

The Impact of Quantitative Easing on Bank Lending

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ABSTRACT

This article aims to examine and compare the essential effects of quantitative easing policies in the United States on bank lending. First of all, the paper examines the overall credit scale from a macro perspective, but different results were presented before and after the quantitative easing policy in the three periods. Second, consider the micro view and utilize several specific data points to analyze the significant changes before and after the three approaches. By examining the extent of credit, coupled with the unemployment rate, house prices, and commodity markets, one can trace their far-reaching effects. As a whole, the quantitative easing policy is of great importance to the sluggish financial need, and it has been used by many countries successively. Under the heavy impact of this epidemic in the past two years, the United States once again instituted a quantitative easing policy in an effort to maintain the stability of the financial markets.

Keywords: *Quantitative easing, Bank lending, Follow-up effects*

1. INTRODUCTION

1.1 Background

The subprime mortgage crisis in the United States triggered the global financial crisis. With the further spread and deepening of the impact of the financial crisis, governments worldwide have paid great attention to it. To stabilize the US economy and stimulate its economic growth, the US government adopted quantitative easing monetary policies. Such extreme monetary policies triggered a domino effect and profoundly impacted the world economy. In the wake of the COVID-19 pandemic, the US has once again chosen quantitative easing to regulate its economy. Therefore, it is necessary to review the effects of the last series of quantitative easing measures in the US. In this paper, empirical analysis of the US from 2006 to 2016 stock, unemployment rate, commodity, and other economic indicators, to study the impact of quantitative easing policy. Since 2020, the Fed's ultra-loose monetary policy has led to a sustained rise in the US stock market and high inflation expectations. For the US stock market, it has always been expected that 2021 will be when the US stock market peaks or even plummets, and the market is worried about another financial crisis. On inflation, Deutsche Bank recently warned that the Fed was throwing a "time bomb" at the global economy. But Wall Street and the Fed argue

that inflation is a temporary problem caused by supply disruptions and losses caused by the pandemic and that it will fade away when the economy returns to normal. So, where are US stocks and global inflation headed? The following is our analysis.

1.2 Related Research

There are many previous studies in China, Japan, and even various countries on the complex relationship between banks and quantitative easing. Zhai and Chen examine the impact of US monetary policy adjustments on China's stock market. Recently, the Federal Reserve monetary policy adjustment is about to exit QE. This paper uses a time-varying VAR model to analyze the influence and characteristics of US monetary policy tools on China's stock market and significant industry indexes by stages and points of time. The paper finds that the adjustment of the FEDERAL funds rate hurts China's related stock indexes in different periods, and the impact degree is greater than the impact effect of the Federal Reserve's bond purchase [1].

Additionally, due to the impact of the COVID-19 epidemic in 2020, the effects of restarting quantitative easing by central banks of various countries are different. Jiang studies this issue and draws the following conclusions: The crisis under the COVID-19 epidemic this time is fundamentally different from the subprime

crisis in 2008, and quantitative easing cannot accurately target this crisis; Low global interest rates are likely to become normal, and quantitative easing central banks will need to respond with a combination of other unconventional monetary policies; Central banks in emerging countries need to adopt appropriate monetary policies to address the potential for inflation and inflated asset prices [2]. Furthermore, A study conducted by Ugai examines the effects of the Bank of Japan's quantitative easing program, which was initiated in 2001 and completed five years later. The survey confirms an apparent impact: the commitment to maintain the policy in the future led to the expectation that interest rates would remain at zero for a more extended period, thereby reducing the yield curve on short to medium-term government bonds. It is conceivable that the Bank of Japan's financial institutions holds more current account balances, which would support these expectations. On the other hand, it is unclear whether increasing the monetary base and changing the composition of the bank's balance sheet contributed to portfolio rebalancing. If there is one, the overall impact will be less than the commitment. From various perspectives, many analysts believe that the program has created a more relaxed environment for corporate financing because of the effects of policy on the Japanese economy. Particular attention should be paid to the fact that policy covers the market funding costs of financial institutions. As a rule, the program had a limited impact on aggregate demand and prices, principally because corporate balance sheets were currently being adjusted and interest rates were zero [3].

