on Asian's biggest country economy in two time period, after the 2008 financial crisis and during the new coronavirus pandemic, in depth using current theories. In this study, the content of the QE monetary policy in the American continent is introduced, the implementation backdrop and impact of the policy are examined. The main focus of this paper is to present the impact of US QE monetary policy on China's economy. First of all, US policy impact will inevitably spread to China's monetary policy and exchange rate policy. Secondly, the QE's spillover effect of Chinese inflation is analyzed from RMB appreciation and commodity price rise. Third, the capital market's strong liquidity will lead to the inflow of international capital into our country due to the United States' QE monetary policy, so the impact on our capital market is analyzed. Fourthly, it analyzes the impact of dollar depreciation brought about by QE on the China's foreign exchange assets safety.

Keywords: Quantitative easing, Inflation, Monetary policy, Capital markets.

1. Introduction

1.1. Research Background

The subprime mortgage crisis in the United States broke out in 2008 and spread rapidly, affecting the whole financial system from the credit field, and the region also spread from the United States to all corners of the globe. At this point, the crisis is not an ordinary single country impact, but a global economic crisis, has guided the financial institutions into depression or the real economy to collapse of various countries to varying degrees in many areas.

The impact of this economic crisis is very different from the past, it makes the traditional monetary policy cannot be transmitted at the speed of the past, and even ushers in the result of policy failure. The liquidity of traditional money could not affect financial markets and the real economy as expected, so extreme quantitative easing policies were created.

In the case of QE, "quantitative" refers to expanding the money supply, while "easing" refers to reducing pressure on banks. Quantitative easing policy mainly refers to some policy actions that indirectly increase the base money supply, when the policy policy is zero or close to zero interest rates. These policies can be roughly understood as the purchase of medium - and long-term bonds, such as government bonds, to inject large amounts of liquidity into the market, with the aim of encouraging financial lending and promoting economic development.

Because the theoretical basis of any new policy is based on the traditional policy of the past, quantitative easing policy is no exception, from a certain point of view can be seen as a special open market operation.

The point that these policies deserve extensive study by Chinese and foreign scholars is that the point of action of the policies is not the traditional financial operation tools, such as adjusting interest rates to increase the base money supply, but the open market operations of the central bank system to affect the money supply. Its policy philosophy is to create new money, which is different from its

traditional credit-easing tools, to inject new money into the economy in the form of purchases of market financial assets, stimulating policy dynamism and thus economic growth.

The United States has spent nearly a century consolidating the supremacy of the dollar, which has chosen its own monetary and fiscal policies under a floating exchange rate system. Because of the existence of international trade, the dynamics of the dollar can affect all aspects of the world economic system. The course of the dollar's dominance makes the development of the global economy significantly changed by the adjustment of the dollar policy. Because the volume of liquid capital is too large, it will not only affect the United States itself, but also affect other countries. As the second largest economy after the United States, China plays an important role in global economic development. As a result of frequent international economic transactions and capital exchange projects, all aspects of China's economic development will be affected by the US quantitative easing policy, from commodity transactions in the real economy to the exchange rate, an important factor affecting financial activities, will fluctuate significantly because of quantitative easing policy.

1.2. Research Process

On the basis of the existing literature, this study summarizes the mainstream views. First, summarize the background of QE policy and economic environment to get a comprehensive research background; Next, analyze the literature in the field to get the mainstream view; Then, it analyzes why the United States implements quantitative easing and what is the historical background of implementing these policies. Next, it analyzes the specific impact of the quantitative easing policy in the American continent on the two major economies of China and America, and finally puts forward suggestions on future strategies according to the impact on China and draws relevant conclusions.

2. Literature Review

The research of western scholars and domestic scholars can be divided into theoretical analysis and empirical analysis. The theoretical analysis will focus on the macro impact and follow-up countermeasures, and there are few studies on mutual relations. In empirical analysis, statistical analysis and macroeconomic model research are carried out through large amounts of data, focusing on the impact of continuity, specific analysis of transmission channels, and the impact of financial security.

Weng and Meng (2021) researched that the dynamics of the US dollar will have a significant impact on China's two-way trade. The increase of the US dollar supply will promote the development of China's international trade, while the increase of the international commodity price index will reduce China's import and export [1]. Cao (2020) researched that: in terms of traditional policy, the positive influence of US monetary policy will lead to the rise of China's interest rate; In the case of unconventional policies, positive changes in the Fed's total balance sheet have led to short-term downward pressure on the level of China's total output [2]. Zhu and Sun (2020) got the conclusion that the QE4 policy of the United States can significantly increase its GDP and investment in basic fields, but significantly reduce China's GDP and construction in related fields. At the same time, the United States has reduced exports and increased imports, and its trade deficit has further expanded, while China's exports have increased, imports have decreased, and its trade surplus has expanded [3]. Chiang (2019) showed that the implementation of QE in America, overnight RRP and China's RRP policies have a obvious spillover influential line on the eurozone, and the monetary policies of RMB and euro develop in the opposite direction but are interdependent [4]. Priftis and Vogel (2017) found that under the policy background of quantitative easing, stock prices, exchange rates, and savings decisions of relevant institutions will all change due to the newly obtained balance formula of investment portfolio, and the reason for such changes is that the elder asset class cannot be completely replaced by another one [5]. Park, et al (2016) found that during the period of quantitative easing, a lot of capital flowed into developing countries, and the phenomenon similar to high inflation brought about by quantitative easing resulted in the result that these monetary policies could not stabilize the

"taper tantrum", and the macro policy could be used as an expected policy to intervene in the future, but it did not necessarily reduce the destabilizing effects [6]. Lin (2014) found that the QE policy in America has a giant effect on the main indicators of China's macroeconomic security, micro financial security and external financial security, and thus has a significant impact effect on China's financial security [7].

