

Henry M. Gunn High School

# The Federal Reserve's Impact on Financial Crises

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## **Title / Research Question**

How did the Federal Reserve help America recover from the Great Depression and 2008 recession?

## **Summary:**

The Federal Reserve (Fed) is America's central bank, an organization that oversees American banks and controls monetary policy. It exists primarily to be the lender of last resort, stabilize the economy, and prevent/mitigate financial crises. Generally, these crises are caused by a lack of confidence in the economy; when any weakness is present, the Fed is responsible for easing credit (lowering interest rates to make borrowing money cheaper) and providing liquidity (making loans or giving out immediate capital). The Fed also works with the executive branch to stimulate the economy through the creation of jobs and the FDIC (Federal Deposit Insurance Corporation) to ensure citizens that bank deposits will be secure. What this paper aims to do is to analyze the effects of the Fed's actions during the Great Depression and the 2008 recession.

## **Background and Significance:**

Stock exchanges are marketplaces where buyers and sellers of various securities can interact and invest. Unfortunately, they're full of risky securities and speculators willing to buy them, and can crash from a sudden lack of confidence, be it in a specific industry or the economy as a whole. As the stock market is also closely tied to America's economy, crashes can be catalysts for economic downturn.

The Federal Reserve has the power to mitigate the severity of economic downturns. However, these crises can be solved far more efficiently when the Federal Reserve takes preventative actions instead of alleviating damage that only continues to grow during the actual time of an emergency. These actions can be seen in stricter capital requirements for banks and other financial entities, or authority from Congress to have more power in times of crisis.<sup>1</sup>

This paper aims to explore the decisions made during the Great Depression and 2008 recession, two of the largest financial crises in America's history. While there have been numerous studies and investigations regarding these crises, I go beyond simply *why* the crash happened or how the implemented monetary policy worked, but will find connections between these crises. The majority of the research papers and news articles regarding this topic may go in depth into how the crises happened or the mechanics of the policies that were enacted, but this paper consolidates all of this information and aims to make it more understandable to the average reader.<sup>2 3</sup>

### **Research Methodology:**

My data collection is entirely observational; I only use data from existing sources. There are three types of sources I draw from: historical texts, Federal Reserve records, and various indicators. The historical texts serve primarily as an introduction to the crashes and how they happened in the first place. The data describing the conditions before each crisis should be observed; a crisis needs certain “ingredients” before it can begin, and it is important to be able to

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<sup>1</sup> (Fed, 2016)

<sup>2</sup> (Goldstein, 2012)

<sup>3</sup> (CNN, 2009)

identify them. Information concerning leverage or interest rates can indicate an incoming crisis, and should be looked at carefully.

The Federal Reserve's records give a detailed timeline of the actions they took, as well as board members' various opinions on the crisis. They provide a record of the atmosphere of the Fed and offer insight as to why certain policies above others were enacted.

Finally, indicators, taken from sources such as the FRED or Bureau of Labor Statistics can determine the success of these policies and their future potential.<sup>4 5</sup> Using Depression-era and 2008 data, I then compare the Fed's various responses in order to see how monetary policy changed over a century and what was ultimately effective.

### **The Great Depression:**

The events of the Great Depression can be traced back to World War I and its effect on the gold standard. The gold standard was a system whereby many of the world's central banks would tie their currency to a certain amount of gold. Furthermore, because so many currencies were tied to gold, they were also by definition tied to each other, creating global interdependence. Most central banks would also require that any printed money be backed by gold, ie. if the US Treasury wanted to print a million dollars, there would need to be a specific amount of gold available to "back" it (this action ensured that there would always be gold available to consumers who wanted to convert their paper holdings; banks would lose credibility if there was ever an inability to convert dollars to gold.).

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<sup>4</sup> (FRED, 2017)

<sup>5</sup> (BLS, 2017)

Under this system, long wars were ill-advised and unsustainable. Wars are inherently costly, and there simply wasn't enough gold to back long-term, heavy spending. Thus, when World War I started, nearly everyone believed that it would end within six months. Unfortunately, the war would last four years. As there wasn't sufficient amounts of gold to back up all the paper money being printed, many countries suspended the "backing" rule and printed recklessly, an action that would either to end the gold system or usher in difficult times to regain the former gold-paper balance. The defeated Central Powers, especially Germany, also faced harsh reparations, a punishment that would make this process even more difficult (the debate over how much precisely would need to be paid slowed the later return of the gold standard). In contrast, having entered the war close to its end, America ended up relatively stable, its coffers rich with the gold of other countries (from trade with Allied Powers).