Shioji examines the effects of an increase in bank lending reserves on subsequent lending behavior by using Japanese data collected during the QE period. The result is that if QE policy plans to impact bank lending positively, the interest rate must be limited on a superficial level [4]. Joyce et al. examined the quantitative easing policy implemented in the UK to determine the motivation of the UK's central bank and the details of how they implemented their policy. They also evaluated a range of evidence related to the effects of the asset purchases to date, both on the financial markets and the economy. Although the magnitudes of the impact of policy asset purchases remain uncertain, the evidence suggests they have substantially affected the economy [5]. After that, numerous studies directly related to the United States. Rodnyansky and Darmouni offer evidence on how large-scale asset purchases can promote lending by banks that hold substantial amounts of mortgage-backed securities. After the first and third quantitative easing cycles, banks with relatively high difference-in-differences are shown to have expanded their lending. Furthermore, the paper incorporates several robustness checks to account for possible time-varying heterogeneities between banks with differential exposure. Thus, a better understanding of unconventional

monetary policy's redistribution effects will entail dealing with how securities holdings are distributed across agents [6].

Kandrac and Schlusche examine the proposition put forth by previous evidence, which indicates that monetary policy transmission plays a crucial role in the information of quantitative easing. Additionally, the authors contribute to the literature on the effects of monetary policy on banking decisions, which is particularly relevant to the risk-taking products of flexible monetary policy. Due to the two easing programs, banks' loan portfolios grew faster and had a higher proportion of high-risk loans. As such, these results are consistent [7]. Morais et al. conducted on the international credit and risk-taking channels of monetary policy, particularly the impact of the monetary policies of core countries upon the credit cycle in emerging markets. The implications of changes in monetary policy on the firm level are also examined. The result is that risk-taking on an international scale and monetary policy spillovers to emerging markets, both in the softening and tightening of foreign monetary policy [8].

Butt et al. desired to figure out whether the QE policy promotes bank lending. To determine whether variations in deposits affect the balance sheets of different banks and test whether these variations have an impact on lending, two alternative approaches are used. In addition, no evidence exists that indicates that policy was conducted through a traditional banking channel in keeping with the existing model. In a simple framework, if quantitative easing generates deposits, which may only last for a finite time in each bank, the traditional channel decreases. Ultimately, the authors' analysis suggests that such flighty deposits may have been caused by the portfolio rebalancing channel of the program, which may explain the absence of bank lending. According to their study, due to the quantitative easing in response to portfolio rebalancing, inflation and aggregate demand increased [9]. Kurtzman, Luck, and Zimmermann can demonstrate that large-scale asset purchase programs have impacted lending standards and risk-taking by examining confidential loan officer survey data. According to their study, cross-sectional variations in mortgage-backed securities holdings by banks have been analyzed, indicating that the first and third phases of quantitative easing have resulted in a substantial reduction in mortgage-backed securities holdings and an increase in loan risk characteristics. An adjustment of one percentage point in the target rate of the Federal Funds rate would have the same effect. Quantitative easing one and Quantitative easing 3 have similar magnitudes of effects [10].

1.3 Objective

This paper, which was inspired by a related research study, focuses on the changes in bank credit that have

been influenced by three rounds of quantitative easing policy over a period of ten years. It is first relevant to examine the fluctuations of the entire financial market from a macroeconomic perspective and then to make a visual comparison using microeconomics. Specifically, interest rate stocks and other detailed data are focused on. Finally, discuss the changes associated with credit-related aspects and draw objective and sincere conclusions based on the data.

2. PROMOTION OF QE CREDIT SCALE

Quantitative easing is a relatively young economic term, first proposed by the Bank of Japan in 2001. On November 25, 2008, the Federal Reserve announced for the first time that it would purchase agency bonds and MBS, marking the beginning of the first round of quantitative easing (QE1). The Federal Reserve announced on November 4, 2010, the launch of the second round of quantitative easing program (QE2). On September 13, 2012, the Federal Open Market Committee (FOMC) of the Federal Reserve announced after the two-day meeting that the maintenance period of the ultra-low interest rate of 0-0.25% will be extended to the middle of 2015 and will be launched from the 15th (QE3).

