# Sources, Effects, and the Impact of Regulatory Policy Responses to the Recent Global Financial Crisis

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**Abstract**

This research paper will aim to determine whether the recovery path chosen to be followed in the United States after the recent global financial crisis has been effective over the past ten years in an attempt to rebuild the country's financial sector. In order make this determination, perspective will be given on and analyzation will be conducted on sources and causes of the global financial crisis, effects seen due to the crisis, and some of the regulatory policy responses that have been put in place by the United States government.

## I. Introduction

For the purpose of this study, many aspects of the global financial crisis (GFC) from 2007-2009 will be explained and analyzed. This will be done in order to determine if the recovery path chosen to be followed in the United States after the recent global financial crisis has been effective over the past ten years. First, the sources and causes that have been cited as reasons for the crisis will be explained and analyzed to establish a foundation to the actual crisis. Sources that will be explained include the rise of the shadow banking industry, loose monetary policy, and the subprime mortgage market. Next, the effects that were seen within the United States due to the crisis will be expanded upon. These effects include the wellbeing of citizens in the United States and overall depressed economic activity in the United States. Finally, the regulatory policy responses to this crisis that were made by the United States government will help determine if recovery efforts have been effective in the attempt to rebuild the financial sector and ensure that another possible global financial crisis can be prevented and/or predicted. In order to make this determination, one must look at the sources, causes, and regulatory policy responses/recovery efforts to the global financial crisis.

The working hypothesis that has been proposed for this research paper is that many of the regulatory policy responses put into place by the United States government aided in the rebuild of the country's financial sector, but certain decisions made in times of distress did not. In the end, the working hypothesis will either be rejected or fail to be rejected. The structure of this paper is as follows: a substantial review of some of the literature used to support the working hypothesis, providing an analytical discussion to the sources, effects, and responses to the recent global financial crisis, providing empirical evidence on the topic at hand, and making concluding remarks.

## II. Literature Review

There is a multitude of research that has been conducted on both the sources and causes of the global financial crisis that took place between 2007 and 2009. Much of the research cites similar sources and causes. Paul Ramskogler, an economist at the Austrian central bank, attempts to synthesize the arguments that have developed in macroeconomic literature with the arguments developed in financial economic literature (Ramskogler, 2015). The research is presented roughly five to six years after the supposed end of the crisis, but Ramskogler presents insights from as early as the first year of discussion about the crisis. It is important to note that much of his research focuses on how both monetary policy and international capital flows have had an impact on the overall growth and rise of the shadow banking industry.

John B. Taylor has provided insight that cites the extremely loose monetary policy of the United States helped to ignite the credit boom and thus had a direct impact on the crisis (Taylor, 2009). He argues that from the period of roughly 2001 to 2006, the Federal Reserve established a policy that was simply too loose. Due to this policy, interest rates became far lower than were suggested by many economists, including Taylor himself. Many of these economists cited the Taylor rule, which prescribes how a central bank ought to adjust the instrument used to set the interest rate policy if there are changes in overall macroeconomic activity. Additionally, the real funds rate became negative from October 2002 to April 2005 for a total of 31 months (Verick & Islam, 2010). According to Taylor (2009), this was the greatest deviation from what historical experience would suggest the interest rate be. Mohan (2009) is in agreement with Taylor in the sense that the genesis of the crisis can be traced back to the extremely loose monetary policy and how low interest rates caused a global imbalance.

Finally, James Crotty argues in his research that the subprime mortgage market was the event that truly triggered the global financial crisis (2008). The sales of homes peaked near the end of 2005 while overall spending on construction to build homes and the overall prices to buy houses were at their peak at the beginning of 2006. The subprime mortgage crisis exploded around the middle of 2007, but the entire industry began to collapse. Although this crisis began in the United States, its effects were felt around the globe. Despite his claim that the subprime mortgage market triggered the crisis, Crotty (2008) also makes note that the deeply flawed practices of global institutions had a direct effect on the crisis.

