# Policy Response After the Great Financial Crisis

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**ABSTRACT**

The Great Financial Crisis was the worst financial crisis since World War II, which plunged the global economy into a full-blown and sustained recession. This paper tries to explain the smooth but slow recovery after the crisis in the U.S. by evaluating the effectiveness and impact of three prime policy responses, including Quantitative Easing (QE), Forward Guidance (FG), and the Troubled Asset Relief Program (TARP). It is found that 1) QE helped the U.S. overcome the crisis by providing liquidity and stimulating consumption and investment, but some limitations made it not as effective as expected, which partly accounts for the slow recovery; 2) FG was helpful to the recovery through its explicit policy interpretation and additional information on economic conditions, but its impact was quite implicit and easily disturbed or overlapped by other policies; 3) the critical support of the TARP helped rebuild market confidence and reverse the deteriorating economic situation, but it created potential risks and shifted the pain from the present to the future.

*Keywords: Great Financial Crisis, Great Recession, U.S., Monetary Policy, Fiscal Policy, Quantitative Easing, Forward Guidance, Troubled Asset Relief Program, TARP*

## 1. INTRODUCTION

After years of rising housing prices, the housing bubble began to show signs of bursting in late 2006 with a decline in prices and a rise in delinquencies on home mortgages. In 2007 and 2008, the subprime mortgage crisis continued to intensify. Redemption suspension of 3 funds by BNP Paribas in August 2007, Northern Rock Crisis in November, and failure of Bear Stearns in March

2008 caused a significant increase in the TED spread respectively, which indicates that market participants had growing fears about whether major financial institutions would be able to deliver on their obligations. In September, when Lehman Brothers collapsed, and Congress rejected the first TARP measure, the TED spread experienced its most significant increase since the beginning of the crisis and reached 4.58% on October 10, the highest throughout history.
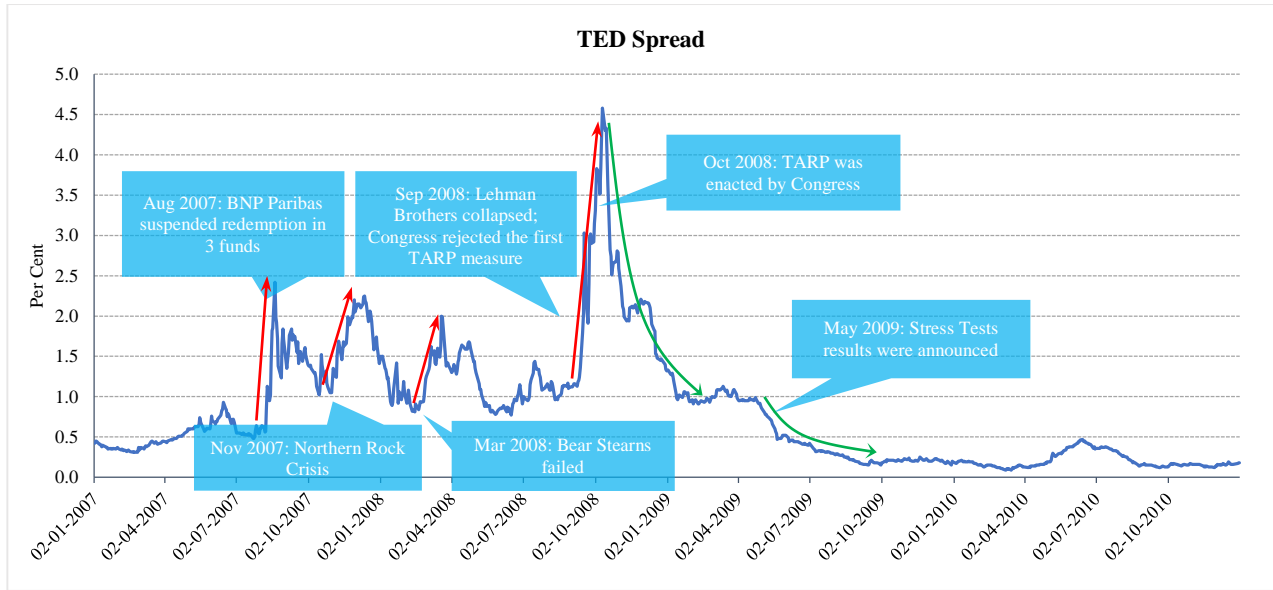
**TED Spread**



**Figure 1:** TED Spread from January 2007 to January 2011 [1]

At the same time, as shown in Figure 2, the effective federal funds rate fell below 1 per cent in October 2008. On October 16, the Federal Reserve (Fed) adopted a target range instead of the target rate for the first time and set it as 0 to 0.25 per cent. Since the nominal rate cannot go below zero, any further decrease is too small to influence the economy, known as the liquidity trap. Therefore, conventional monetary policies that shift the LM curve became no longer effective, and policy response tended to influence IS curve. (Vide Figure 3)