Post-war, the major topic in the early '20s was the gold standard. There was a general consensus to go back to the standard, but only two difficult ways to do so. To restore their previous gold-paper standards, blown out of proportion by heavy wartime spending, countries could either slowly take paper money out of circulation (deflation), or simply make their currency worth less in comparison to gold (devaluation).<sup>6</sup> America ended up deflating, and the Federal Reserve introduced a program to buy and sell government securities to control the money supply in the banking system (OMO: open market operations).

Germany finally figured out the question of reparations (suffering hyperinflation—a condition where the purchasing power of a currency rapidly goes down by the moment—along the way), and the world finally seemed to stabilize. It became profitable to engage in activities

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<sup>6</sup> (Ahamed, 2009)

that would stimulate the economy, like selling goods or keeping money in the bank, and worldwide, economies began to improve.

Starting in the early '20s, America's stock market also entered a boom. Companies like GM were doing incredibly well, and *everyone* was investing, even urchin boys and house cleaners. The government was under the impression that this boom was partially because of overspeculation, and wanted to curb the "gambling" while leaving smart investing alone. While the underlying economy was relatively strong, activities targeting overspeculation could harm this stability. According to monetary economics, the best choice would be to raise interest rates. Unfortunately, France, Germany, and Britain, the three other largest central banks, agreed that in order to spread gold around, those with the largest gold reserves (which included America), should *lower* rates in order to make the countries with less gold like Britain more attractive. These countries would have comparatively higher interest rates, which would attract more investors; thus, they would increase their gold reserves and the world would have a more balanced level of gold.

This solution did do its job, stabilizing Britain temporarily. However, there needed to be a more permanent solution. Furthermore, by easing credit instead of tightening it, overspeculation increased in America. The situation only grew worse when Benjamin Strong, the respected leader of the Fed's New York branch, died. The entire Federal Reserve underwent turmoil as there was no more designated leader (Although Strong was only president of one branch of the reserve, he was respected and other parts of the Fed supported his actions). Now, different factions within the Fed could not agree on raising rates, and this inability to take action reduced the public's trust in the Fed.

Eventually, the Fed raised interest rates. This action, while curbing overspeculation to some degree, also forced other countries to raise their rates to stay competitive, causing minor recessions in countries like Britain. Soon, while the stock market was still at near-peak levels, it was centralized around a few glamour stocks; the rest had gone down from their previous highs. For these stocks, there was a “buy and sell quick” attitude, where buyers knew the underlying security was overvalued but were sure that prices would rise in the near future and they could escape with a profit.

By late 1929, investors decided to pull out. In October, in events known as Black Thursday, Black Monday, and Black Tuesday, the stock market crashed. The Fed finally took action, lowering interest rates, lending to banks, and performing open market operations (OMO) to prop up the prices of various securities. Interestingly, these events were taken well, as the general consensus was that the stock market was now fairly priced and there was no more chance for another crash in the future. Unfortunately, the Fed stopped OMO as soon as there seemed to be some stability, when they really should have waited for signs of recovery to do so. Furthermore, banks, instead of lending to more customers, were holding onto their cash for safety. It turns out many were insolvent instead of merely illiquid (unable to pay off long-term debts instead of temporarily short of cash). The stock market cascaded lower, at one point being at the lowest ever in history.

Additionally, Herbert Hoover, the president at the time, was unwilling to take dramatic action. It wasn't until Franklin Roosevelt (FDR) came into office that a national bank holiday was called. FDR soon conducted a “stress test” for banks. If they could prove they could pay off their debts and run sustainably, they'd be allowed to reopen. If not, they'd have to merge with

other banks or stay closed. At the end of the process, only relatively safe banks were open, and consumers could rest assured that their money would be secure.

FDR's New Deal programs also kicked in at the time, providing fiscal stimulus in the form of public works, agricultural subsidies, unemployment insurance, and Social Security. By reducing unemployment, raising commodities prices (he paid some farmers to *not* grow food, reducing the total crop supply and increasing overall prices), and providing for the unemployed and elderly, FDR was able to help America recover until the beginning of World War 2.