While negative effects were seen across the globe as a result of the global financial crisis, many of those effects started (and stayed) in the United States. One author, Angus Deaton (2012), analyzed the effect that the crisis had on the wellbeing of Americans. The crisis itself, for many, resulted in drastic changes in income and wealth. At the same time, the rate of unemployment rose, and many Americans no longer had a steady source of income. The author was able to conduct this research through analyzing the data that was collected by the Gallup Organization. This organization, since January 2008, collected daily data on 1,000 Americans with a range of self-reported well-being (SWB) questions that were used to determine if the recession affected the emotional and evaluative lives of Americans (Deaton, 2012). Ultimately, Deaton concluded that there was a direct correlation between wellbeing and the stock market (this was greater than the correlation between income and unemployment).

It is accurate to state that economists were unable to predict the impact and effect that the global financial crisis would have on the United States and countries around the globe. Writing nearly ten years after the peak of the crisis, Ben Bernanke aims to provide new research to one of the most detrimental effects of the global financial crisis: depressed economic activity in the

United States (2018). Not only was there slowness in recovery, but there was an especially severe downturn. Overall, Bernanke presents his research on how credit factors played into the depressed activity in the economy.

In 2009, President Barack Obama signed the American Recovery and Reinvestment Act (ARRA) into effect. According to Barbara Klein and Klaas Staal (2017), ARRA predicted a fiscal stimulus of close to $800 billion, making it the largest in American history. Another objective of ARRA was to simply promote overall economic recovery. Within their research, Klein & Staal (2017) examine the effect of the ARRA on the economic growth of individual states in the United States. When analyzing the effectiveness of the ARRA, the authors acknowledged that some states were hit harder than others when it came to the economic situation of an individual state. Ultimately, Klein & Stall (2017) concluded that the ARRA had a positive economic effect on individual gross state products within the United States.

## III. Analytical Discussion

### A. Global Financial Crisis Overview

The global financial crisis (GFC) that took place between 2007 and 2009 was the worst financial disaster to have taken place since the Great Depression in 1929. During the crisis, there was extreme and utter stress in financial markets and banking systems all around the globe. Assets saw a substantial decline in value, debts were unable to be paid back, and liquidity was scarce. The downturn in the housing market in the United States set off what seemed like a domino effect for the rest of the world.

In the United States the overall housing market took on a great deal of suffering. Homeowners, many of which had been given subprime loans, were unable to meet the repayments that were part of their mortgages (Klein & Stall,2017). As a result of this, the value of many homes dropped dramatically, and banks were put in a tough situation: the land and the house that were repossessed from their original owners were worth less than the amount they had loaned out. This began the start of the liquidity crisis in the United States.

The global financial crisis itself was a large shock to the entire global economy. For example, global output and employment rates were plummeting in the fall of 2008 as financial markets were crashing simultaneously around the world (Deaton, 2012). This was one of the greatest challenges to both the political and social systems in the United States since the early 1940s when the country was part of World War II. Both financial markets and currencies around the globe (including the United States) put at risk. Additionally, weaknesses and faultiness within monetary policies were exposed to the world at this time as a result of the crisis. Due to this, just had had happened after the Great Depression, there was an extensive review conducted of financial regulation (Crotty, 2008); however, the process to ensure that both domestic and international financial regulation was improved was much more structured.

In early November of 2008, leaders of the largest economies from around the world and the European Union gathered in Washington with the goal to enhance the macroeconomic and financial cooperation of markets globally (Deaton, 2012). This forum, known as G20, became internationally regarded as the premiere forum for global economic cooperation. Many governments from all over the world joined together to combat the drop in overall economic activities. The crisis left effects on many individuals that were affected heavily by factors such as economic insecurity, loss of job, and much more.

## B. Sources and Causes of the Global Financial Crisis

There was a decisive impact of the rise of the shadow banking industry on the global financial crisis. Otherwise known as nonbank lending, the shadow banking industry played a large role in the global financial crisis. Shadow banking is the lending (and other financial activities) that are done by institutions that are unregulated or done by conditions that are unregulated. The institutions that took part in shadow banking helped in fueling the crisis as they not only provided lending to borrowers that were severely underqualified, but they financed many of the investment instruments that ended up collapsing when all of the subprime mortgages crumbled (Cox, 2019).