**Federal Funds Rates**
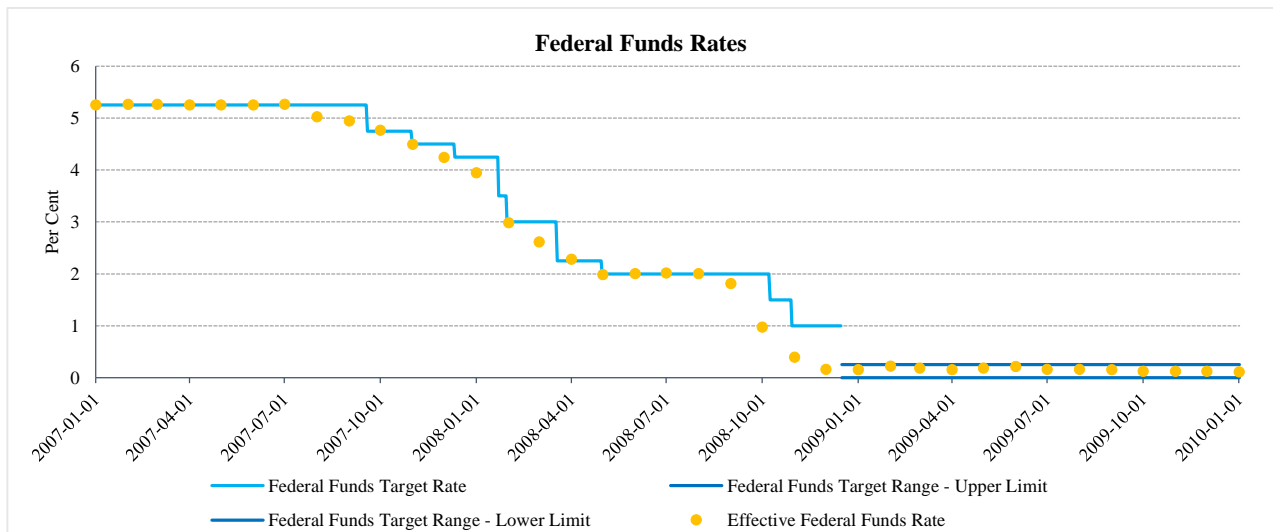


**Figure 2:** Federal Funds Rates from January 2007 to January 2010 [2-5]
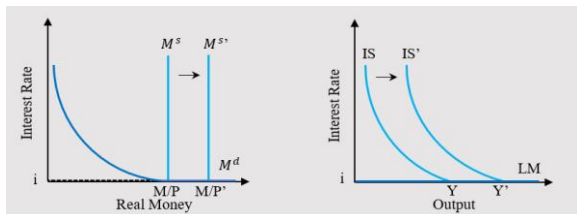


**Figure 3:** IS-LM Model in Liquidity Trap

Under such circumstances, the Emergency Economic Stabilization Act (EESA) was passed and signed into law on October 3, 2008, creating the TARP. Not long after that, the Federal Open Market Committee (FOMC) of the Fed started QE1 in November 2008 and made the first FG announcement at the end of 2008. This paper will focus on these three prime policies and evaluate their effectiveness and impact on the U.S. economy, in order to provide a reference for better decision-making and problem-solving in future crises.

In the next chapter, we will specify our main research question and explain its source. Chapter 3, edited and organised by Yufei Ye, summarises existing researches; and the evaluation of QE, FG, and the TARP by Chengmai Zhang, Yuanyuan Li, and Jince Chen, is in Chapter 4.
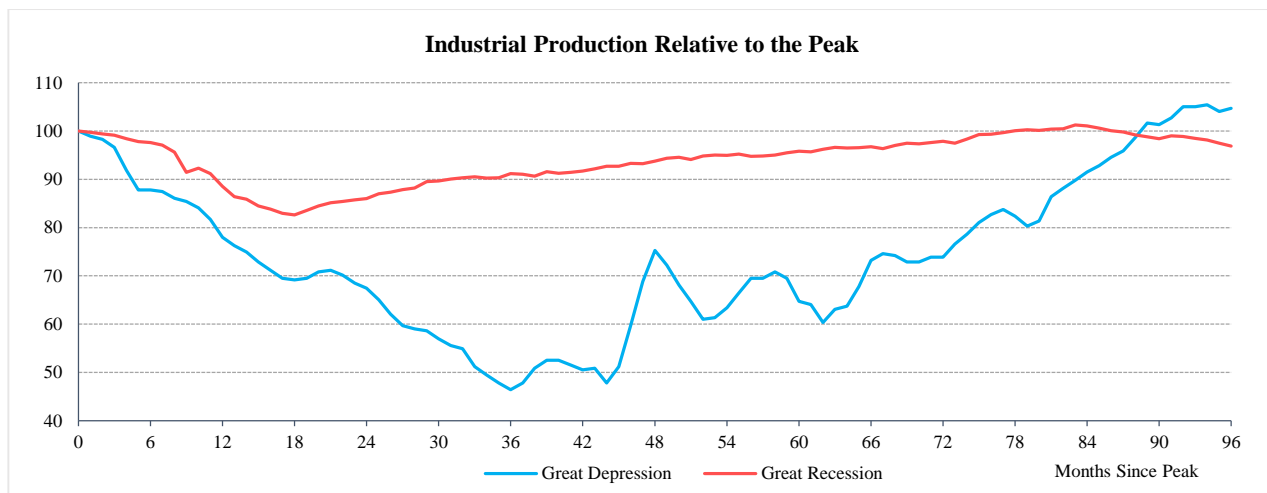
**Figure 4:** Industrial Production Relative to the Peak [6]

All indexes are normalised relative to the peak, which is identified just before each downturn (July 1929 for the Great Depression, December 2007 for the Great Recession)

## 2. MAIN RESEARCH QUESTION

Before we started our research, we compared the general performance of the U.S. economy after the shocks of the Great Recession and the Great Depression, recognising a sharp contrast in the pattern of recovery.

Figure 4 illustrates the industrial production 96 months (8 years) after the peak identified just before each downturn. Compared to the Great Depression, the downturn of the Great Recession was much slower and shorter, and the recovery was also much smoother, which should be attributed to the prompt and effective policy response. However, if we consider the time taken for the recovery (as measured in months from the nadir to the same level as the peak), the data also show that the recovery after the Great Recession took about 60 months, which is about 8 months longer than that after the Great Depression. The difference indicates that there must be some shortcomings of the policy response to the Great Recession that contribute to this lack of efficiency and effectiveness in the recovery.