As shown in Figure 1, From 2008 to 2012, the United States launched three quantitative easing policies, QE1, QE2, and QE3.

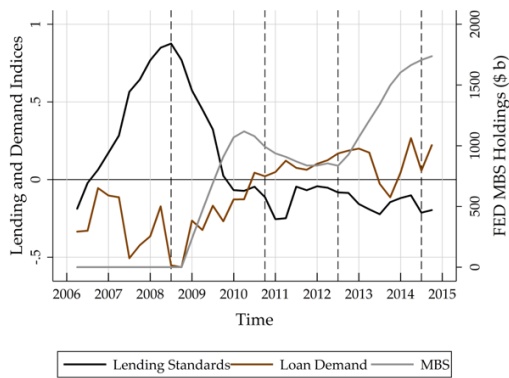


Figure 1 Loan Demand and the Amount of MBS [10].

This graph depicts the lending standards index and the loan demand calculated by the method of Bassett et al., which can take a value between -1 and 1, where -1 represents an easing of bank lending standards and an increased perceived demand, and 1 represents a tightening of lending standards and a decreasing perceived demand (left y-axis). Moreover, it depicts the amount of MBS that the Federal Reserve bought as part of its LSAPs (right y-axis) [10].

2.1 QE1: The 2008 subprime mortgage crisis

In the second half of 2007, the subprime mortgage crisis broke out in the United States, leading to the rapid deterioration of the country's financial situation and the collapse of many financial institutions and banks. Despite consecutive interest rate reductions by the Federal Reserve from September 2007 to December 2008, the subprime mortgage crisis remains unaffected from 5.25% to 0.25%. There is considerable financial pressure on the U.S. government.

As part of its efforts to aid the U.S. economy, the Federal Reserve announced in 2008 that it would purchase Fannie Mae and Freddie Mac debt, Long-term Treasury securities, and mortgage-backed securities [11]. Before August 2008, banks were still not lending as much as the Federal Reserve anticipated. On the contrary, they held large sums of cash. The bank used this credit to write off the remainder of its subprime mortgage debt. Others were increasing their capital ratios as a precaution [11]. There was a shortage of credit-worthy borrowers, according to many banks. This is likely since banks have tightened lending standards as well. As a result of the Fed's large purchases of mortgage-backed securities (MBS) in November, loan demand surged, rising with fluctuation, and lending standards showed a downward trend.

2.2 QE2: Further purchases of U.S. Treasuries

The Fed mainly signed currency swap agreements with central banks of several economies, reformed the discount window, launched the term auction facility, the term securities lending facility, the primary dealer credit facility, and acquired part of the non-performing assets of Bear Stearns. As a result, prevent liquidity shortages in domestic and foreign financial markets and institutions.

From September 2008 to March 2009, the main event was The Federal Reserve's decision to purchase us \$300 billion of long-term Treasury bonds and up to the US \$1.25 trillion of mortgage-backed securities issued by Fannie Mae and Freddie MAC, presenting a significant feature of "direct rescue."

The distinctive features of this stage are as follows: first, due to the high deflationary pressure, the Federal Reserve took the initiative to inject liquidity into the market direction has gone beyond the lender of last resort mandate. Second, the role of fiscal policy is increasingly apparent and forms a division of labor and cooperation with monetary policy. The relationship of the division of labor is manifested as follows: The Federal Reserve actively releases liquidity, reduces financing costs, and improves the credit availability of the public; The Ministry of Finance has adopted a shareholding and purchase of non-performing assets to rescue troubled institutions and prevent systemic financial risks and

adopt tax cuts to stimulate the economy. The cooperative relationship is manifested as follows: The Ministry of Treasury provides funds to the Federal Reserve through the Supplementary Financing Program (SFP) to solve the shortage of funds caused by the release of liquidity and provides a risk barrier for the assets purchased by the Federal Reserve. For example, the Ministry of Treasury offers guarantees for the assets purchased by the Federal Reserve. The Federal Reserve will provide emergency loans to American International Group into the Treasury of its warrants to achieve financial control of its equity.