## **2008:**

The 2008 recession was all about mortgages. Ever since the first mortgage-backed securities (MBS) were created by Solomon in the 1970's, they quickly became a hit.<sup>7</sup> While Solomon had a monopoly on these securities for years, other firms eventually entered the market, and the industry became less and less profitable. In the late 1980's, the first collateralized debt obligations (CDOs) were created. CDO's are basically securities made from a group of mortgages. These securities were profitable for two reasons. First of all, there would be more business in creating and selling a security. For a normal mortgage, the interaction is between the bank and homeowner. In contrast, the CDO also involved security underwriters (to sell to investors) and bond raters (to evaluate the risk).<sup>8</sup>

Furthermore, these CDO's seemed far less riskier. For MBS's, there would usually be an arrangement called a credit default swap (CDS). A CDS is an agreement that lets a bank or other financial institution give up the risk of a mortgage defaulting for a fee (like a hedge). For

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<sup>7</sup> (Lewis, 1989)

<sup>8</sup> (Fligstein, 2012)

example, let's say that I am offered \$10,000 a year in order to claim responsibility for a million-dollar mortgage. If the homeowner pays their all fees on time, I earn quite a bit. However, if they default, I would owe \$1,000,000. The riskier the mortgage, the larger the payments. Because of the large risks involved in this sort of speculation, CDS's were not very popular. With the CDO, a seemingly riskless security that allowed an investor to capitalize on the profitable mortgage industry appeared. Furthermore, the launching of different "tranches" (creating categories of CDO's based on the safety of their underlying mortgages), meant it almost ridiculous not to invest in these securities.

By nature of a CDO, a small percentage of defaults are fine, as the overall security is still valuable. Unfortunately, this leeway creates some perverse incentives, as banks could then issue mortgages to less creditworthy people for higher profits (like junk bonds). As the percentage of homeowners grew and the number of housing starts decreased, financial institutions were *all* forced to issue risky mortgages just to stay profitable. Furthermore, a majority of these mortgages were adjustable-rate mortgages (ARM's), with rates that moved with short term interest rates like the Federal Funds Rate (shown later).<sup>9</sup> While the number of defaults was steadily increasing, everything seemed to be fine (most of the prices were still high and etc). Unfortunately, if interest rates rose, there would be a major correction; mortgage payments would spike, leading to a wave of new defaults that would crush mortgage-related securities.

Truth be told, there *were* signs of a major correction. While credit agencies still rated CDO's as safe, some pulled out of the housing market.<sup>10</sup> Unfortunately, there were more perverse incentives at play here; investors aware of the fragility of the housing industry kept buying these

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<sup>9</sup> (Board, 2014)

<sup>10</sup> (Paramount, 2015)

securities, certain their value would grow at least temporarily. Additionally, credit agencies were loath to downgrade certain companies, as they were literally paid by those same companies for their ratings. Eventually, interest rates reached an appropriate level (after years of .25% rate increases), raising the payments of homeowners. An unignorable number of mortgages defaulted, and credit agencies were forced to adjust their ratings, triggering a run on these securities. A series of selling sprees occurred, and the value of CDO's severely dropped. Although there certainly was a panic, only a handful of companies were seriously in trouble (including Lehman Brothers, Bear Stearns, and such). Unfortunately, these were systemic firms that heavily dealt with mortgages, and considering the size of the industry, the government was forced to step in and perform bailouts.

The first major liability was Bear Stearns. Although this bank was not large by any standard ("17th largest financial institution at the time"), it was too interconnected to fail; most of the loans Bear Stearns took out used MBS's as collateral. Thus, if Stearns filed for bankruptcy, lenders would need to sell these MBS's, which would lower their price even further in the market. The New York Fed stepped in. Although it was obstructed from taking on all the responsibility for Stearns (ie it would pay back all debts if Stearns fell), it made a deal with JP Morgan. JP Morgan would effectively buy Bear Stearns, taking the first billion in any losses, but then the Fed would step in and take care of the rest. This was a bailout, but Stearns still lost out; it was being bought for \$10/share, about 15 times cheaper than its all-time highs. This strategy would prove helpful in the future for Wachovia and Washington Mutual.

The next domino was Lehman. Unfortunately, the Fed couldn't repeat its strategy, with Stearns, as no one was willing to buy Lehman. With insufficient capital to help Lehman, it was forced to file for bankruptcy.