3. Reasons and Background of Quantitative Easing in the United States

In the wake of the 2008 financial crisis, the US Treasury seized control of Fannie Mae and Freddie MAC, the two dominant lending companies, and pledged substantial cash support on behalf of the national government, which represented government protection against massive losses from a default. Then came the $85 billion bailout of American International Group. At the same time, the Federal Reserve did not provide policy bias and financial support to all large corporations, leading to the bankruptcy of some major corporations, such as Lehman Brothers. Facing such distress is not only a small number of enterprises, many pioneer companies in the field are on the verge of collapse. In the midst of such a crisis, a credit freeze has set in. In response to such a crisis, the U.S. Treasury and the Federal Reserve launched a massive $700 billion rescue program. On October 3, former President George W. Bush signed the economic rescue legislation and pushed for it to become law. On October 29, the Federal Reserve lowered the federal funds rate to 1% under the new law. At this stage, the monetary authorities adopt rescue plans, this time to maintain economic stability and prevent the collapse of the financial system. Lower interest rates are intended to revitalize the economy by easing access to and restrictions on credit, reducing the burden on consumers and businesses, and stimulating individuals to continue spending. Despite numerous policy responses, the turmoil in financial markets has not been resolved. Although interest rates are already very low, credit remains tight and the credit crisis has not been resolved. In this economic context, the market interest rate has reached the point where the crisis can no longer be alleviated, and the Federal Reserve can only rely on unconventional quantitative easing policies, hoping that the new policies can make the economy grow, which means that America has entered the era of QE.

In October 2008, the Fed activated its 1st round of QE action, pumping $1.725 trillion of base money into the market by the end of March 2010, 72% of which was used to buy $1.25 trillion of mortgage-backed securities. 17% was used to buy $300 billion in Treasury securities and 11% was used to buy $175 billion in agency securities. As soon as the economy recovered, the Fed began its second round of quantitative easing and pumped $600 billion into the market over six months to buy Treasurys, twice as much as it spent buying new securities and continuing previous investments. So here gets the result: $250 billion to $300 billion to reinvest in loan-backed securities and to continue buying Treasurys that were used in the previous round. With the U.S. economy in recovery mode, an important cause for the Fed to put the 2nd round of QE into practice is that the momentum of the American economic increasing is weakening, and quantitative easing is trying to consolidate the momentum of the economic change in the absence of conventional stimulus policy measures.

In mid-September 2012, the Fed started its 3rd round of QE, which included keeping interest rates low and adding $40 billion in mortgage-backed securities. Internationally, at that time, the development situation of the major developed economies is facing stagnation and unable to move forward. The three major economies represented by the United States, Japan and Europe have jointly decided to use the same monetary policy to promote economic recovery. Domestically, QE3 was launched to address high unemployment and the fiscal cliff, and to further stimulate economic growth. According to statistics, although the US unemployment rate has dropped to 7.8% after two rounds of easing policies, the problem was still severe. In addition, on January 1, 2013, a number of tax cuts and stimulus policies, including the extended Bush tax cuts, the payroll tax cut and the business relief program initiated by Obama, would expire. The automatic spending cuts agreed by Congress would also take effect. This would eventually reduce America's fiscal deficit by about $500 billion, or 4% of GDP.

On March 15, 2020, the US Fed announced that it would restart quantitative easing, which can be considered the fourth round of QE. The plan is to purchase $500 billion of US Treasury bonds and US $200 billion of mortgage-backed securities in the next few months to ensure that financial institutions with market adjustment capabilities and sufficient capital preparation have the full ability to guide enterprises affected by the new coronavirus outbreak on the right track, and to guide and encourage the US national economy to overcome the difficulties brought by the social turmoil. The result is to stabilize the market. In addition, the Fed has cut interest rates twice, at which point the target range for the federal funds rate has been lowered to between 0% and 0.25%. The US government and the Federal Reserve announced the resumption of the commercial paper financing mechanism used in the 2008 financial crisis, in order to attract enough capital into the stock market, but it has not been a good effect, the US stock market was still continuing to fall. On March 23, 2020, the Federal Open Market Committee held an emergency meeting, would buy unlimited amounts of US Treasuries and MBS on demand, and expand the quantitative easing amount to no limit. In a separate announcement, the New York Fed said it would buy $75billion of Treasuries and about $50billion of agency mortgage-backed securities each day for the week beginning March 23 "at reasonable prices".

Table 1. History of QE

Policy and Time	Background and measures
QE1: 2008.11-2010.4	In September 2008, Lehman Brothers collapsed, the United States financial crisis erupted, November 23, the Fed started the first time to buy agency bonds and mortgage-backed securities, opened the 1st round of QE policy in America. In March 2009, under the influence of economist Friedman's theory that "changes in money supply will affect real economic output", the Federal Reserve adopted QE policy to print a large amount of money to increase market liquidity and stabilize asset markets such as stocks.
QE2: 2010.10-2011.6	In the 9 months of 2010, the US economic growing was weak, on November 4, the Federal Reserve launched the 2nd round of QE systematic policies, the whole of 600 billion dollars of middle and long-term US Treasury bonds, and through the increase of basic money supply, to face the macro comprehensive risk, at the same time, the Federal Reserve once again to other countries "sell" Treasury bonds.
Operational Twist (TO): 2011.9-2012.12	After the withdrawal of QE2, the US economy recovered slowly, and Fed declared the actual implementation of "Operation Twist" on September 21, 2011, planning to dump US $400 billion of short-term Treasury bonds and purchase US $400 billion of long-term Treasury bonds before June 2012. Its "Operation twist" is similar to QE2.
QE3: 2012.9-2012.12	Because the social, economic and political conditions of America were in a relatively severe state, with a high unemployment rate and a huge debt that cannot be easily borne, the upcoming presidential election, the Federal Open Market Committee of the United States decided to start QE3 on September 13, 2012, and purchase $40 billion of MBS per month.
QE4: 2013.1-2014.10	On December 13, 2012, the Federal Reserve announced a new policy action to replace Operation Twist, which was to purchase $45 billion of long-term Treasury bonds per month, plus the monthly purchase of $40 billion of MBS that had just begun three months earlier, the Fed is pumping huge amounts of money into the market every month. In addition, the Federal Reserve has implemented a zero or very low interest rate policy, holding interest rates steady at 0-0.25%.
Unlimited QE: 2020.3- Now	On March 23, 2020, the Federal Reserve announced an unlimited asset purchase program. That would be $75 billion in Treasury bonds and $50 billion in agency MBS each day for seven days, with no limit set. At the same time, the Federal Reserve announced an expansion of the money market liquidity facility.

While the US dollar is the global reserve currency, the US dollar participates in various international commodity transactions, including bulk commodities, and has a significant impact on global financial and economic activities. Quantitative easing is a monetary policy tool that the United States has used many times in the 21st century, and each time with good response. The obvious effect

of this instrument is to weaken the dollar and stimulate short-term capital flows to a large and developing market, thus diluting US debt. What is good for the US market means that there will be an indirect negative effect on the rest of the market, and this negative effect will increase the losses of countries holding dollar fixed assets. This will have a big impact on the global economy.