2.3 QE3: Low interest rate maintenance period to be extended

In November 2012, the federal reserve bank of USA published its third massive purchase program to content containing the effect taken by the subprime mortgage crisis in 2008. In stage three, FRB combined the first two stages purchase program in stage three and through the new stage of QE policy to purchase 40-billion-dollar mortgage-backed securities and 45 billion long-term government bonds each month. During the implementation period of the first two QE policies, the unemployment rate of the USA remained elevated. The numbers of FOMC members expect that the unemployment rate will be above what they expected before. Therefore, the FRB was looking forward to a solution, and they needed an adjusted quantity easing policy to condition the situation of the labor force market.

Consequently, Stage three of quantitative easing has an identified difference with the first two stages of QE policy. QE3 did not purchase a particular value of assets, and it was open. The purchase program would persist until the condition of the labor force of the USA has a identify changes.

3. ANALYSIS OF QE ON BANK LENDING

After the QE1 was implemented, the Federal Reserve pumped liquidity into the banking system. To cope with the subprime mortgage crisis, the Federal Reserve can "create money." Besides, interest rates were significantly lowered. Consequently, the housing market was able to stay afloat.

Although QE1 added liquidity to the economy, it did not have the effect of causing banks to increase their loan portfolios. In addition, there was not a net increase in the money supply. Consumer demand did not grow enough to be able to boost the economy, either. Investors were concerned about the potential for inflation if QE was used. However, the Fed attempted to create mild inflation. The Fed was dealing with the immediate crisis as it had to counter the deflation in housing, which had plummeted 30% from its peak in 2006. This is since inflation is not a given until the economy has expanded. The Fed would have appreciated such a situation. The Fed's assets would also have increased in value during that period. Selling them would not be difficult for the Fed. The Fed could also reduce the money supply, thereby preventing inflation.

QE1 was, therefore, a successful policy. In fact, interest rates were lowered by almost one-third. Rates for a 30-year fixed interest loan decreased from 5.21% to 3.98% from April 2010 to November 2011. These low rates contributed to the overheating of the housing market. Investors were also forced to find alternative sources of financing. In some instances, this resulted in runs on gold and oil, which drove their prices sky-high, but record-low interest rates helped safeguard the United States' economic engine.

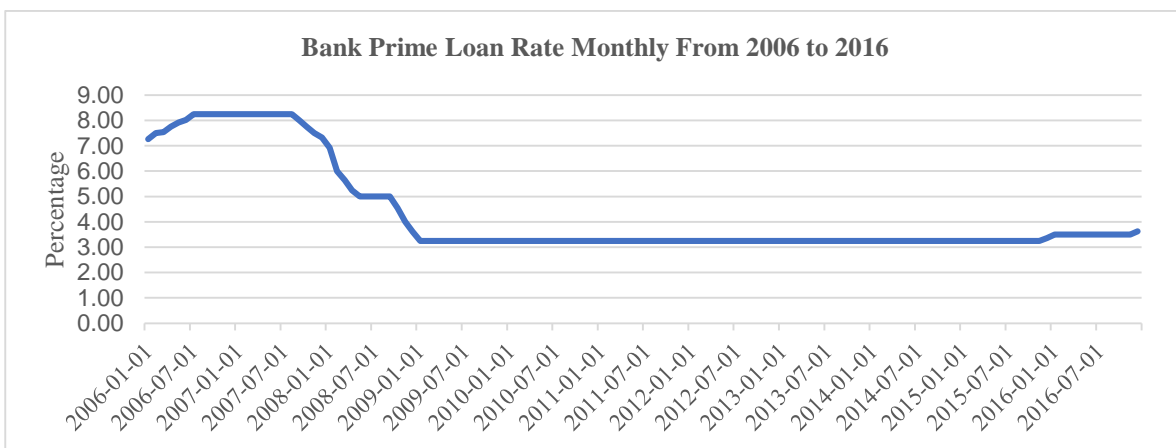


Figure 2 The interest rate of U.S. Bank prime loan

During the financial crisis period, the Federal reserve bank starts to put down the lending rate of banks from 5 to 3.2 and maintain a 3.2 lending rate until 2016. In this period, the bank's lending behavior was strongly affected