To avoid another "Lehman" the Fed tried to find other ways of supporting illiquid companies without depending on other companies.<sup>11</sup> Now, the strategy was to raise enough capital to plug in any "holes"; basically restore confidence with strong promises that investors would get their money back no matter what. Ironically, if effective, the Fed wouldn't have to use any of that money. With pushback from Congress, the Fed was able to pass a number of programs such as Term Securities Lending Facility (TSLF), which would essentially let large financial institutions "trade" their junk securities in exchange for Treasury AAA-rated ones (giving these companies far more liquidity to pay off their loans). More important was the Troubled Asset Relief Program (TARP), which would allow the government to directly buy preferred stock (the most illiquid parts of a company) and "inject capital", loaning companies large amounts of necessary capital. The Fed also worked with the Treasury department and FDIC to expand bank guarantees as well, letting investors know that their money was safe in banks, even if any were to go bankrupt.

One of the most significant programs was quantitative easing (QE), which in theory lowers interest rate below 0 (the Fed used this program when they literally could not lower rates any further). Essentially, the Fed created new money, and used it to buy assets from troubled institutions. With several rounds of QE, the money supply was doubled, and these institutions had

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<sup>11</sup> (Geitner, 2014)

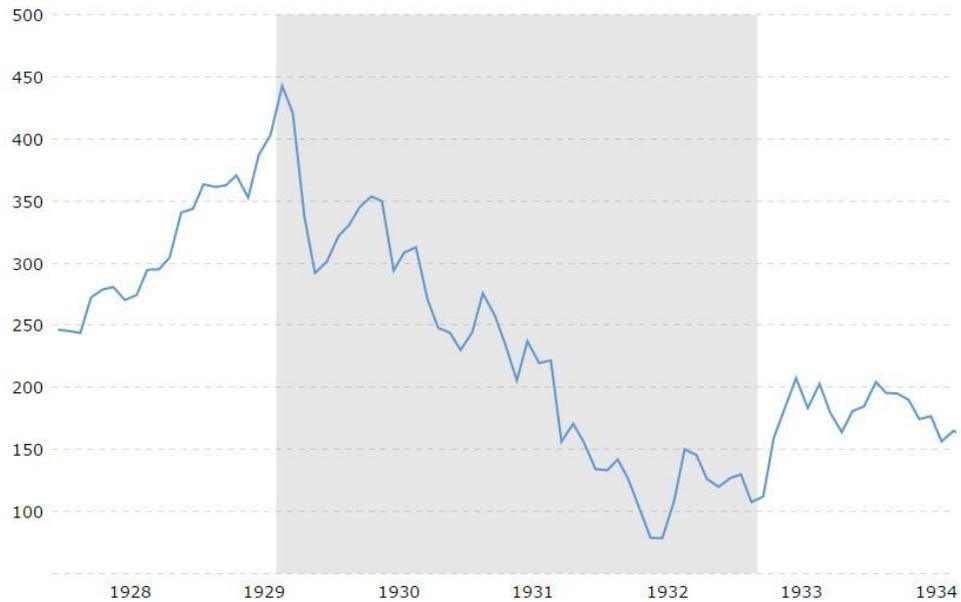
liquid capital, which they could hold onto or invest in other assets (which would stop falling in price).

Now, even though the Fed, Treasury, and FDIC had helped stabilize the financial system, it was still in trouble because of a weak underlying economy, entailing a low level of disposable wealth and low-valued securities and homes. To encourage any level of investment, the different governmental organizations that had had different viewpoints about how to fix the crisis had to come together and credibly commit that no important companies would be allowed to fail.

This cooperation resulted in the stress test. 19 systematic financial institutions would go through rigorous simulations by the Fed to estimate the necessary amount of capital if the economy underwent further downturn. The data would be available to the public, and the government would require unsatisfactory companies to either raise funds privately or receive a high-interest loan from the government. Overall, 75% were in a fairly strong position, and the rest had sufficient plans to raise capital on their own.

The global economy was still weak, but the worst of the crisis over by the middle of 2009. The government began to focus on housing initiatives and other extensions to the Recovery Act while pushing for reform. Today, banks are larger due to the takeovers during the crisis, but have larger capital requirements that simultaneously disincentivize speculation and reduce the likelihood of another panic.