4. The influence of QE on the US Economy

4.1. Reverse Deflationary Expectations

Deflation is another thorny issue for the Fed during the crisis phase.

Economists generally agree that deflation has occurred when the consumer price index (CPI) has fallen for three consecutive months [8]. Deflation is a sustained decline in the prices of commodities in the overall market, including a decline in the prices of commodities, a decline in the prices of labor costs, and a sustained decline in the prices of basic goods. Since the outbreak of the financial crisis in 2008, consumers have low enthusiasm for consumption due to the overall downturn in the market, and do not have normal demand for commodities, which makes the core consumer price index of the United States continue to decline, and the deflation expectation of the American society is everywhere. Such monetary policy could stimulate the rise of consumer demand, and the core consumer price index has gradually recovered since 2011, and was in a reasonable inflation range. During each round of quantitative easing, the consumer price index in the United States has been slowly but clearly improved, and the unlimited QE policy adopted during the COVID-19 pandemic has made the index rise rapidly in the short term, which could be seen to stimulate consumer shopping demand in a little period of time.

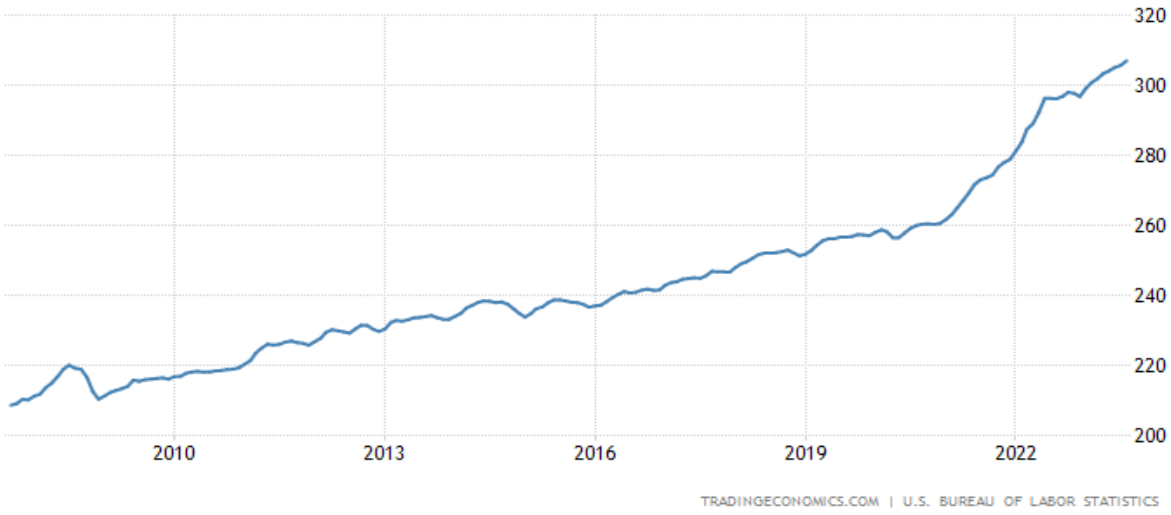


Figure 1. 2007-2023 US CPI Index

4.2. The Job Market Continues to Improve

Full employment is an important and main goal of macro-control.

The first two rounds of policies focused too much on market liquidity and financial market stability, and greatly ignored national livelihood indicators. Quantitative easing is not only a macroeconomic adjustment for the country, but also a positive guide to everyone's work and life. The rebound in the American job market has led to a steady decreasing in the group of long-term unemployed [9]. After the Fed beginned three rounds of QE actions, the employment environment in America continued to improve in 2013, and the unemployment rate index fell from 7.9% to 6.6% in a year, and it is expected to continue to fall in the future. The surge in unemployment has resurfaced in the course of the COVID-19 pandemic, and quantitative easing has proved to be very effective by rapidly falling to a record low in two years through unlimited quantitative easing.

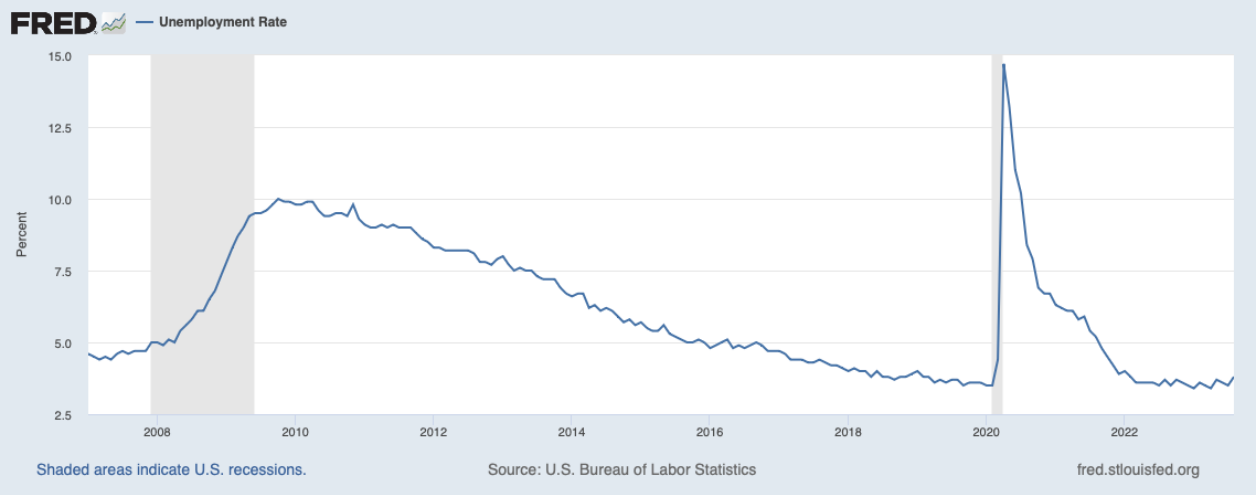


Figure 2. 2007-2023 US Unemployment Rate

4.3. The Real Economy Grew at a Low Speed

Economic recovery is the ultimate goal that the US government wants to achieve with quantitative easing. The first phase of quantitative easing worked well, with the US economy recovering significantly and for a short period of time, and economic indicators returning to pre-crisis levels at a remarkable speed [10]. The effects of multiple rounds of quantitative easing have kept the US economy growing steadily. According to the official data disclosure, the consumption data of the United States in 2014 have been significantly improved, and the GDP growth rate has risen to an unexpected height, and even returned to the average growth rate in 2010. In addition, the US fiscal position has improved, and the Federal Reserve's budget resolution for this fiscal year has mitigated the adverse impact of fiscal deficit pressures on economic growth.