by stage three quantity easing. Since FRB in the stage 3 QE policy would engage purchase initially 400 billion long-term and 450 MBS from other financial institutions each month. At the end of the stage 3 QE policy, FRB

held \$1.75 trillion in MBS, representing around 30% of the entire agency MBS market. The assets held by the FRB must have the same quality ‘Liquidity,’ so 90% of 1.75 trillion MBS security were traded on the most currency market in the USA, also called the TBA market [4]. The liquidity of assets also gives the same liquidity quality to stage three of quantitative easing. As the liquidity quantity easing, banks could use vast amounts of MBS swap more reserve money and expand their bank lending. Compared with the previous stage, the bank lending of QE 3 had a 2% increase.

4. DISCUSSION

4.1 Housing price

Housing prices have only fluctuated slightly up and down since 2006, reaching a maximum of 184.6070 in July 2006. However, in the second half of 2007, housing prices continued to decline without any indication that they would reverse. Despite implementing the first round of quantitative easing, there was no immediate change in the downward trend in housing prices. It was not until March 2009 that the first turning point was reached when

house prices reached 146.5130. Nevertheless, this slight increase only lasted until July, at which time the decline accelerated until February 2010. A small rise in house prices occurred only for four months, and it was not until the third month after the implementation of QE2 that the growth trend was evident again, 137.7420 for house prices. However, it continued to decline after February 1, 2012, when it reached the lowest point in a decade, only 133.9950, only three-quarters of the starting point. After that, the real estate market gradually became more apparent and grew slowly. After implementing QE3, it fluctuated a little and then began to rise immediately. A decade later, the price of the house has been increased to the original amount.

The U.S. quantitative easing policy implemented after the "subprime mortgage crisis" failed to completely resolve the impact of housing price declines on the financial and real economies. Restoring housing prices to the original levels took ten years. It has also resulted in the slow pace of the Fed's exit from quantitative easing since the slow recovery of the real estate market has restricted the acceleration of the U.S. economy.