Therefore, our research focuses on the effectiveness and impacts of different policies implemented in response to the Great Recession, trying to explain the quick reverse and the slow recovery. We demonstrate why QE was effective but not as much as expected, what role FG played in the recovery, and how the TARP helped to turn the deteriorating economy around but created risks for the future.

## 3. LITERATURE REVIEW

There are already abundant literature surveys discussing the Great Recession's policy response, especially unconventional monetary policies. Rogers, Scotti, and Wright (2014) investigated the unconventional monetary policies in Europe, the U.S.,

and Japan, and further affirmed their effectiveness in easing financial conditions by reducing term premiums, especially at the zero lower bound. [7] Kuttner (2018) also advocated that the benefits of unconventional policy outweighed their costs, considering that the cut in interest rates brought by those policies is likely to have a significant impact on stimulating the economy, whilst adverse effects seem to be mild. [8] Swanson (2021) mainly focused on FG announcements and Large-Scale Asset Purchase programmes and stated that both significantly impacted short-term and long-term Treasury yields. [9]

However, there is also much scepticism about those policies. Lombardi, Siklos, and St. Amand (2018) suggested that new communication devices with standard monetary policies are preferred to the unconventional ones because they believed that the unconventional policies can only prevent economic collapse, but are not desired to boost stable economic growth, and hence does not appear to be an appropriate monetary policy strategy. [10] Martin and Milas (2012) also argued that the effects of unconventional policies such as QE might be temporary, suggesting more exploration of alternative approaches. [11]

Particularly about QE, numerous papers have made different kinds of analysis. On the one hand, some papers focused on the positive impacts of QE. Beck, Duca, and Stracca (2019) found that QE leads the inflation expectation and CPI to increase sustainably, without raising risks and side effects after QE. [12] Haldane, Sklar, Wieladek, and Young (2016) asserted that only QE's intervention could reliably improve the price and activity. On the other hand, some papers focused on its ineffectiveness. [13] Rodnyansky and Darmouni (2017) pointed out the possible ineffectiveness of QE because of the fraction of Mortgage-Backed Security (MBS) of banks, which is a salient factor that influences the

expansion of the lending after implementing QE. [14] Also, QE had brought differential effects on various types of financial institutions rather than improving everyone equally. For the U.K., Butt, Churm, and McMahon (2015) found no evidence to support that QE has improved bank lending. [15] Haldane, Sklar, Wieladek, and Young (2016) showed that the effectiveness of QE depends on the financial system's liquidity and the economic state. [13] Joyce, Miles, Scott, and Vayanos (2012) believed that if the private sector sees no difference between the assets held by the government and the central bank and its own, then any asset swap with the central bank would not change anything. [16]

As for FG, Yellen (2011) stated the importance of clear communication and gave readers some simulations of a macroeconomic model to further illustrate the effectiveness of FG, but it has not talked about the multi-effects of the policies published at the same period. [17] Negro, Giannoni, and Patterson (2012) showed that the standard mid-scale DSGE models tend to overestimate the macroeconomic impact of FG using the empirical analysis benchmark. Regarding the methodology, the paper took account of the noisy effects and introduced a new train of thought, which is slightly different from Yellen's research. [18]

Regarding fiscal policies, scholars and some government officials have questioned the consequence of TARP for quite a long time, and many of them identify the moral hazard, too-big-to-fail problem, and market distortion after the implementation of TARP.

Some papers focused on the impacts of TARP on the banks' behaviour. Harris, Huerta, and Ngo (2013) found that the efficiency of TARP-recipient banks had deteriorated since the bailout. [19] Black and Hazelwood (2013) found that compared to non-TARP banks, the risk of loan originations increased at large TARP banks but decreased at small TARP banks. [20] Duchin and Sosyura (2014) suggested that TARP banks tended to initiate riskier loans and shift assets towards riskier securities after receiving the bailout. Because this shift in risk occurs mainly within the same asset class, these banks appear safer according to regulatory ratios but show increased volatility and default risk. [21] By analysing a sample of 123 bank holding companies from 2004 to 2013, Forssbbck and Nielsen (2015) found that a higher bailout probability significantly reduces the risk-sensitivity of spreads for the entire sample, which is mainly due to the largest banks, indicating a moral hazard

and too-big-to-fail effect of recapitalisations. [22]

Some other papers focused on the impacts of TARP on the market structure. Calomiris and Mason (2003) and Calomiris and Wilson (2004) suggested that capital enhances banks' ability to compete for deposits and loans through empirical analysis. [23,24] Mehran and Thakor (2010) and Allen, Carletti, and Marquez (2011) suggested a positive correlation between capital and market share theoretically. [25,26] Koetter and Noth (2012) looked at the impacts of the probability of bailout on competition, concluding that a higher likelihood is associated with higher market power after the crisis. [27] Berger and Roman (2015) further concluded that TARP-recipient institutions gained competitive advantages, enhancement of market power, and increase in market shares. [28]

# 4. POLICY EVALUATION

## *4.1.Quantitative Easing*

### *4.1.1.Liquidity Injection*

In late November 2008, the Fed started its first round of QE, purchasing $600 billion in MBS backed by Fannie Mae, Freddie Mac, and Ginnie Mae and the direct obligations of Fannie Mae, Freddie Mac, and the Federal Home Loan Banks. [29] Two years later, QE2 was announced in November 2010, in which the Fed decided to purchase a further $600 billion of long-term Treasury securities by mid-2011. [30] Such a large scale purchase improved the liquidity and stability of the financial market.