## S&P 500:



Source: [macrotrends.net](http://macrotrends.net)

As previously stated, the stock market is a strong indicator of immediate confidence in the economy and how much "extra wealth" is in the hands of ordinary citizens. The S&P 500 is one group of securities that does a fairly good job of representing the entire stock market. The

shaded bars on these graphs highlight the recession period; a sharp downward trend is characteristic during these times (obviously). It should also be noted that small corrections upwards can be misleading and falsely indicate that a crisis is over. In late October of 1929, Black Thursday and Black Monday were responsible for the first falls in the market, but a weak government and banking system were what continued this trend. In other words, there is always a "catalyst" to start these events, but they persist because of existing weaknesses.

### Federal Funds Rate/Discount Rate:



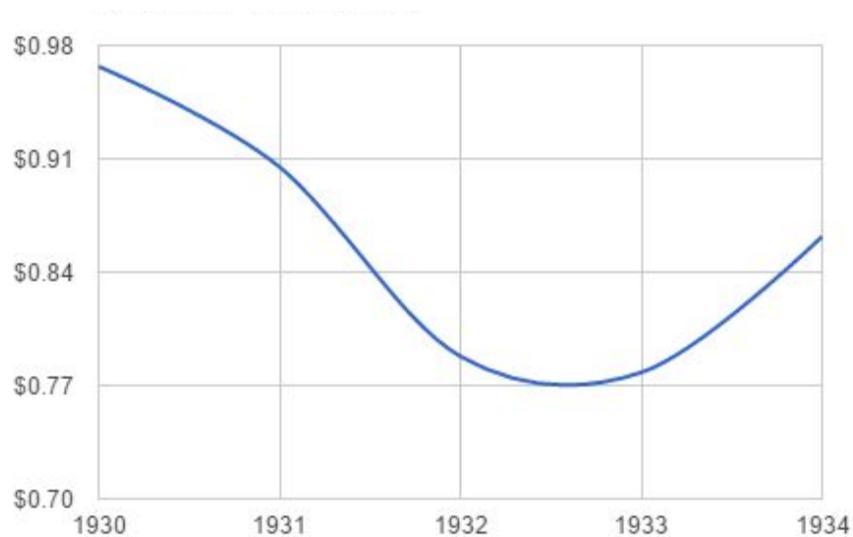
Source: fred.stlouisfed.org



Source: fred.stlouisfed.org

The discount and federal funds rates are benchmark interest rates. The funds rate is the interest rate banks under the umbrella of the Reserve will make loans to each other at, and the discount rate is the rate that the Fed will lend to individual banks for. It would have been preferable to use the funds rate for the Great Depression, but unfortunately, there was no available and reliable record for the time period. The trend is clearer for the 2008 Recession, but in times of crisis, the Reserve will rely on easing to make the cost of borrowing as low as possible; in other words, the cost of buying money is reduced, and there is increased incentive to engage in economically productive behavior such as buying a home or car.

### Real GDP:



Source: *thebalance.com*

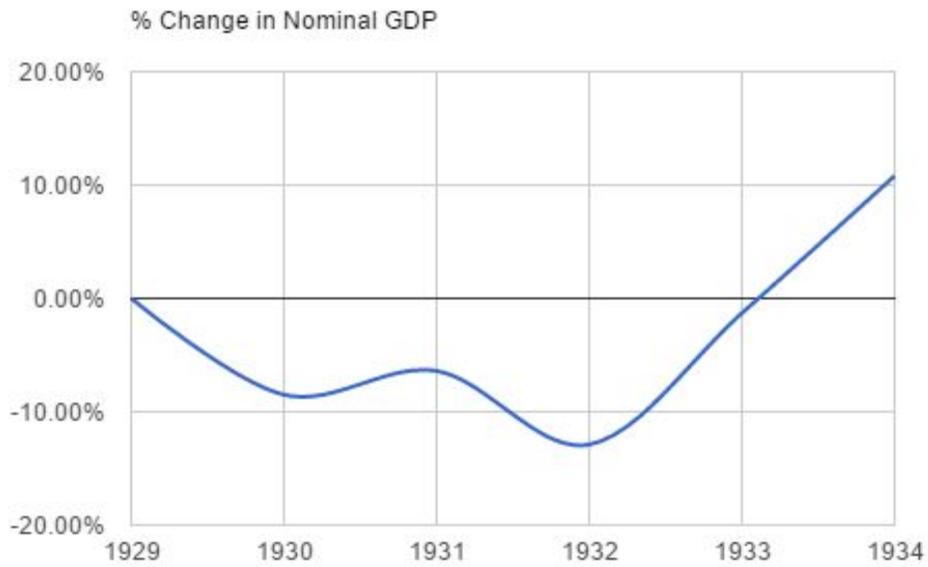
(In trillions)