Before the global financial crisis, according to Ramskogler (2015), there were three channels that gave investors the chance to indirectly hold securitized bonds. The first channel was the money market funds. The funds from this channel began to grow as early as the end of the 1990s, and they held nearly USD 1.7 trillion USD toward the end of 2006 (Ramskogler, 2015). McCabe (2010) makes note that many of these funds were investing in treasuries, but the majority of these funds were investing in assets that were classified as safe (i.e. commercial market paper and agency debt). This is what created the strong connection to the mortgage market. In order to finance the necessary investments, shares are sold to investors by the money market funds, and these investors guarantee that shares will be taken back at the minimum of face value (Ramskogler, 2015). Underlying assets serve as the collateral in this situation.

The second channel that gave investors the chance to indirectly hold securitized bonds was the overall market for commercial paper that was asset-backed. To put it into perspective, the outstanding commercial market paper that were asset-backed totaled approximately USD 2

trillion in the year 2006 (Ramskogler, 2015). There is a process that originators must go through in order to create commercial market paper. McCabe (2010) describes the process as the originator transferring bonds that have already be securitized into a vehicle known as a "special purpose vehicle." The name is significant as these vehicles have the special purpose of holding all of the assets and issuing commercial paper that is backed by the assets. According to Acharya et al. (2013), the close relationship between the two was completely underlined by stock prices being interdependent. Additionally, research seems to point to the market understanding the relationship, too.

Finally, the last channel was the market for repossessions, or repos for short. During a transaction of repos, participants in the market sell a specific asset with the intention and agreement to repurchase the asset back for a higher price at a date in the future. According to Gorton & Metrick (2012), this was not only the most important but the most direct out of the three channels as investors were indirectly exposed to the previously securitized bonds in this channel. Once again, Gorton & Metrick (2012) make the important distinction between a purchase and a repurchase: repurchases mimic the interest rate and the asset that is being repurchased has the potential to be used as collateral if the bank were to fail. Many of the assets were said to have been safe, but this was not always the case as credit unions were the ones claiming the assets were safe. Ratings are often the center of investment policies for institutions (Ramskogler, 2015), and the rating agencies were increasingly rating securitized bonds and assets. This led to much higher risk and had a direct impact on the global financial crisis.

It is impossible to ignore the impact that the loose monetary policy put in place by the Federal Reserve played in the causation of the global financial crisis. In 2003, interest rates in the United States were only 1 percent (Verick & Islam, 2010). Yes, these low interest rates had a

direct effect on why the recession back in 2001 was short, but according to Verick & Islam (2010), it most certainly planted the seed for the global financial crisis from 2007 to 2009. With a similar stance as Verick & Islam (2010), Taylor (2009) argued that from the years 2001 to 2006, the policy from the Federal Reserve was simply too loose. This resulted in interest rates that were much lower than the rate suggested by the Taylor Rule, which prescribes how a central bank ought to adjust the instrument used to set the interest rate policy if there are changes in overall macroeconomic activity. Additionally, the real funds rate became negative from October 2002 to April 2005 for a total of 31 months (Verick & Islam, 2010). According to Taylor (2009), this was the greatest deviation from what historical experience would suggest the interest rate be. Many economists did express their concerns about the loose monetary policy (Taylor, 2009, Verick & Islam, 2010), but the government did not take action. Additionally, these economists even expressed how the deficit of the United States at the time was simply unsustainable. While the US dollar did not end up collapsing, the monetary policy would eventually have to be tightened.

The subprime mortgage crisis exploded around the middle of 2007, but the entire industry had already begun to collapse. The sales of homes peaked near the end of 2005, and overall spending on construction to build homes and the overall prices to buy homes were both at their peaks near the beginning of 2006. Its effects were felt around the globe, but especially felt in the United States. This was due to the fact that mortgage-based financial products were packaged up and handed out across the world (Crotty, 2008). Representatives from all across the system celebrated the growth of securitization, including mortgage brokers and investment bankers. Fees associated with the mortgages would not have to be returned if there were large losses suffered with the securities (Demyanyk & Van Hemert, 2009). Due to this, everyone involved with

subprime mortgages had strong incentives to ensure that there was a steady flow of loans going in and out of the system. Additionally, the reason as to why subprime mortgages were so profit-generating was due to the fact that they were packaged up into high-yield securities that were in high demand from areas like investment banks and hedge funds (Crotty, 2008). It is evident that the subprime mortgage market was truly one of the main causes that triggered the start of the global financial crisis.