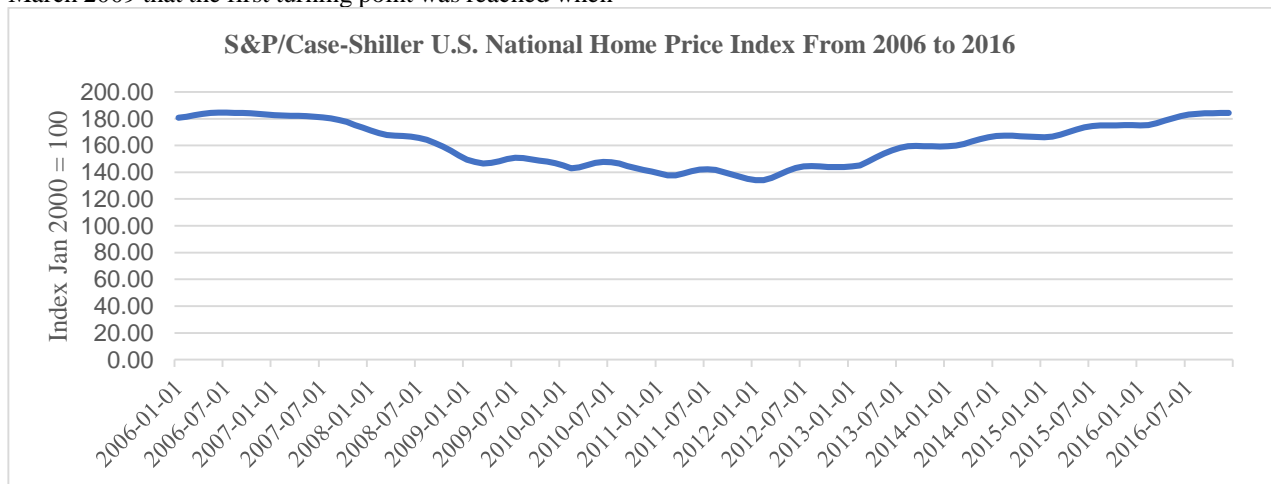


Figure 3 S&P/Case-Shiller U.S. National Home Price Monthly

4.2 Employment rate

Before the financial crisis of 2008, the employment rate of the USA kept a relatively low level since the beginning of the 21st century. It only has a slight fluctuation between 2003 and 2004. In 2003, the unemployment rate reached 6.1% in March, and then the unemployment rate started to decline until the financial crisis in 2008. In May 2008, the employment rate continued increasing, even implementing the first round of Quantitative Easing after collapsing of Lehman Brothers in September 2008, the unemployment rate of the USA still without any indication to show that the unemployment rate would decline. To achieve goals that were not reached in the previous round of quantitative easing, despite implementing the second round of

quantitative easing. But it did not achieve the desired goal. In September 2009, the unemployment rate reached 10%, the highest level of the recent ten years for 21 centuries. Although the unemployment rate slightly declines in the next few years, it keeps the unemployment rate level around 9%. The unemployment rate of the USA started has had a slight decline since the last few months of 2011. The unemployment rate decreased from 9.0% to 8.1% in August 2012. The reason behind that is a massive amount of unemployed give up finding a job. So despite implementing the third round of quantitative easing, to injure 400 billion dollars to encourage lobar market until the market revenue.

The U.S. quantitative easing policy probably failed to solve the problem of U.S. unemployment. And the unemployment rate takes almost eight years to back the

level of 3.9% In December 2021. The pretty high unemployment rate was why the U.S. exited the Q.E. policy in such a slow step.