(in billions)

Source: fred.stlouisfed.org

### Change in GDP



Source: thebalance.com

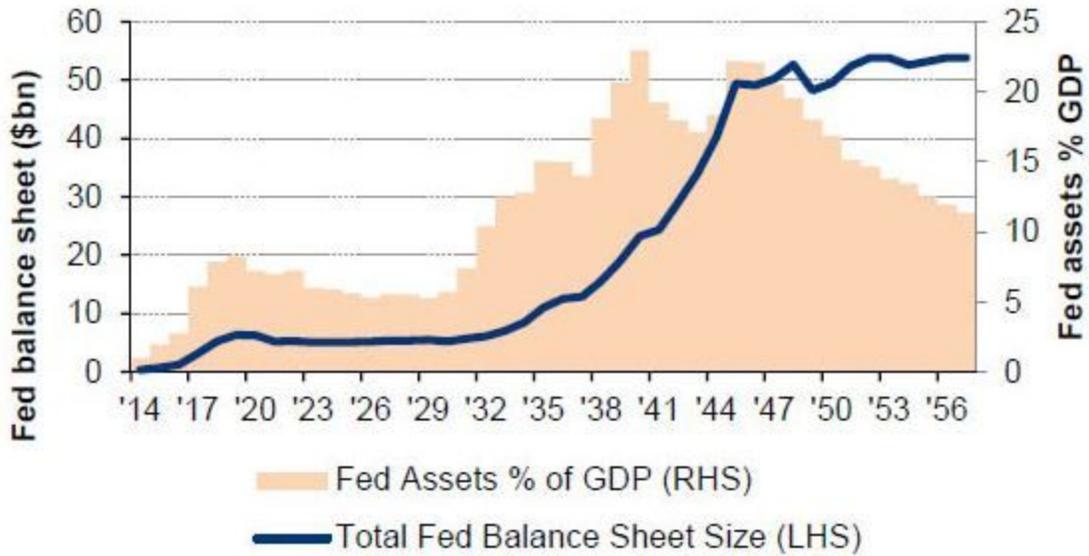


(% change in real GDP)