### *4.1.2.Consumption and Investment*

This increase in the money supply also led to a rise in investment and consumption. As shown in Figure 5, the relation between M1, consumption, and investment was markedly different before and after the QE. The correlation coefficient between M1 and real investment increased from 0.887 (measured from 2002Q1 to 2008Q3) to 0.974 (measured from 2008Q4 to 2015Q4), whereas the correlation coefficient between M1 and real consumption increased from 0.887 to 0.969 over the same period. These significant increases in their positive correlation indicate the success of QE on investment and consumption.
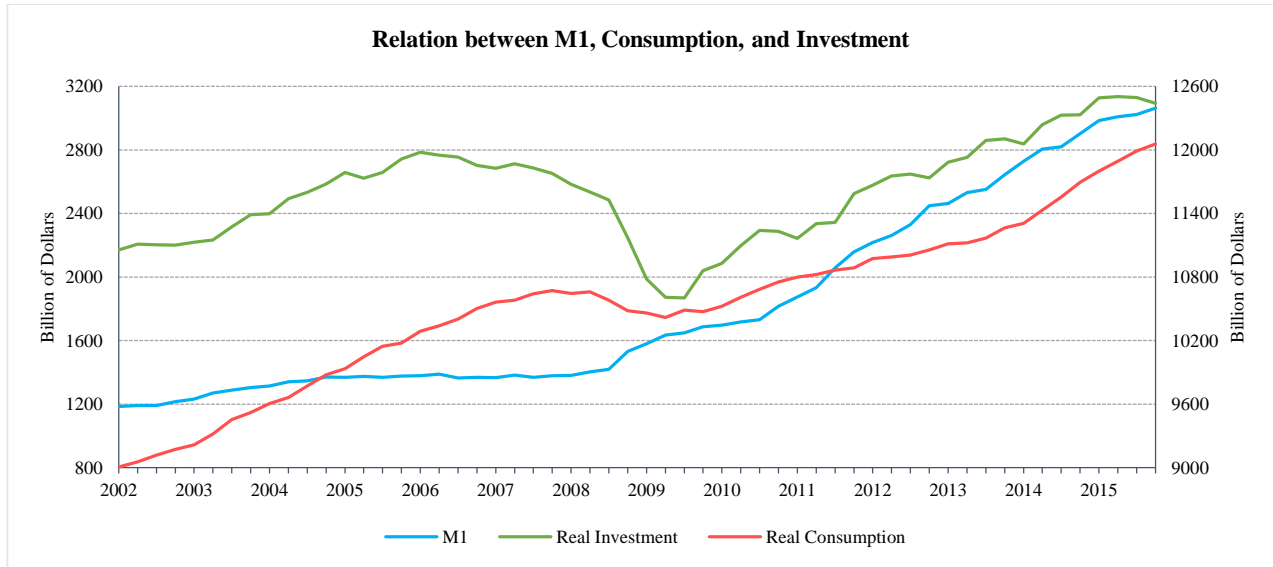
**Figure 5:** Relation between M1, Consumption, and Investment from 2002 to 2015 [31-33]

### 4.1.3. Low Inflation

However, QE was not doing well as the Fed and the public expected. The rising inflation rate plays an essential role in QE, which will lower real interest rates and encourage people to spend more on current consumption and investment. However, as shown in Figure 6, there is no considerable change in the fluctuation pattern of inflation rates before and after QE. Thus, the effect of the increase in consumption and investment was hard to materialise as expected.
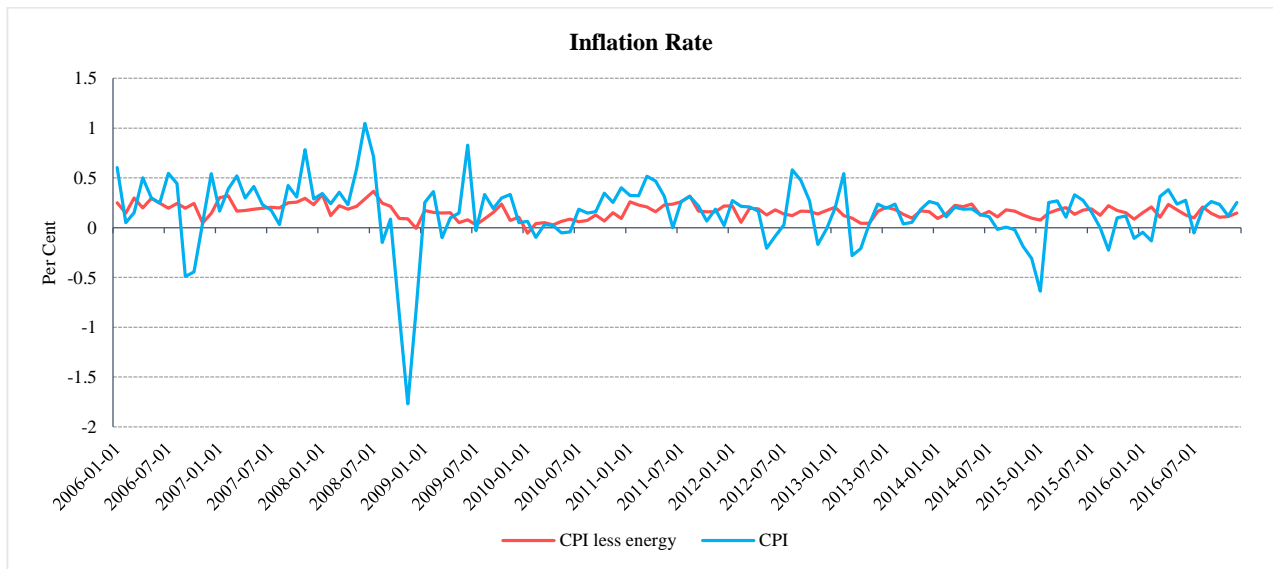