In connection with the subprime mortgage market, it is important to note that credit ratings agencies had a direct role in the crisis. Crotty (2008) makes note that ratings agencies are often paid by the investment bank of the product in which they are rating, so in turn, their profits heavily depend on if banks are happy or not. If the rating had not been done by ratings agencies but instead done by or handled through the government, the chances of the securities growing at the rate at which they did would have been significantly less.

### C. Effects of the Global Financial Crisis in the United States

It is important to note that although this was a global financial crisis, many of the effects seen originated in and remained in the United States. These effects had a real correlation on the wellbeing of citizens in the United States. Angus Deaton (2012), in his analysis of the crisis and the impact on the wellbeing of Americans, found that wellbeing closely tracked the stock market over a span of three years and roughly one thousand days. In order to conduct the research, Deaton (2012) analyzed data that was collected by the Gallup Organization. This organization, since January 2008, collected daily data on 1,000 Americans with a range of self-reported well-being (SWB) questions that were used to determine if the recession affected the emotional and evaluative lives of Americans (Deaton, 2012). During the crisis, including those that had been

surveyed, people could not take their eyes off of the stock market. Concerns of financial security and job security were higher than ever before. In his research, Deaton (2012) was particularly surprised by this direct correlation between the wellbeing of Americans during the global financial crisis and the stock market as he believed that most Americans did not have a direct (or indirect) financial interest in the stock market. He was led to believe that this correlation was due to the stock market having become the most watched tool and indicator of the country's financial state for both the present and the future (Deaton, 2012).

If economists had been able to predict the overall impact that the global financial crisis would have had on both the United States and countries across the globe, it is possible that the lives of millions would not have been as dramatically changed as they were. They worried about low risk premiums and high house prices, but the ramifications were not anticipated by many in the profession. When it was too late, not only was there a sense of extreme slowness in the recovery from the crisis, but there was an especially severe downturn. Ben Bernanke (2018) presents his research on how credit factors played into the depressed activity in the economy. He aims to provide new research to one of the most detrimental effects of the global financial crisis: depressed economic activity in the United States. Bernanke (2018) even goes so far as to say that despite the failure to not accurately anticipate the global financial crisis nor the impact of the crisis, an effect that came out of the situation was the need to implicate basic macroeconomics along with rethinking many of the standard models within economics. In terms of macroeconomics, there is a dire need to take into consideration credit-related factors when both modeling and forecasting the overall economy (Bernanke, 2018). This has been made very clear after the crisis. Additionally, the standard models that have been used by central banks for years need to be reassessed. Bernanke (2018) makes note that while they are good tools for

incorporating the most basic of financial prices such as interest rates or exchange rates, but they are not able to accommodate the stresses that the country saw financially between 2007 and 2009. This also includes the disruption of the entire credit market. According to Bernanke (2018), this is the main reason as to why the standard models and approaches were not able to predict the gravity of the crisis.

### D. Regulatory Policy Reponses and Recovery Efforts in the United States

In 2009, President Barack Obama was able to sign the American Recovery and Reinvestment Act (ARRA) into effect. This act predicted a fiscal stimulus of close to $800 billion. This made ARRA the largest act of its kind in American history (Klein and Staal, 2017). The overall objective of this act was to ensure that overall economic recovery was promoted within the United States after the crisis. As ARRA was signed into law by President Obama in February of 2009, Klein & Stall (2017) considered gross state products for the entirety of 2009 as there may have been anticipation effects due to a new Congress starting in the latter half of 2009. Within their research, Klein & Staal (2017) examined the effect of the ARRA on the economic growth of individual states in the United States. When analyzing the effectiveness of the ARRA, the authors acknowledged that some states were hit harder than others when it came to the economic situation of an individual state. Chodorow-Reich et al. (2012) note that when dealing with intergovernmental transfers, the countercyclical efficacy of these transfers are quite questionable. This is due to the fact that states have the ability to use money to save in case of unforeseen events or tragedies, and thus this would not have an impact immediately on neither employment nor gross state products. Despite this, Klein & Stall (2017) did conclude that the

ARRA had a positive economic effect on individual gross state products (GSP) within the United States.