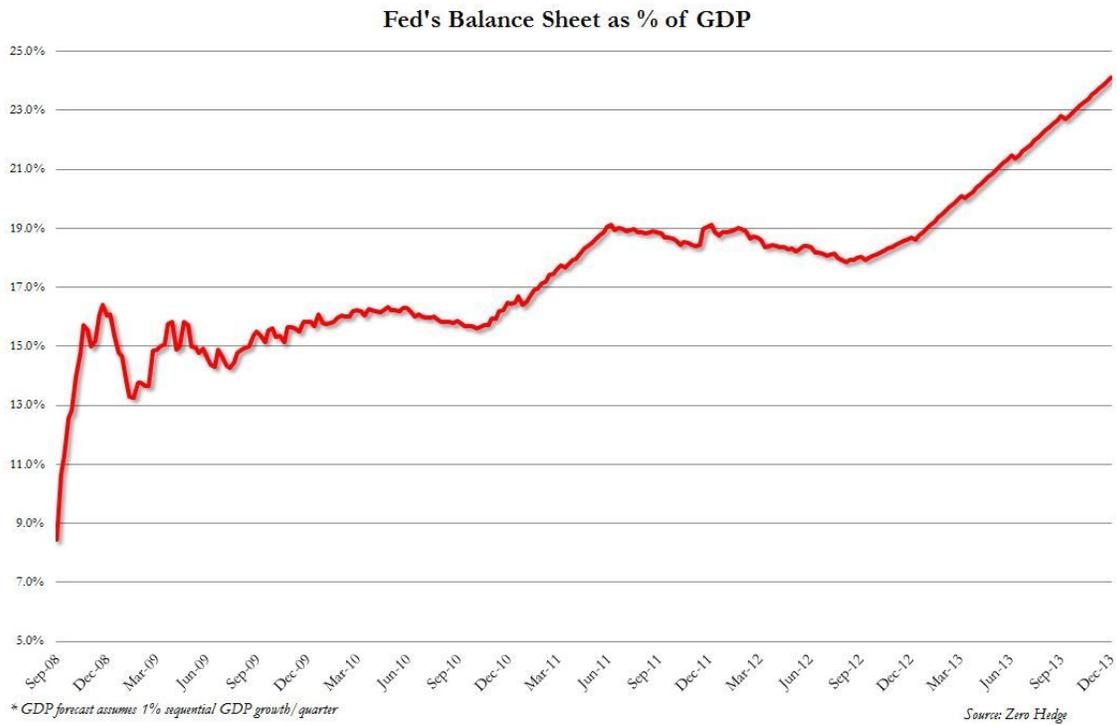
Source: fred.stlouisfed.org

GDP is one of the basic indicators of the US economy. It essentially measures the value of all the goods and services produced within the US to quantify the health of the economy. During recessions, the GDP can enter a positive feedback, where a low GDP report can discourage spending and investment, which drives the GDP down even further. The magnitude of GDP drops should also be noted; in the Great Depression, there were over 10% drops, while the 2008 recession only reached about a 3% fall, signaling that despite the severe recession, America was better off than it had been during the 1920s and 30s. A similar trend is seen in the recovery.

## Federal Reserve Balance Sheet as a % of GDP:

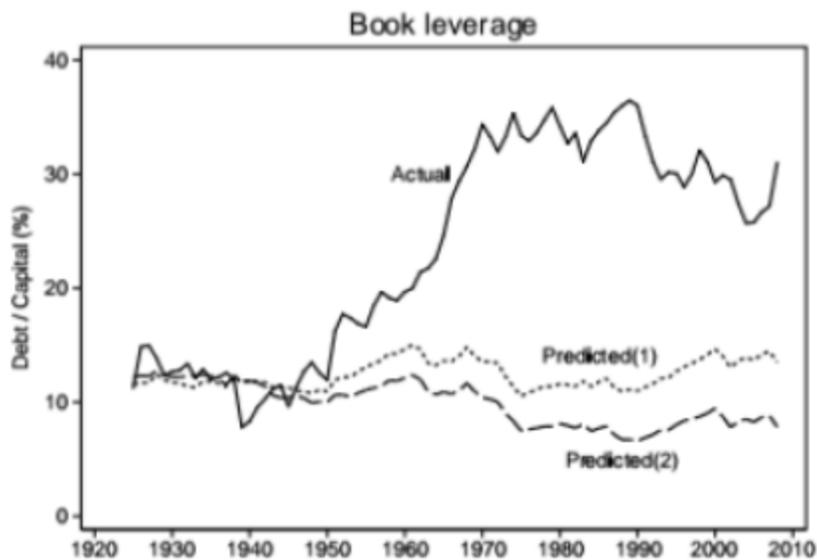


Source: BofAML US Equity & Quant Strategy, Federal Reserve Board, Bureau of Economic Analysis