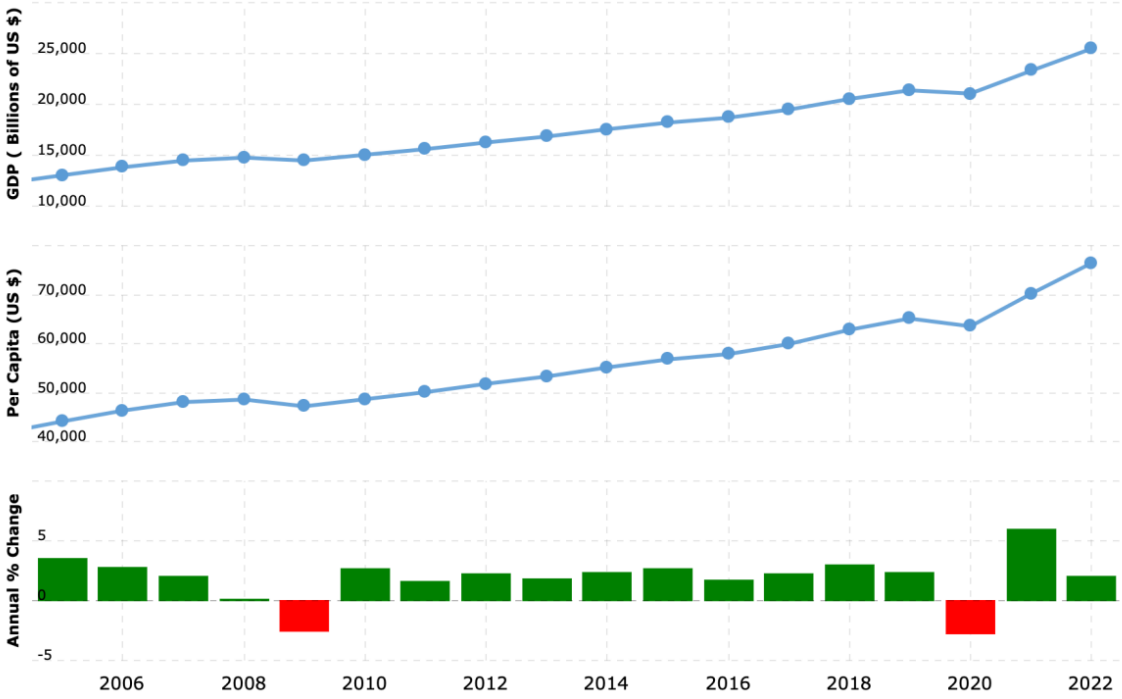


Figure 3. 2005-2023 US GDP

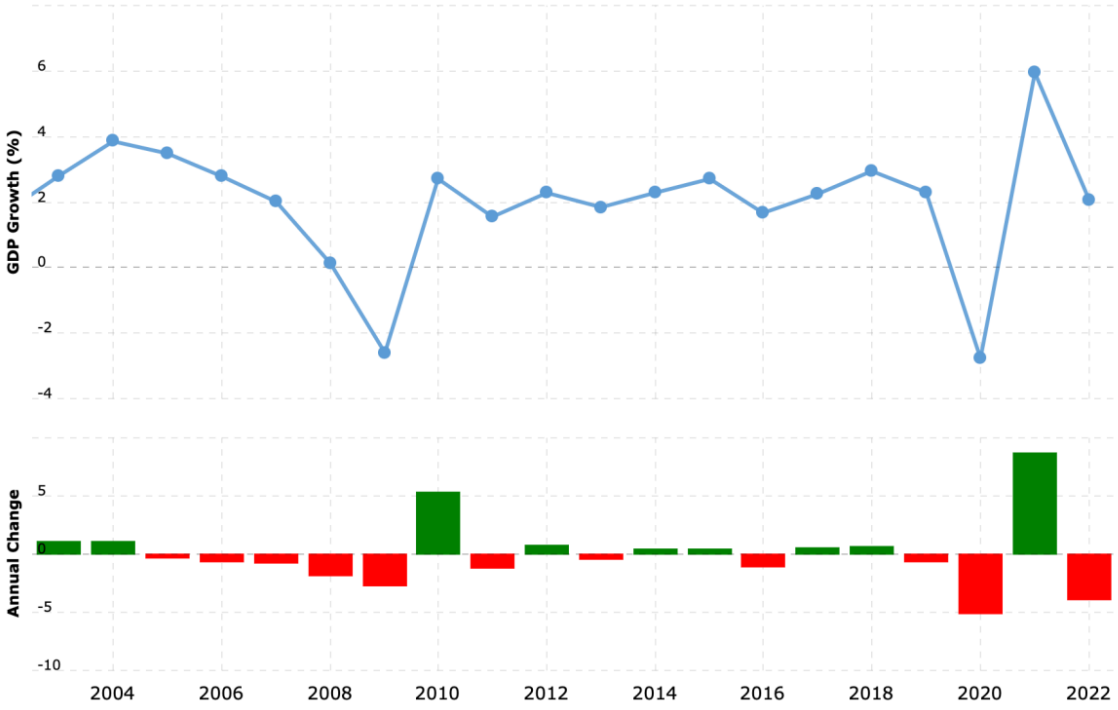


Figure 4. 2003-2023 US GDP Growth Rate

4.4. Financial Markets Stabilized as the Credit Crisis Eased

Maintaining financial market stability is an important motivation for the Fed. The government's hope that failed companies and related institutions can be revived shows that monetary policy works. By observing the relevant data of the real estate market and the stock market, we can see that the American financial market is recovering and developing slowly.

5. The Influence of the US QE Policy on China's Economy

Since the financial crisis in 2008, the form of monetary policy transmission has been based on direct monetary measures. And the indirect effects of abnormal monetary practices haven't been fully played [11]. Through the analysis of the influence of quantitative easing policy in America, it can be seen that this policy has achieved remarkable results. At the same time, it cannot be ignored that quantitative easing policy has brought a great impact on the real economy and brought excess liquidity to the real economy. As the largest economic individual in the global economic system, the policies and economic development adopted by the United States have a global impact, and no other country can avoid these impacts. How do these effects affect other countries? It affects other countries' economic operations through spillover effects. As a very important and very large economy in the global market, China will naturally be affected by these impacts. With close economic exchanges and frequent international trade, China and the United States are important economic partners that cannot be lost to each other. China also holds large amounts of US Treasury bonds. Therefore, the impact of the continuous quantitative easing monetary policy of the United States will inevitably quickly penetrate into all aspects of China's economic development, and the exchange rate, foreign trade indicators, capital liquidity, bulk product prices and other indicators will be clearly affected, resulting in exact changes in China's economic system.