**Figure 6:** Inflation Rate from 2006 to 2016 [34-35]

### 4.1.4. Time Delay

When the banks and firms receive the money, they need time to collect information to analyse future economic conditions before making a decision. Therefore, the full effects of a monetary policy may not be felt for twelve to eighteen months. [36] Regarding the growth and growth rate, Monetary Base (MB) rose dramatically due to the QE each time, whilst M1 increased in a much more modest and gradual way. There are also significant differences in the magnitude of the increases. Figure 7 shows that not all the increase in MB was injected into M1. After QE1, MB had exceeded M1. Though M1 had been accelerating due to the cumulative effect since then, the M1 was still below MB, which means that the impact of the previous QE had yet to be fully shown when the next round came or, to say, QE was not fully efficient.
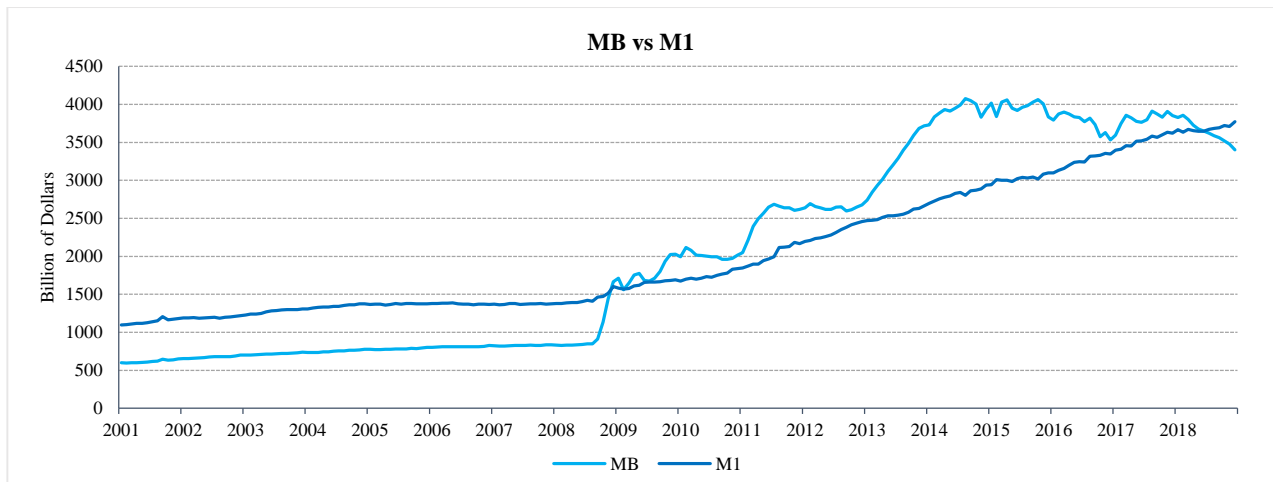
**Figure 7:** MB vs M1 from 2001 to 2018 [33,37]

### 4.1.5.Incomplete Conduct

The saying "you can lead a horse to water but cannot make it drink" is an excellent summary of the incomplete conduct of QE that the Fed can offer more money to commercial banks but cannot force them to lend it out. In case of future uncertainties, the banks in difficulty may decide to hoard any cash raised from QE or use it to repay their liabilities. So the extra money may not even be offered to people and businesses. Even though banks do offer more loans, people may not want to spend them. When the increased money finally went into people's pockets, it was their own decision on whether to spend it or not. Consumer confidence and producer confidence are very low during the crisis; therefore, saving instead of spending is likely to increase significantly after QE.

In general, QE1 focused on MBS, QE2 on Treasury notes, and QE3 on both. [38] Therefore, as shown in Figure 8, the patterns of the Fed purchase showed a marked difference. The purchase decision would influence the effect of QE – QE3 had a substantial impact on credit, and QE1 had a significant but more minor impact on lending than it, whilst QE2 had no significant impact on lending, consistent with its exclusive focus on Treasuries sparsely held by banks. [39] These conclusions partly prove the existence of the incomplete conduct of QE.
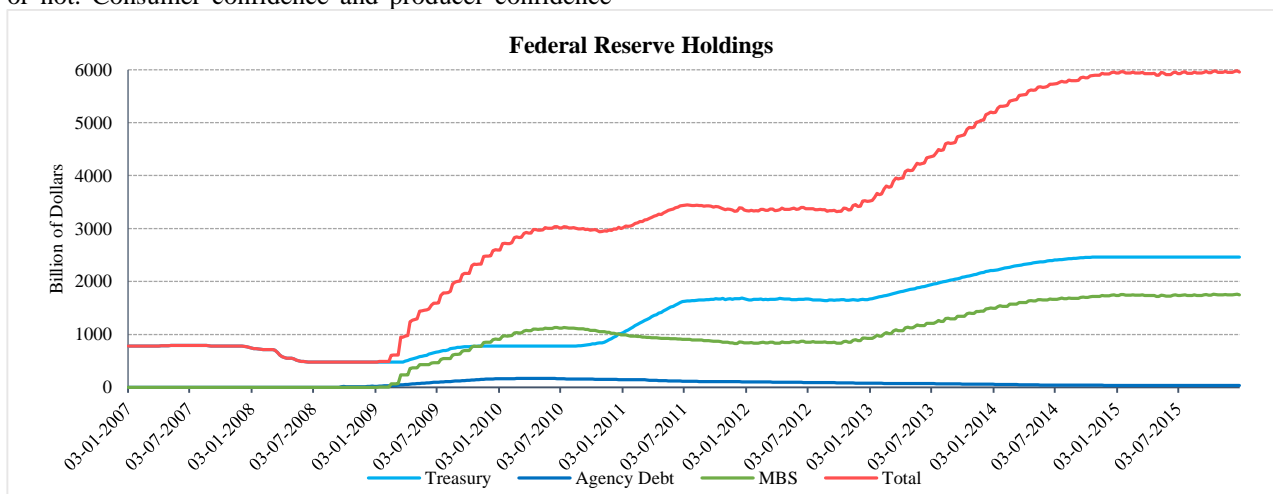


**Figure 8:** Fed's Holdings from 2007 to 2015 [40-42]

To sum up, QE provided liquidity to the market, stimulated consumption and investment, and lowered the unemployment rate. However, it had no significant impact on inflation, and there were also time delays and incomplete conduct of QE, which caused its impact to be much limited. In a word, QE did help the U.S. to overcome the Great Recession, but it is not as effective as expected.