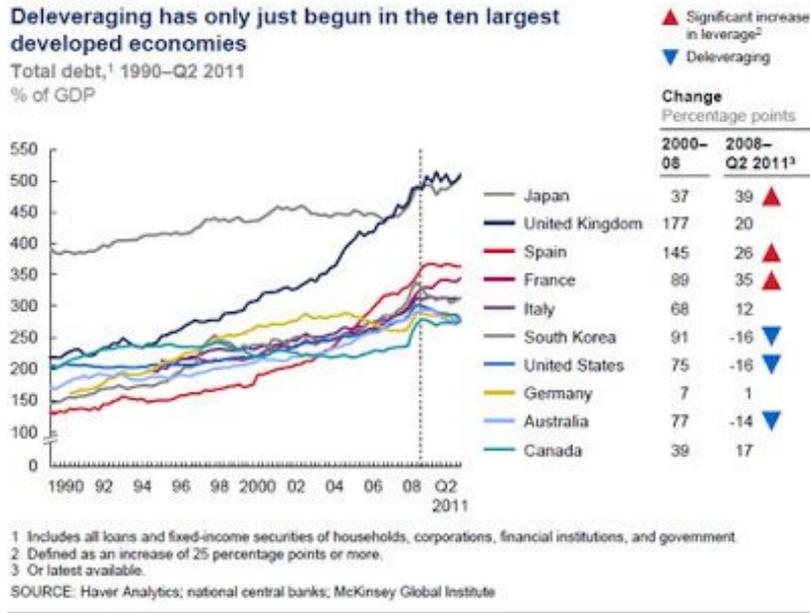


The Fed's balance sheets is one of the most important tools when it comes to recessions. The somewhat timid Fed of the 1920's and '30s failed to utilize it well. Although the percentages are fairly similar for both of the above charts, the banking system was far smaller then, meaning more money was being funneled into fewer banks. One of the main differences between the Great Depression and 2008 recession is that Ben Bernanke, the chairman of the Fed at the time, was committed to being aggressive with the balance sheet. Using a program called quantitative easing (not unlike a large wave of OMO), he brought massive liquidity into the banking system. At a time where near-zero fed funds rate wasn't enough, the Federal Reserve was able to "ease" the financial system even further and bring confidence back (compare the S&P 500 chart and observe how fast it recovers, even above its pre-recession highs).

### Leverage:



Source: National Bureau of Economic Research



The leverage ratio compares the amount an entity has borrowed to the amount it owns. A high leverage ratio is one way to grow rapidly. By paying a fee to borrow money, an entity has the ability to increase a return (If I have 100 dollars, and I earn a 5% gain over the year, I will effectively earn 5 more dollars. However, if I borrow 400 dollars, giving me a leverage ratio of 5, I can earn 25 dollars in capital gains, 5 times as much as I would have made otherwise). When the stock market seems to be steadily growing, speculators can leverage to make their seemingly-guaranteed gains larger. However, when a security drastically loses value, one will soon find that they owe more than they can pay, and end up losing collateral such as houses. In crises, this losing effect occurs throughout the entire financial sector, and it traditionally doesn't fully end until investors deleverage — paying their debts and resorting to more sustainable borrowing. In the graph above, one should focus on how the leverage's magnitude changes throughout a crisis. It should be noted that unlike 2008, major leverage wasn't a theme of the

Great Depression, which is why it isn't significant in this graph. From 2000-2010, there is a sharp rise in leveraging that actually doesn't fully decrease later, due to continued stimulus.

### **Conclusion:**

Overall, the Fed didn't play a large role in ending or preventing the Great Depression. In the face of overspeculation, it was unable to take any decisive action, divided by different factions seizing power. Furthermore, by propping up Europe and lowering interest rates, the Fed had two conflicting goals: supporting Europe and curbing overspeculation. By trying to accomplish both, it was unable to fulfill either. This situation was due to different countries trying to bring back the gold standard. This system is only able to function if the amount of gold was proportionally split amongst the countries and *no* country was in trouble; if one faced a contraction, the rest would suffer. After WW1, America had the largest amount of gold, Germany faced an incredible amount of turmoil, and the amount of new gold being uncovered couldn't match the expanding global economy. Finally, in the midst of bank runs in 1932, the Fed failed to distinguish temporary stability from recovery, and ended its open market operations far too soon.

For the 2008 recession, Fed chairman Ben Bernanke, an avid study of the Great Depression, aimed to not repeat these mistakes. And while the government was ultimately successful, there were some initial roadblocks and a variety of different starting conditions. Investment banks and other financial entities were under a variety of agencies such as the SEC and OCC, meaning that the government never had a full picture of the financial sector's condition to begin with. There was also a belief that home prices were stable to a degree, and that

it was impossible that they would slump nationwide. <sup>12</sup>Pre-crisis, not a single one of the "stress tests" that financial institutions administered to themselves accounted for this possibility. Yet, that's exactly what happened.

Additionally, once the government started performing bailouts, it had a difficult start. By zig-zagging (bailing out Bear Stearns, letting Lehman go bankrupt, then bailing out AIG), it confused investors, and had to work even harder to restore confidence later on.

Although they originated differently, the Great Depression and 2008 recession had fundamental similarities. While they were ultimately solved in different ways, there were parallels in the desire to restore confidence. As mentioned previously, if investors don't have confidence that they'll get their money back, they won't invest in the first place. Although the Great Depression Fed cut off their support preemptively, they still coordinated with the president to pass their stress tests and fiscal stimulus, not unlike the 2008 Fed's response.

While this research is in no way comprehensive, it provides key metrics that both differentiate the beginning stages of these crises as well as the reactions towards the policies taken to combat them. Ultimately, just like the 2008 Fed built off the Great Depression Fed's response, future generations of the Federal Reserve will look upon the solutions to these crisis as inspiration. Even if the financial system changes as it did from 1920-2000, the goal of bringing back investor confidence must stay consistent.

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<sup>12</sup> (Silver, 2012)

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