Besides ARRA, there were many other regulatory policy responses and recovery efforts made to help rebuild after the global financial crisis. First, there were many actions taken to simply build consumer confidence in the national banking sectors (Davis, 2010). This was done through creating extensions of deposit insurance, new types of financial guarantees, and even injections of government equity into the nationalization of different banks. Second, Davis (2010) notes that there were efforts made to help both restore and "unfreeze" liquidity to both financial institutions and different asset markets. This was done in an attempt to expand the types of collateral that would be accepted by the repurchase agreements of central banks. It is also necessary to note that at the time, central banks began to increase the aggregate liquidity through their own individual open market operations (Davis, 2010). The increase was made in order to not only offset the fear of individuals, but to attempt to increase the demand for liquidity. In turn, this was able to offset the adverse effects from high credit spreads on lending in the private sector (Davis, 2010).

Finally, heated debates were sparked after the global financial crisis about whether or not bailouts were desirable and should be part of the regulatory reform. According to Bianchi (2016), many economists argued that bailouts were needed in order to avoid and prevent a complete and udder meltdown of the financial sector. This, in turn, would have resulted in a large contraction in both output and employment. The bailout would have consisted of, according to Davis (2010), non-bank financial institutions that were regarded as systematically important, including insurance companies and investment banks located in the United States. Similarly, after finishing his research, Bianchi (2016) concluded that bailouts are much more favorable than not, and this

is due to the fact that they are able to alleviate the "under-capitalization" of most firms in the case of a financial crisis (like the global financial crisis). In the end, this will help with accelerating the overall recovery of the economy. Ultimately, Davis (2010) concluded that the total disruption to the market of different assets due to the disorderly failure was said to be unacceptable. Regardless, bailouts were viewed as a possible regulatory reform.

## IV. Empirical Evidence

There is much empirical evidence that has been presented by researchers on the overall topic of the global financial crisis. Figure 1 (see below) was published in October 2007 in *The Economist* magazine. The graph shows the background on monetary excesses along with the federal funds interest rate. According to Taylor (2008), it is based on a paper he presented in August of 2007. The actual interest rate can be seen as the line that drops all the way in 2003 to one percent and does not rise until 2006. The other line displays what, potentially, the interest rate could have been if the Federal Reserve had followed the same policy it had for nearly 20 years prior (Taylor, 2008).

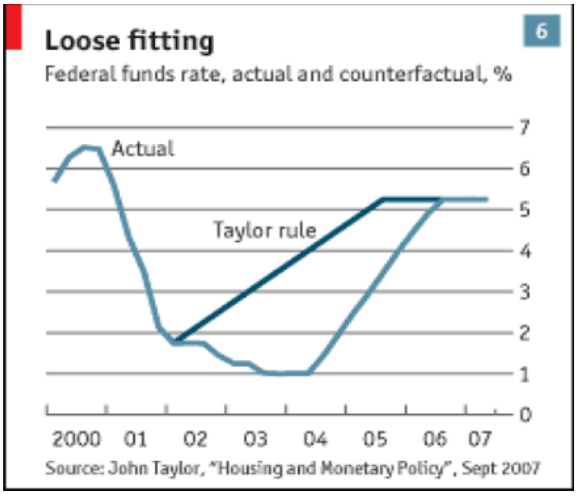


**Figure 1. Chart from *The Economist*, October 18, 2007**

Source: Taylor (2008), *The Financial Crisis and the Policy Responses: An Empirical Analysis of What Went Wrong*

According to Taylor (2008), the line was labeled as "The Taylor Rule" by *The Economist* due to the fact that it is an approximate drawing of the interest rate found by incorporating both actual inflation and GDP into one of Taylor's other policy rules. Additionally, Figure 1 is able to show that from roughly 2002 to 2006, the decision of what interest rates would be was significantly lower than the suggestion of policy should be according to historical experience. This, in turn, confirms that the monetary policy leading up to the global financial crisis was too loose and too easy. According to Taylor (2008), Figure 1 alone gives ample evidence to support the theory that there were monetary excesses before the housing boom took place.