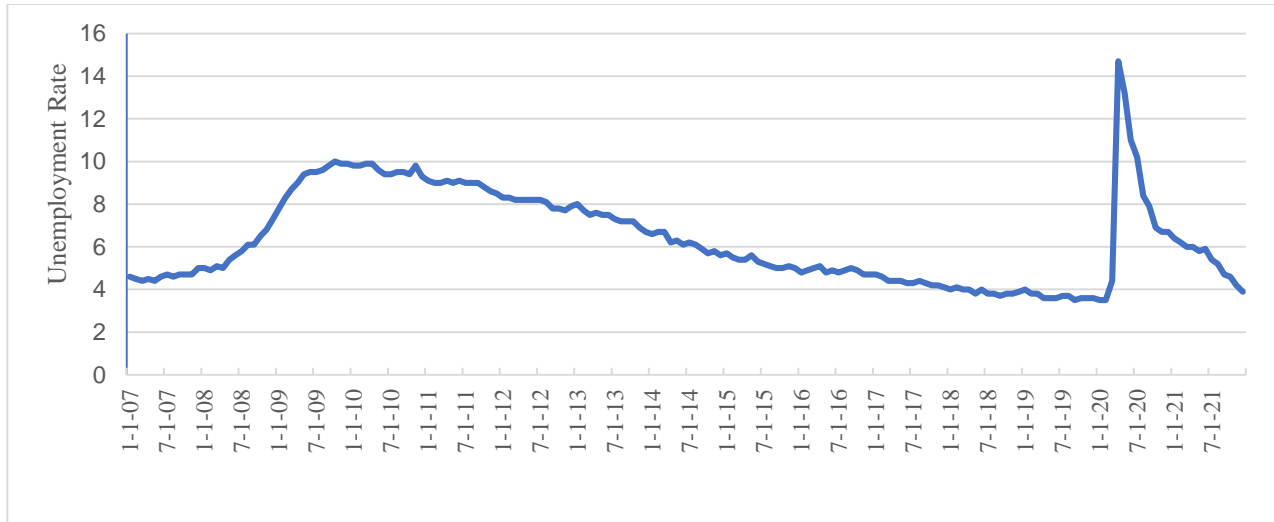


Figure 4 The Unemployment Rate of USA between 2007 and 2022

4.3 Commodity prices

Commodity prices are determined by market demand, supply capacity, production costs, alternative expenses, dollar value, central pricing, and settlement currency unit. Some people believe that the demand for commodities must rise when the economic aggregate grows. In recent years, international demand for bulk commodities mainly comes from developing countries. Still, the reality is that the utilization rate of resources and energy in developing countries is relatively low. If we adjust the energy and resource sources and use them more efficiently, we can reduce the demand for commodities while maintaining high economic growth. The rise in commodity prices is also historic, persistent, and widespread. The historical performance of the price rise is: in 2008, the US subprime crisis led to the collapse of

commodity prices, after which there was a period of recovery. But the increase in the money supply superimposed by the loose monetary policy is reflected in the commodity prices this time; that is, gold, iron ore, and some other commodities began to hit record highs. Much of the liquidity unleashed by the first two rounds of Quantitative Easing has not found its way into investment and consumption in the US. This liquidity has spilled over into the US and into commodity markets and emerging market economies in addition to the US stock market. With the implementation of quantitative easing monetary policy, international commodity prices have a slight shock, but the overall trend is rising. Global commodity price indices have rebounded after falling during the financial crisis. During the first round of QUANTITATIVE easing in the US, the commodity price index rose by 16.4%, food prices by 20%, and oil prices by 59%.

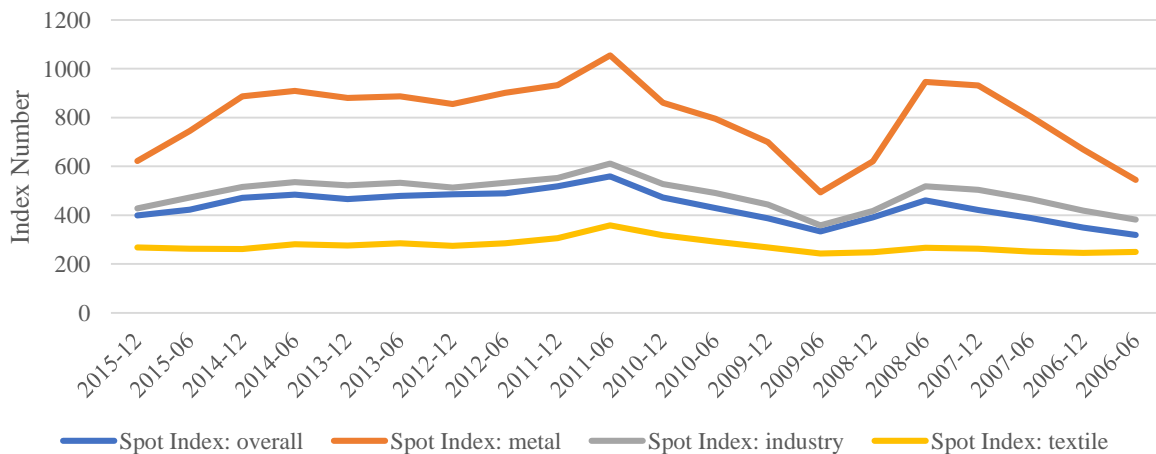


Figure 5 The Spot Index of USA between 2006 and 2016

5. CONCLUSION

The article analyzes the impact of the three quantitative easing programs on bank lending from a macro and micro perspective. It explores the three significant changes in housing prices, unemployment, and commodities closely related to them. It is mainly found that the three rounds of quantitative easing policies have a substantial impact on different problems, thereby realizing the recovery of the overall economic market. Although it took a long time and many twists and turns, it was successful. Quantitative easing is an unconventional policy measure that is now almost universal globally. Although it is beneficial to restrain the deterioration of deflation expectations to a certain extent, its effect on reducing market interest rates and promoting the recovery of the credit market is not apparent. It may bring certain risks to the later global economic development.

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