### 4.2.Forward Guidance

### 4.2.1.Explicitness

**Table 1:** Summary of Significant FG Statements Language [43-45]

| Time | FG |
| --- | --- |

| | |
|---|---|
| Dec 2008 | Lower the target for federal fund rate to a range of 0 to 1/4 per cent |
| Aug 2011 | Low levels warranted at least through mid-2013 |
| Dec 2012 | Low levels warranted at least as long as the unemployment rate remains above 6-1/2 per cent, inflation between one and two years ahead is projected to be no more than a half percentage point above the Committee's 2 per cent longer-run goal, and longer-term inflation expectations continue to be well anchored |

FG in the U.S. can be divided into three stages. In the first stage, the announcements were roughly open-ended, which means that they did not contain any specific date or goal. August 2011 saw a change in the form of statements; the expiry date was introduced for the first time. Since December 2012, goals such as unemployment rate and inflation have been included in FG announcements. There is a clear trend that the guidance became more and more explicit.

Typically, more explicit statements are more effective. In an uncertain economy, such as the one during the crisis, it is difficult for investors to predict the future market interest rates and make decisions. By releasing more transparent information on future policy

rates, explicit FG can help investors better interpret its orientation and form a more consistent expectation. Such consistency will expand from expectation to behaviour by promoting people to make similar adjustments to their investment portfolios. As market demand becomes more concentrated, the market becomes more stable, and the future becomes less uncertain.

### 4.2.2.Additional Information

However, it is arguably true that implicit FG can also be effective because of additional information provided along with FG in FOMC statements. Inspired by the work of Del Negro [18], we divide the FOMC announcements into two parts, economic conditions and policy actions, as shown in Table 2. Even though words in the FOMC statements concerning output and inflation do not belong to FG, their role is similar to FG and can influence its effectiveness. The Fed's comments on the economic conditions support FG statements and indicate the orientation of future policy. Therefore, even when FG language stays unchanged, the additional information can help investors revise their expectations in line with the path of economic and financial developments, enhancing the effectiveness of FG. [17] On the other hand, the additional information can also offset the impact of FG and reduce its effectiveness to some extent because the somewhat negative comments on the economy involved might hurt public confidence and economic sentiments.

**Table 2:** Summary of Significant FOMC Statements Language [43-47]

| Time | Economic Conditions | | Policy Actions | |
|---|---|---|---|---|
| | Economy | Inflation | FG | QE |
| Dec 2008 | Weakened further | Diminished appreciably | Lower the target for federal fund rate to a range of 0 to 1/4 per cent | / |
| Aug 2011 | Considerably slower growth | Picked up then moderated | Low levels warranted at least through mid-2013 | / |
| Jan 2012 | Expanded moderately | Subdued | Low levels warranted at least through late 2014 | / |
| Sep 2012 | Expanded moderately | Subdued | Low levels warranted at least through mid-2015 | QE3 |
| Dec 2012 | Expanded moderately | Below long-run objective | Low levels warranted at least as long as the unemployment rate remains above 6-1/2 per cent, inflation between one and two years ahead is projected to be no more than a half percentage point above the Committee's 2 per cent longer-run goal, and longer-term inflation expectations continue to be well anchored | / |

### 4.2.3."Noisy" Effect

In the first stage of U.S. FG, as shown in the first two rows in Table 3, treasury rates fell dramatically among all maturities. This decline was likely to result from the delayed impact of the dramatic fall in the federal funds rate rather than FG. (Vide Figure 2) In the second stage, as shaded in grey in the table, it is clear that the response of financial markets to the September 2012 announcement was altogether different from the other two – nominal yields rose instead of falling. One explanation for this is related to QE3, which was announced simultaneously. These examples show that it is hard to recognise the direct effects of FG from data like the treasury yields.