5.1. The Influence of QE Monetary Policy on China's Monetary and Exchange Rate Policies

Nowadays, dollar remains the most important and biggest international reserve currency.

The introduction of QE by the United States has indirectly increased the number of US dollars in circulation, and the US dollar has depreciated to a certain extent. The RMB is facing great pressure

of appreciation, and at the same time, it will face a lot of foreign capital pouring into China. In the context of the US QE policy, China's monetary policy can only passively adjust with the US Failure to respond or wrong response will lead to excess liquidity generated by the spillover influence of the QE policy in the huge economic market, and excess liquidity will lead to a huge bubble economy in China's domestic assets. In the short term, faced with a large reserve of hot money, China's exchange reserves from other countries will naturally accelerate the rise, the appreciation pressure of the RMB will always stay at a commanding peak, excess liquidity of assets, and cross-border capital flows will be difficult to control.

In October 2010, it was the central bank's first move to raise interest rates in the face of the 2008 economic collapse, followed by a rapid increase in reserve requirements in the short term. With the economic status and central influence of the central financial system, the implementation of this monetary policy means that a large number of bank capital are frozen, so that these money cannot flow into the market through loans, reducing the liquidity in the market and controlling the liquidity of money. The important effects of this are to control inflation, reduce people's inflation expectations, and ensure that more money is kept in the bank. Therefore, raising the deposit reserve ratio will significantly reduce the liquidity of bank assets, making the central bank's regulation ability decline, and the most intuitive result is that the funds available for lending will be significantly reduced. Therefore, banks need to reduce their lending scale, which indirectly affects the market interest rate and the stock market, and ultimately reflects on the overall economy, so as to achieve the purpose of regulating the national economy. However, the continuous quantitative policy of the United States has led to excess liquidity, which has a serious impact on the fledgling economy, and this impact has offset the role of the Chinese central government in monetary policy, making the effectiveness of the central bank increasingly reduced.

To address excess liquidity in the financial market, the central bank in China raised the required reserve ratio several times in 2010 and 2011, bringing China's reserve requirement ratio to a record high of 21.5%, even though China's CPI still reached 6.5% in July 2011. This means that the China central bank tightening these policies has "failed", mainly because the QE monetary policy of America has allowed hot money in the international market to enter China, offsetting the role of China's monetary policy [12].

According to the "trinity" development strategy at that time, under the condition of open economy, it is impossible for a country to obtain monetary policy independence, exchange rate stability and capital free flow at the same time. Usually, an economy will choose two of the most suitable goals for its own interests as the main line of development and abandon the remaining one. China has pursued opening to the outside world for a long time and achieved good results under the historical strategy of reform and opening up. However, the capital market cannot be fully and completely opened up immediately, and it must be carried out gradually according to the plan, which means that it is impossible to completely restrict and control the flow of capital.

It can be reported that if the RMB exchange rate is to be kept stable, the monetary policy cannot remain relatively independent. China's macroeconomic policies cannot give full play to their expected effects, because the interest rate hike policy adopted by China to maintain economic stability will be offset by the monetary policy of QE. Since then, the central financial system of China has not used the way of raising the reserve requirement ratio to intervene in policy, not only found that two countervailing policies would make the whole effort futile, but also the fluctuation of interest rates belongs to the adjustment property of the capital market itself.



Figure 5. 2007-2023 China Interest Rates: 3-Month Rates and Yields

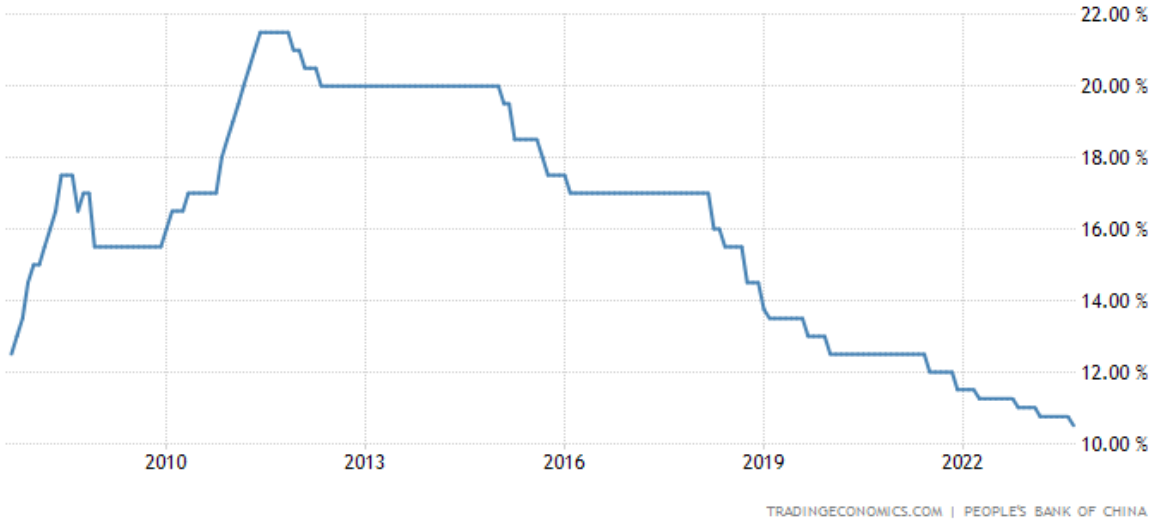


Figure 6. 2007-2023 China Cash Reserve Ratio Big Banks

5.2. Spillover Effect of US QE Policy on Chinese Inflation

In academic logic, if domestic interest rates suddenly fall, the country's currency will become less attractive, the public will be less willing to hold the country's currency, and capital will continue to flow abroad. The exchange rate institutional reform in 2005 made China enter the space of floating exchange rate system, the local currency would quickly knit, the real exchange rate would continue to decline, the speed and extent of currency depreciation would far exceed the equilibrium level, and the interest rate will also start to drop [13]. This is the reason why the yuan has appreciated under the influence of the US QE policy.

When the level of a country's exchange rate rises, the supply of its currency in the whole world financial market will exceed the demand. If the government wants to keep the country's basic economic index amid the chaos, it needs to buy foreign currencies to increase its foreign exchange reserves. The QE policy launched by the Fed in response to the 2008 comprehensive collapse has greatly increased the domestic currency supply in the United States, which has brought about the depreciation of the dollar and forced the appreciation of the RMB.