One of the immediate policy responses as a result of the global financial crisis was the extreme cut in the federal funds rate. According to Taylor (2008), the rate target went from 5.25 percent in August 2007 (when the crisis began) to only 2 percent in April 2008. One of the effects of this reduction in interest rates was both the depreciation of the dollar and the extreme rise in oil prices. For example, oil prices doubled to more than $140 in July of 2008 (Taylor, 2008). This spike can be seen in Figure 2 (below). Once the expectations of growth across the world declined, the prices of oil simultaneously declined, too.

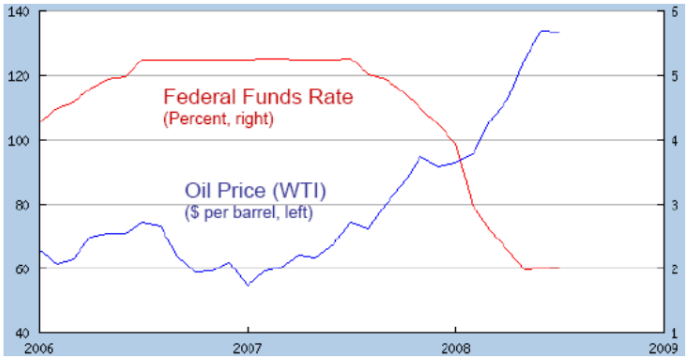


**Figure 2. The Sharp Cut in Interest Rates Was Accompanied by a Rapid Increase in Oil Prices Through the First Year of the Crisis**

Source: Taylor (2008), *The Financial Crisis and the Policy Responses: An Empirical Analysis of What Went Wrong*

More specifically, Figure 2 shows how closely correlated the federal funds rate and the price of oil were during the global financial crisis (Taylor, 2008). According to Taylor (2008), he felt that this dramatic interest rate cut helped to raise the prices of oil and other commodities, yet at the same time causing the crisis to prolong. It is important to note that the chart in Figure 2 (above) ends before oil prices went back to normal due to a slump in demand across the globe. The damage of the high oil prices had already been done.

Yuliya Demyanyk and Otto Van Hemert focused much of their research on the subprime mortgage market. As seen in Figure 3 (below), the figure shows the overall error in prediction in the subprime-prime rate spread. According to Demyanyk & Van Hemert (2009), this error was determined while in a regression of the spread on the overall prime rate, along with other loan and borrow characteristics. These characteristics included, but are not limited to, FICO credit score, origination amount, and the value of the debt-to-income ratio (Demyanyk & Van Hemert, 2009).

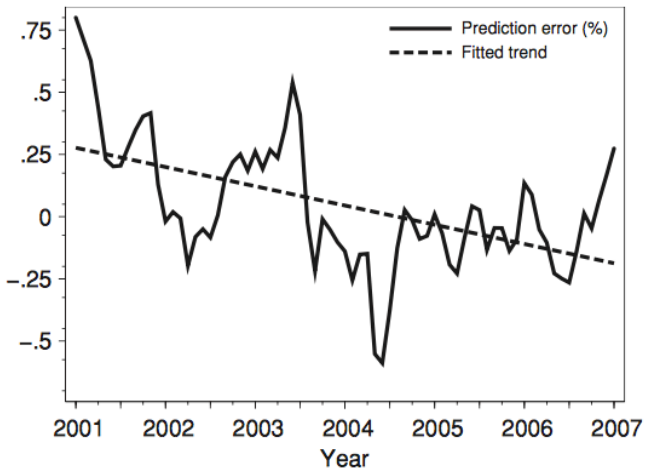


**Figure 3. Prediction Error in the Subprime-Prime Rate Spread**

Source: Demyanyk & Van Hemert (2009), *Understanding the Subprime Mortgage Crisis*

According to Figure 3, the prediction error was plotted, the average per orientation month was plotted, and the fitted linear trend was plotted. With this information, Demyanyk & Van Hemert (2009) were able to conclude that the downward trend symbolized that the subprime-prime spread declined between the time period of 2001 and 2007. It is important to note that the spread was adjusted for differences in the characteristics of both loans and borrowers (Demyanyk & Van Hemert, 2009). Yes, there were problems in the subprime mortgage market before the start of the actual crisis, but the risk did not completely reveal itself until housing prices stopped rising.