**Table 3:** Nominal and Real Treasury Yields of Different Maturity [48-52]

| Stage | FG Dates | 5-Year | | 7-Year | | 10-Year | | 20-Year | | 30-Year | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Nom. | Real | Nom. | Real | Nom. | Real | Nom. | Real | Nom. | Real |
| 1 | 2008-12-16 | -15 | -83 | -22 | -74 | -33 | -57 | -28 | -45 | -32 | N/A |
| | 2009-03-18 | -36 | -43 | -47 | -51 | -41 | -59 | -35 | -45 | -21 | N/A |
| 2 | 2011-08-09 | -18 | -39 | -23 | -52 | -23 | -33 | -23 | -16 | -14 | -26 |
| | 2012-01-25 | -15 | -20 | -15 | -18 | -12 | -15 | -8 | -11 | -5 | -8 |
| | 2012-09-13 | 2 | -25 | 6 | -19 | 11 | -15 | 16 | -8 | 17 | -9 |
| 3 | 2012-12-12 | 6 | 1 | 9 | 6 | 8 | 11 | 8 | 10 | 7 | 8 |
| | 2013-12-18 | 11 | 5 | 13 | 5 | 9 | 12 | 4 | 11 | 3 | 7 |
| | 2014-03-19 | 17 | 19 | 15 | 15 | 11 | 16 | 7 | 11 | 5 | 8 |
| | 2014-10-29 | 5 | 3 | 5 | -1 | 2 | 3 | -2 | 0 | -2 | -2 |
| | 2014-12-17 | 15 | 16 | 16 | 18 | 15 | 15 | 14 | 15 | 13 | 14 |
| | 2015-03-18 | -8 | -23 | -8 | -23 | -8 | -23 | -7 | -19 | -7 | -16 |
| | 2015-07-29 | 1 | -1 | 3 | -2 | 2 | 0 | 0 | -1 | 0 | -1 |
| | 2015-10-28 | 15 | 11 | 15 | 11 | 14 | 10 | 12 | 7 | 10 | 6 |
| | 2015-12-16 | 2 | 3 | -1 | 0 | -4 | -3 | -5 | -7 | -6 | -4 |
| | 2017-03-15 | -8 | -7 | -8 | -6 | -7 | -10 | -5 | -9 | -3 | -6 |
| | 2018-01-31 | 5 | 9 | 7 | 4 | 5 | 4 | 4 | 2 | 3 | 2 |
| | 2018-06-13 | 0 | 0 | -1 | -2 | -2 | -1 | -3 | -2 | -4 | -2 |
| | 2018-09-26 | -3 | -2 | -4 | -2 | -4 | -3 | -4 | -2 | -4 | -2 |
| | 2019-01-30 | -12 | -20 | -10 | -18 | -9 | -16 | -7 | -15 | -5 | -12 |

FG dates refer to the dates when FG was announced or revised by the FOMC. All data are measured in bp in a two-day window following each FG event.

To further illustrate this phenomenon, using the decomposition shown in Table 2, it is more evident that economic outcomes were significantly affected by the statements on economic conditions or other policy actions that were announced or implemented simultaneously with FG. This "noisy" effect indicates that the impact of FG was relatively weak, and it is critical to isolate the effect of FG by decomposing the FOMC statements with the consideration of other related

policies to draw a more specific and explicit conclusion.

To sum up, FG is practical to some degree by lowering the long-term interest rate and therefore stimulating the investment. It is also its advantage to improve the transparency of government intentions and raise individual confidence. However, the passive information hinted by FG could lead to a decline in the economic sentiments. It should also be noted that it is hard to determine the direct impact of FG from "noisy" economic indicators, and we call for further research on the isolation of FG impact through decomposition of the FOMC statements. In a word, FG was generally helpful to the recovery of the U.S. economy, but its impacts might be relatively weak compared to other policies such as QE since the impact of FG were quite implicit and easily disturbed or overlapped by other policies.

To sum up, FG is effective by offering investors a more straightforward interpretation of future policy orientation to help them make decisions. The additional information provided along with FG not only backs up the statement but also shows negative economic conditions, which could lead to a decline in the economic sentiments. It should also be noted that it is hard to determine the direct impact of FG from "noisy" economic indicators, and we call for further research on the isolation of FG impact through decomposition of the FOMC statements. In a word, FG was generally helpful to the recovery of the U.S. economy, but its impact was quite implicit, indicating that FG might be relatively weak compared to other policies.

### 4.3. Troubled Asset Relief Program

#### 4.3.1. Capital Provision and Confidence Restoration

Since its inception in October 2008, the TARP had helped banks and companies enlarge their balance sheets and reduce their leverage ratios by providing them with a vast amount of capital, which was also a direct injection of liquidity. As a result, these recipients became less likely to be insolvent.

In addition to the capital support, the TARP was a powerful signal that the government decided to intervene and try its best to prevent the financial system's collapse. This signal was crucial to restoring market confidence. After the TARP was enacted on October 3, 2008, the TED spread decreased by 32 bps in the following four days but went back again. [1] In the meeting between Treasury Secretary Paulson and the heads of the nine largest banks on October 14, banks were informed that Treasury would make direct capital infusions. [53] Since then, the TED spread had truly begun its plunge from 4.5 to 1 per cent through the first quarter of 2009 [1], which indicates the restoration of market confidence. After the announcement of the Stress Test results, the TED spread

finally went back to its pre-crisis level. (Vide Figure 1)

The restoration of confidence stabilised and stimulated investment, alleviating the economic difficulties of decreasing aggregate demand. The facts proved that it also managed to prevent large-scale bank runs, as happened in the Great Depression, which would have meant a further loss of liquidity and further deterioration of the whole economic situation. Just as the Congressional Oversight Panel (COP) stated in 2011, at the peak of the crisis, when the stability of virtually every bank was questioned, the TARP restored some measure of calm and stability to the markets. It achieved this partially by providing capital to banks but, more significantly, by demonstrating that the U.S. would take any action necessary to prevent the collapse of its financial system. [54]

#### 4.3.2. "Biased" Rescue

However, the TAPR also created a public backlash in the short run. Though Treasury first insisted that only healthy banks would be eligible for capital injections, when the public found that some TARP recipients were, in fact, on the brink of failure, all participating banks became tainted. [54] Moreover, many senior managers of TARP-recipient institutions retained their original jobs and considerable salaries without any substantial punishment. [55] These two factors might go down in the public eyes as evidence that bankers earn more in a boom but shift all the risks to taxpayers in a slump. At the same time, the TARP was widely perceived as having restored stability to the financial market whilst doing little for the 13.9 million unemployed workers and the 2.4 million homeowners who were at immediate risk of foreclosure. [54] This weakness also incurred much criticism for the TARP.