The continuous QE monetary policy of America has brought too much liquidity to the real economy, and the dollar has seriously depreciated against the currencies of major economies, which has put upward pressure on international commodity prices [14].

From all perspective of the Reuters CRB index, which measures international commodity prices, the adoption of QE policy will cause the CRB index to rise in the current trend. From the perspective

of international commodity prices, the depreciation of the US dollar during QE1, QE2 and QE3 led to the rapid rise of international commodity prices denominated in US dollars.

In 2005, China implemented the reform of its exchange rate system, gradually adjusting from a fixed exchange rate system to a managed floating exchange rate system. The floating exchange rate system enabled the RMB to actively adjust in line with market conditions, resulting in a substantial appreciation against the US dollar. At this time, the pressure became how to maintain the stability of the exchange rate, in order to maintain the stability of the exchange rate, the central bank needed to increase the supply of basic money in the domestic economy to counter the dollar reserves in the international market, and a large amount of basic money would make the money supply exceed the demand, leading to the rise of prices. At this time, it could be seen that the QE monetary policy of America has increased the pressure of RMB appreciation and inflation in China.

From 2008 to 2012, China's CPI showed an obvious upward trend, and the trend of CPI was the same as that of China's money supply. In 2020, in the face of the unlimited QE policy adopted by that continent due to the novel coronavirus epidemic, China's CPI trend and the base money supply have shown a relatively big difference, the base money supply has been rising while the CPI index has dropped significantly. However, in terms of the overall development trend from 2019 to 2023, the trend of CPI and the base money supply were both in an upward trend. This means that the price level of our country is rising in response to quantitative easing, getting that QE in that country has an obvious promotion of inflation in our country.

Due to the uneven distribution of resources in our country, many raw materials need to be imported to meet. From the perspective of crude oil imports, from 2011 to 2019, China's dependence on crude oil in the international market has been increasing year by year. The emergence of the novel coronavirus epidemic in 2019 has made the dependence on crude oil imports slightly lower, reaching 10,189,160 thousand barrels per day in December 2022. This is down from 10,301,224 BPD in December 2021. It is obvious that China has a great demand for crude oil, and the external dependence on crude oil in 2021 has reached 72%, which has already exceeded the warning line of 50%. Rising international commodity prices will inevitably increase China's energy import costs, resulting in cost-push inflation.

In addition, with the process of economic globalization, China's dependence on commodities of foreign origin is increasing every year, and the prices of imported raw materials have been rising, which will also make the cost of producing raw materials begin to increase. The only group that can catch the increase in costs is the consumer, so higher commodity prices and inflation are inevitable. It can be seen that the continuous QE monetary policy has exacerbated China's inflation by promoting the rise of international commodity prices.