The extreme consequences of the global financial crisis began to recede a few years after the peak of the crisis, and many people expected that deleveraging would occur. Fortunately, this never came. According to the McKinsey Global Institute (2018), the total of combined global debt, non-financial corporations, and households has nearly grown by approximately $72 trillion since 2007. This climb can be seen in Figure 4 (below). Yes, although the increase seems smaller when looked at in comparison to GDP, it is still pronounced.

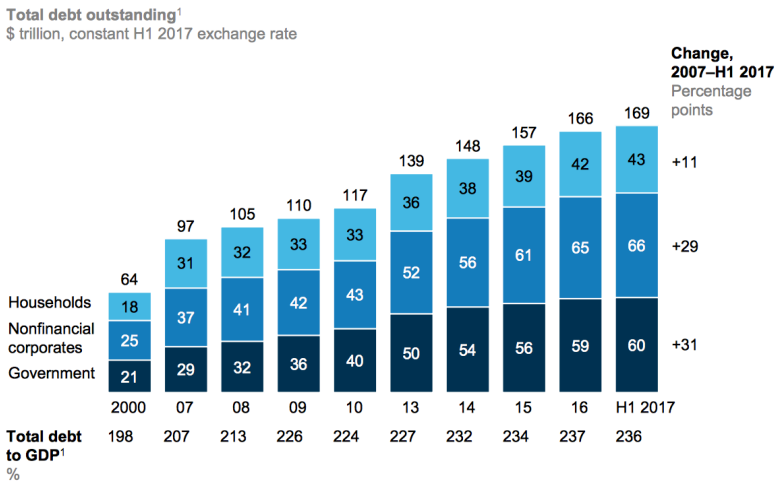


**Figure 4. Global debt has continued to swell since the crisis but has remained stable relative to world GDP since 2014.**

Source: Bank for International Settlements (BIS); McKinsey Country Debt Database; McKinsey Global Institute analysis

## V. Concluding Remarks

We can conclude that many of the regulatory policy responses put into place by the United States government aided in the rebuild of the country's financial sector, but certain decisions made in times of distress did not. For example, some of the regulatory policy responses that did aid in the rebuild included the ARRA, taking steps to rebuild consumer confidence in all aspects of the national banking sector through means such as creating extensions of deposit insurance, and increasing the aggregate liquidity of central banks. More specifically, Klein & Stall (2017) concluded that the ARRA had a positive economic effect on individual gross state products (GSP) within the United States, Davis (2010) noted that the confidence was able to start to be restored through numerous means (including extensions of deposit insurance being created and creating new financial guarantees), and once again, Davis (2010) notes that the adverse effects from high credit spreads on lending in the private sector was able to take place partially due to the increase in the aggregate liquidity. Not all of the regulatory policy responses were as successful, especially the ones that were made in times of distress (i.e. during the actual crisis). For example, prices of oil were raised dramatically. One economist, Taylor (2008), felt that this dramatic interest rate cut not only was one of the reasons that the prices of oil and other commodities rose so much, but that the cut caused the crisis to prolong.

The shock of Lehman Brothers collapsing sent waves throughout the entire financial sector. The fallout in the United States was arguably the worst across the globe, as there was a total of $19 trillion USD in household wealth lost, an approximate 30 percent drop in housing prices, nearly 9 million jobs lost in America, and over 10 million homes were lost (Hays, 2018). The financial shock in 2008 was massive, but the reaction (for the most part) was smarter than it had been when the stock market crashed in the 1930s. Fortunately, the downturn of the global

financial crisis seems to be behind us. Reform within the financial sector have continued to develop; however, there is only one instrument that can accurately tell us if our global financial system is both more resilient and stronger than before: that instrument is time.

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