The backlash was both supervision and restriction – it not only forced the program to be more transparent but also limited Treasury's options to promote the program. If Treasury had expanded TARP recipients to more small institutions, the backlash might have become even fiercer. Besides, the vast potential economic damage was another reason those large institutions were first considered in the rescue. Therefore, the public backlash and the too-big-to-fail problem skewed the TARP towards bailing out giant banks whilst allowing smaller banks to collapse. As a result, a total of 334 small and medium-sized banks have failed since the creation of the TARP. [54]

#### 4.3.3. Market Distortion and Future Risks

This "biased" rescue distorted the market and contributed to potential risks in the future. The collapse of smaller banks significantly reduced the number and strength of competitors to large banks. At the same time, the TARP also provided these large banks with

comparative advantages [28] because capital can enhance their ability to compete for deposits and loans [23,24], and the implicit government guarantee improved their credit ratings and hence lowered their costs of funds whilst other banks received no such adjustment. [54] Thus, the market became less contestable whilst the competitiveness of the large banks was enhanced. This imbalance is partly responsible for the status quo that large banks in the U.S. today manage an even larger proportion of the nation's wealth than before the crisis, and banks that were too big to fail in 2008 become even bigger today. As shown in Figure 9, the market share taken by giant banks increased from 47% in 2006 to 59% in 2018, and Citigroup, JP Morgan Chase, Wells Fargo, and Bank of America alone gained 6% over the same period.
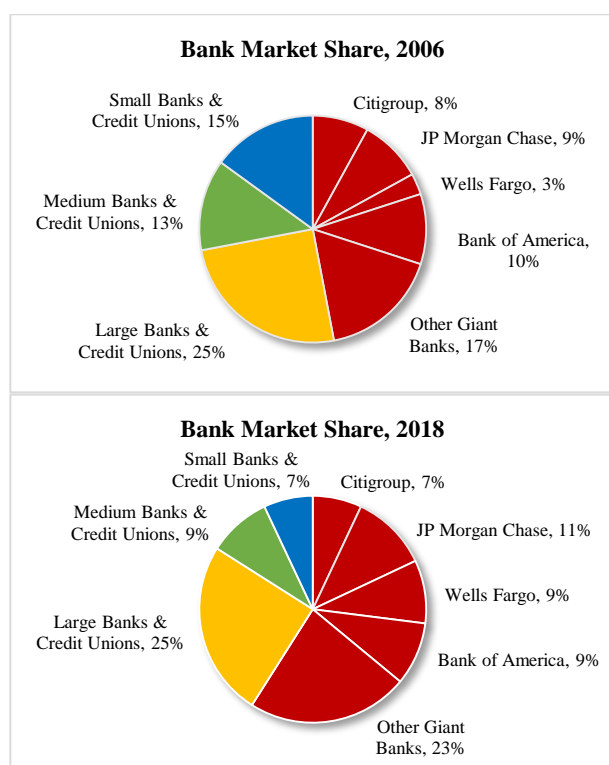


**Figure 9:** Bank Market Share in 2006 and 2018 [56]

In addition, these large TARP-recipient banks then tend to take more risks [20,21] because they would expect that, if their gamble fails, taxpayers will bear the loss, which is known as the moral hazard. Moreover, the expansion of the TARP to the automotive industry made the moral hazard even worse because it seemed to tell the market that any company could receive a bailout from the government, so long as its collapse would cost enough jobs or deal enough economic damage. [54]

Merging the two aspects, the bigger too-big-to-fail banks, together with their increased possibility to take risks, creates even greater risks and increases the likelihood of future crises. Therefore, the TARP can be construed as a shift of pain from the present to the future. It only cured symptoms instead of the disease: though the

financial market had stabilised, the problems lying behind – too-big-to-fail problem and moral hazard (which existed before and partly accounted for the crisis) – had not gone away; instead, they remained and became even worse.

To conclude, the TARP provided critical support by restoring market confidence at the peak of the crisis. Nevertheless, the consequent public backlash and too-big-to-fail problem led to "biased" rescue, which distorted the market, exacerbating the problems lying behind the crisis. In a word, the TARP effectively boosted confidence and reversed the deteriorating economic situation, but it created potential risks and shifted the pain from the present to the future.

## 5. CONCLUSION

In conclusion, QE injected liquidity into the financial market, stimulating consumption and investment. However, QE had no significant impact on inflation and thus real interest rates. There were also other limitations, including time delay and incomplete conduct of QE. Therefore, its impact would be much restricted. In a word, QE did help the U.S. to overcome the Great Recession, but it is not as effective as expected.

FG, together with additional information about economic conditions, helped investors form a consistent expectation of future policy orientation through explicit statements and therefore stabilise the financial market. However, the additional information might also be detrimental to economic sentiments and thereby reduce FG's effectiveness. Moreover, the forthright impact of FG is hard to distinguish from the noisy effects caused by other simultaneous influential policies. In short, FG was helpful to the recovery of the U.S. economy, but its impact was relatively weak.

The TARP provided critical support at the peak of the crisis, partially by directly injecting capital to banks but, more significantly, by rebuilding confidence. However, it created a public backlash, which, together with the too-big-to-fail problem, led to "biased" rescue, distorting the market. In the long run, the distortion exacerbated problems behind the crisis – too-big-to-fail problem and moral hazard – and therefore brought potential risks for the future.

In brief, QE helped the U.S. overcome the crisis by providing liquidity and stimulating consumption and investment, but some limitations made it not as effective as expected, which partly accounts for the slow recovery. Through announcing FG, the transparency of the policy and market stability were improved, but it is hard to isolate its direct impacts from other policies at the same period in the data. The TARP's critical support helped rebuild market confidence and reverse the deteriorating

economic situation, but it also created potential risks and shifted the pain from the present to the future.

At last, the analysis of the nation's crisis management back to 2008 is still valuable for the world in 2021 and beyond. The policy response to the Great Financial Crisis, whilst arguably not a prime example, provides a good reference for policymakers facing future crises. Understanding the effectiveness and impact of policies, the government can react in a wiser and timelier manner and the public can be more confident as the responses and their implications become more predictable.

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