Figure 7. 2007-2023 China CPI Index

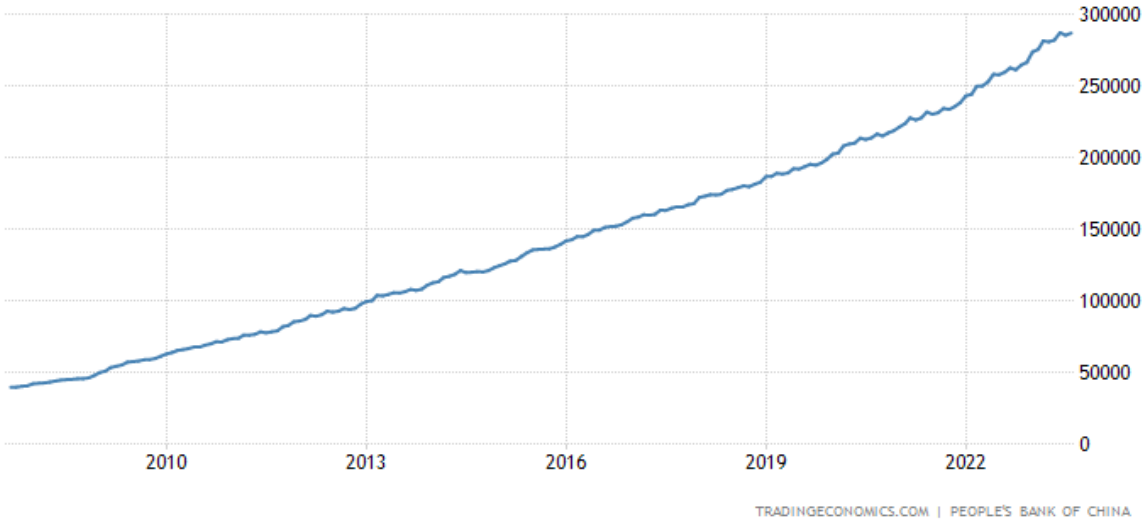


Figure 8. 2007-2023 China M2



Figure 9. 2007-2023 CRB Index

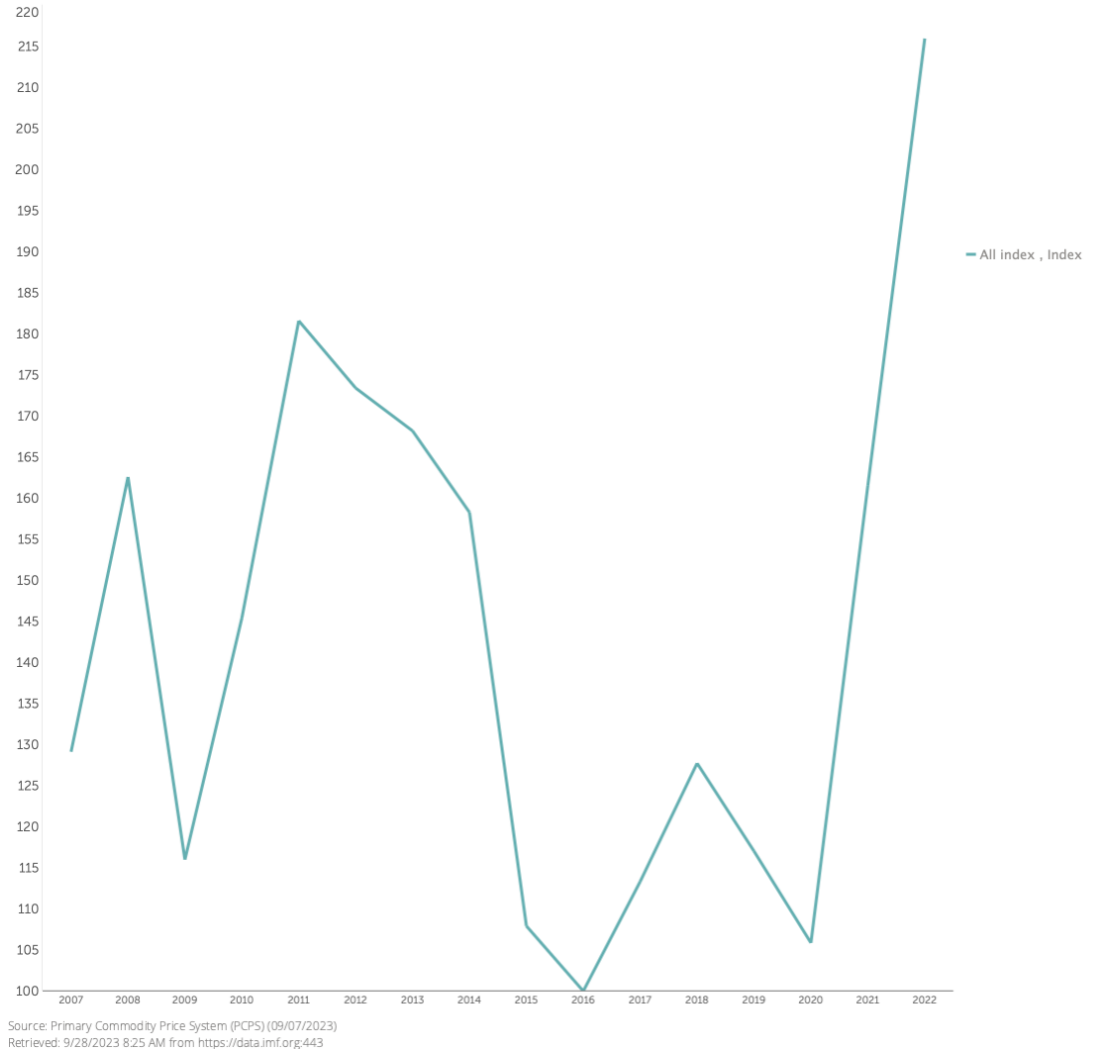


Figure 10. 2007-2023 Primary Commodity Prices

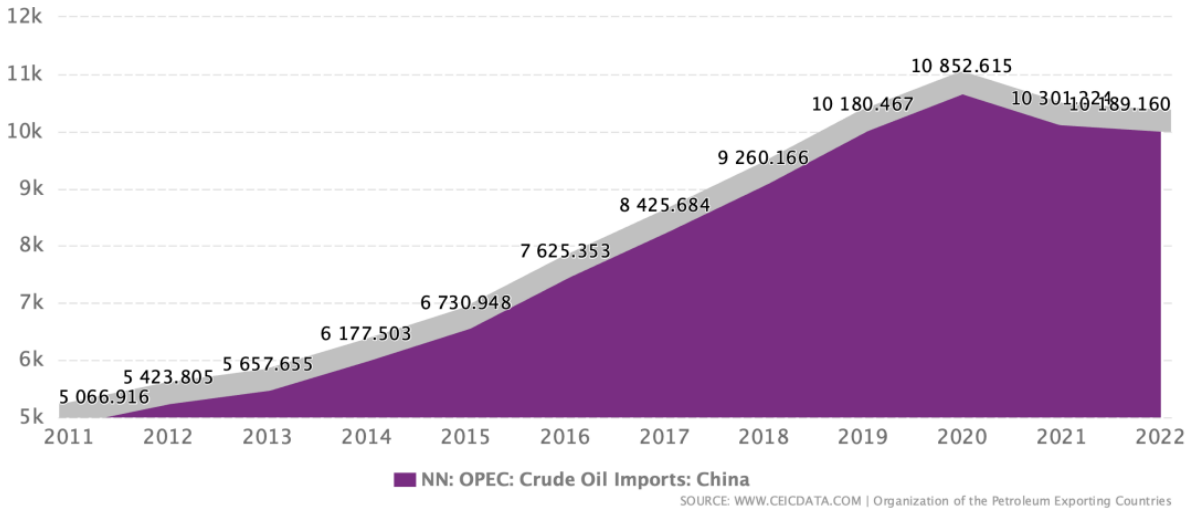


Figure 11. 2011-2023 China Crude Oil Import

5.3. The Influence of US QE Policy on China's Capital Market

The most immediate impact is on financial channels. The financial channel has two branches, including quantity and price [15]. In terms of numbers, US dollar investors would quickly pour into China's investment market in developing countries, injecting some vitality and vitality into the new

economic market. At this time, China's assets would usher in a very strong upward cycle. From the price point of view, this "near-zero interest rate, quantitative easing" monetary policy will objectively lead to a significant depreciation of the dollar, the decline in the yield of US Treasury bonds, and economic entities holding US Treasury bonds will receive losses. At this point, it is inevitable that dollar investors will chase assets with higher expected yields. In this process, non-US dollar currencies will have varying degrees of appreciation, the most typical representative is the RMB. The yuan has appreciated to varying degrees each time the US has implemented quantitative easing.

5.4. The Influence of US QE Policy on the Safety of China's Foreign Exchange Assets

In 2014, the foreign exchange reserve of China's financial institutions was 3,843 billion US dollars, and from 2007 to 2014, China's foreign exchange reserve was on the rise. The significant appreciation of RMB has brought about the dilemma of our country's monetary policy, and the bank's policy is not easy to achieve significant results [16].

The inflow of hot money leads to the increase of other countries' money, and the continuous increase of foreign exchange outstanding funds leads to the endogenous growth of base money, so the central bank is forced to increase the quantity of base money, and the base money increases the total money supply in circulation through the function of money multiplier. Although the People's Bank of China can adopt traditional financial actions to adjust the total amount of funds in the market, such as open market operations and adjustment of the reserve requirement ratio are the most classic actions in the international market. While the inflow of hot money, the amount of China's foreign exchange reserves also rises sharply. Moreover, China's foreign exchange reserves have maintained an increasing trend since 2007 and will continue to rise in the future. Foreign exchange reserves began to decline in 2015 and remained stable after the COVID-19 pandemic in 2019, stabilizing at $3,221.6 billion in 2022. In 2013, 70% of China's foreign exchange reserves were in US dollars, which meant that China holds 2.67 trillion US dollars in international reserves. Once the US dollar depreciated, foreign exchange reserves in the biggest country in Asia would shrink rapidly. In 2022, only 27.7% of this quantative index would be in dollars. This showed that China was gradually reducing the proportion of dollar assets in response to the depreciation of the dollar while the quantitative easing policy was taking effect. Therefore, the quantitative policy of the United States will inevitably lead to a large shrinkage of our reserve assets through the depreciation of the dollar.



Figure 12. 2007-2023 China Foreign Exchange Reserve

6. China's Response Strategy

6.1. Accelerate the Internationalization of the RMB and Expand Foreign Exchange Reserves

Promoting the internationalization of the people is a very important basic issue for China's economic development. Accelerating the internationalization of RMB can make China's domestic currency obtain a stable economic status, and also reduce the influence of China's foreign exchange by the hegemony of the US dollar. Becoming an international currency can guarantee a full say in international transactions and stabilize risk-free arbitrage in the international market [17].

First, China needs to expand the scope of currency swaps. It is necessary to expand the actual scope of use of RMB in specific regions, improve the voice and frequency of use of RMB in regions with frequent transactions, realize the nationalization of RMB, and expand the scope of use and convertibility of RMB. Second, it is indispensable to accelerate the pilot work of RMB settlement in cross-border trade. This future plan for RMB settlement will help push the process of accelerating the promotion of RMB settlement of cross-border trade, taking advantage of the status of a major trading country in the world, using RMB as the settlement currency in international trade, increasing the frequency and expanding the scale of use of RMB in international trade. Finally, it is requisite to build an economic community with neighboring countries, improve the breadth and depth of RMB in the regional market, avoid the risk of fluctuations in the US dollar exchange rate and promote the gradual increase of RMB's voice in the international market.

The authoritative monetary policy implemented in another continent has had a huge impact on the world, and the impact on China is self-evident, greatly increasing the difficulty of foreign exchange management and making the use of foreign exchange reserves risky. Therefore, it is imperative to coordinate the relationship between asset profit and asset safety, and actively manage foreign exchange reserves, so as to show the effect of diversification. The use of "basket" foreign exchange reserve policy makes the risk evenly spread, will not be due to the depreciation of the US dollar or the impact of the US policy to greatly shrink foreign exchange assets, and improve the method of risk management [18].

First of all, adequate planning should be made in the purchase of foreign exchange to make the structure of foreign exchange reserves balanced and long-term development. In addition, the structure of foreign exchange reserves should be linked with people's livelihood planning, and investment in basic fields such as science, technology and education should be strengthened. Secondly, relevant institutions should adjust the structure of foreign exchange reserves to keep them in a reasonable state, with a reasonable proportion of investment in bulk commodities, and with planning and preparation for investment in science and technology and education. Finally, government should ensure the stability of foreign exchange reserves and do not significantly increase or decrease any reserves in a short period of time, which will affect other foreign exchange reserves.

6.2. Control the Quantity of Money and Manage the Inflow of Hot Money

Economic conditions in China are affected in many directions, so the central bank has little control over the real money supply. Under the current inflationary pressure in China, reducing the money supply has become one of the most direct and effective ways to control inflation. By raising the deposit reserve ratio, the central bank will reduce the commodity yield of various financial institutions. At the same time, the desire for investment and consumption will be greatly reduced. At this time, the consumption expectation of the people will also change, and the predictable economic development situation will also change, which will affect the demand for funds.

At the same time, the state should strengthen macro-economic control. On the one hand, improve the reserve mechanism of resource commodities, because China is highly dependent on foreign resources, and the rise of international asset prices will inevitably affect China's normal economic activities. A sound reserve mechanism can hedge the negative effects of rising resource prices, reduce dependence on foreign resources, and cushion the impact of excessive fluctuations in international commodity prices on our economy. On the other hand, official regulations will strengthen the

management of capital markets with higher returns, which are favored by international short-term capital. Legislative branch will improve relevant laws and regulations and encourage all departments to cooperate with each other and strictly implement them, so as to effectively control imported inflation.

Because there is a lot of hot dollar money in the international market, China needs to formulate effective and comprehensive capital flow management measures to prevent uncontrollable situations. In the face of a large number of unavoidable hot money inflows, China can also have adequate measures to deal with them. For areas where there may be huge bubbles, these regulatory measures will play a huge role in both the stock market and the real estate sector. On the one hand, we must strengthen supervision and stop hot money [19].

The State Administration of Foreign Exchange shall closely monitor cross-border capital flows: First, relevant departments should strengthen cross-border capital monitoring, standardize monitoring methods, clarify monitoring subjects, and refine monitoring responsibilities. Second, the whole administrative framework should improve the system and control assets. The comprehensive use of a variety of methods, including political, economic and cultural, combined with government financial institutions and various propaganda agencies, will strictly regulate the inflow and outflow of hot money. Third, a sound system has been established with detectable technology to control and inspect the main bodies and fields of hot money inflow, and strictly crack down on various illegal acts. Fourth, ministry of law needs to enhance the legal awareness of market players and improve the conscious awareness of intercepting hot money. Fifth, ministry of commerce needs to strengthen the screening of hot money, effectively combat the influx of hot money, and establish a database to provide basic analytical data for future hot money monitoring [20]. On the other hand, China should channel hot money and make it serve our economic construction. All organizations and institutions will use a combination of capital control and taxation policies to channel the hot money flowing into China to revitalize the real economy.

7. Conclusion

The multiple rounds of quantitative easing policies launched by the United States must have led to a rapid recovery of the American economy, but this positive impact on the American economy corresponds to a negative impact on other economic markets. China and America are the largest economies all over the world, and the frequent exchanges and economic transactions between the two economies bring about currency circulation and interest exchange, which makes the Chinese market significantly affected by the US monetary policy. In the modern context of the novel coronavirus pneumonia, contradictions and conflicts between these two main political and economic entities, China and America have intensified, and the influence of quantitative easing policy on the economic environment has become more profound. Due to the obvious and significant spillover effect, the exchange rate policy and monetary policy cannot develop independently in the land of China, which should also prove that the frequent economic activities between China and America are real. The result of spillover effect into another economic market, the difficulty of RMB appreciation, the rise in international commodity trading prices, these effects into the domestic, the Chinese capital market has a great threat, the security of the financial system began to collapse. China can make its domestic economy develop steadily through many ways. The internationalization process of RMB needs to be accelerated continuously, and more foreign currencies are needed to ensure diversified development. Such "diversification" can establish a mechanism for international policy coordination and make China's international position more stable and neutral.

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