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The 2008 Financial Crisis: How Deregulation Led to the Crisis

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Abstract

The causes of the 2008 Financial Crisis have been analyzed by scholars and many have come to different conclusions as to which cause is at the core of the crisis. The purpose of this senior thesis is to analyze the causes of the crisis and empirically explain deregulation as the main cause of the crisis. This study will use data on bank failures from 1965-2013 gathered from the Federal Deposit Insurance Corporation to analyze how different regulatory and deregulatory banking laws affected the number of bank deletions that occurred over time using regression analysis. Other variables will be used to represent the other causes that are mentioned by scholars. My hypothesis is that the deregulation laws will have a significant and positive affect on the number of bank deletions over time. Laws should therefore be aimed at regulating banks to ensure the stability of the financial system.

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LAKE FOREST COLLEGE

Senior Thesis

The 2008 Financial Crisis: How Deregulation Led to the Crisis

by

Katherine Bentley

April 20, 2014

The report of the investigation undertaken as a
Senior Thesis, to carry two courses of credit in
the Department of Economics

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Abstract

The causes of the 2008 Financial Crisis have been analyzed by scholars and many have come to different conclusions as to which cause is at the core of the crisis. The purpose of this senior thesis is to analyze the causes of the crisis and empirically explain deregulation as the main cause of the crisis. This study will use data on bank failures from 1965-2013 gathered from the Federal Deposit Insurance Corporation to analyze how different regulatory and deregulatory banking laws affected the number of bank deletions that occurred over time using regression analysis. Other variables will be used to represent the other causes that are mentioned by scholars. My hypothesis is that the deregulation laws will have a significant and positive affect on the number of bank deletions over time. Laws should therefore be aimed at regulating banks to ensure the stability of the financial system.

I would like to dedicate this thesis to my parents, Stephen and Leslie Bentley, who have worked hard to ensure that I am able to take advantage of every opportunity I am given and provided me with constant love and support. Without them, this project would not have been possible.

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Chapter 1 The Introduction

The 2008 Financial Crisis caused the most significant economic downturn since the Great Depression. Before the crisis, housing prices were on the rise, innovative investment options were being created, and new ways to diversify risk were being utilized. House prices then began to fall, and the weaknesses of the economy were exposed. There are countless opinions held by the media, the policymakers, and the people in the country about what caused the 2008 Financial Crisis. Being able to pinpoint the cause of a problem is the first step towards solving that problem. The 2008 Financial Crisis resulted in a 10 percent unemployment rate in 2009 (Bureau of Labor Statistics, 2012, 2). \$8.8 million jobs were lost, and \$19.2 trillion were lost in household wealth (Department of the Treasury, 2012). Real GDP fell more than 5 percent from the pre-recession peak (Department of the Treasury, 2012). Once the cause of the crisis is established, formulating a remedy to target that cause will not only help the current problem, but it will also help to reduce the likelihood of another financial crisis.

There are numerous different reasons that are said to be the cause of the crisis, but this thesis will work to show that deregulation can be traced back to the core of the economic downturn. This thesis will begin by discussing the causes from the views of different scholars on the subject. Subprime mortgages took on many forms due to the financial innovation that was occurring at the time. Mortgage lenders gave risky mortgages to people who could not afford the risk, and when house prices rose, mortgages began to default. Securitization set out to diversify risk, but it took the subprime mortgages to a new level. Mortgages were originated, sold, securitized, and sold to investors all over the world. Securitization severed the

relationship between the borrower and the lender. The credit rating agencies had formed an oligopoly that limited competition and led to incorrectly rating the subprime mortgages. The agencies gave ratings using flawed models while trying to earn the highest profit. Housing initiatives by the government encouraged relaxed standards in order to eliminate discrimination in lending. The monetary policy in the years leading up to the crisis was loose in order to prevent a recession from the stock market bubble. The housing bubble burst was the trigger that exposed all of the other vulnerabilities already existent in the economy.

Deregulation will be looked at from a new perspective. It will be analyzed empirically in the hopes of finding a quantitative connection between bank deletions and the deregulatory laws as they were passed. The other causes discussed have roots in the deregulation that has occurred since the 1970s. The passing of the Depository Institutions Deregulation and Monetary Control Act of 1980 is the first main law discussed, and it played a role in the crisis 28 years later. The Garn-St. Germain Act of 1982 is the next law that was passed that played a crucial role in the crisis. The one deregulation law that is constantly discussed and associated with the crisis is the Gramm-Leach-Bliley Act because it repealed regulations that were put in place by the Glass-Steagall Act a few years following the Great Depression. These are the three deregulatory laws that will be focused on, and specific parts of these laws will be identified and tied to the causes of the 2008 Financial Crisis.

In order to look at deregulation empirically, variables were collected to proxy for the other causes discussed, and the deletions of commercial banks will be the measure of the negative performance of banks. Three different models were run.

The first model uses multiple variables to proxy for the different causes discussed in Chapter 2, and the other two models use fewer variables in order to broadly measure the discussed causes using variables for bad assets, monetary policy and shocks, and deregulation. The goal is to use the positive and significant deregulation coefficient to show that deregulation played a crucial role in the deletions of banks leading up to the 2008 Financial Crisis. The positive effect of deregulation on deletions will then be used to suggest effective regulation reform in order to ease the consequences of another financial crisis because this crisis cost the taxpayers over one trillion dollars. Financial crises are not completely avoidable, but knowing what caused the 2008 Financial Crisis will help to change banking legislation from being reactive to proactive.

Chapter 2 Causes of the Financial Crisis

The literature explaining the causes of the 2008 Financial Crisis cites multiple reasons for why the crisis occurred. Subprime mortgages, securitization, credit rating agencies, housing initiatives and other policy factors, and deregulation are among the causes discussed in the current literature. The authors discuss the different causes and why they believe that each cause is the main cause of the crisis. This chapter will discuss and explore subprime mortgages, securitization, credit rating agencies, and housing initiatives and other policy factors as potential causes in order to show that each one is not the main cause of the 2008 Financial Crisis.

Subprime Mortgages

Subprime mortgages played a very crucial role in the 2008 Financial Crisis. The literature focuses on the changes in mortgages and how the innovations during this development lead to the crisis in the financial sector. Subprime mortgages were mortgages given to borrowers who did “not qualify for mortgages under standard credit terms” (Mills, 2009, 71). Special mortgage terms were established for borrowers who were “not likely to have the income to pay ordinary interest and principle on their debts” (Mills, 2009, 71).

Joseph E. Stiglitz (2010) makes the argument that the “troubles in the financial sector originated with mortgages” (97). The troubles began with the changing role of banks. Banks used to earn a profit from the interest rates received from borrowers minus the interest rates they had to pay depositors. The profit was lucrative in the long-run but not large, so the banks took advantage of relaxed regulations to look for new ways to generate profits (Stiglitz, 2010, 84). Banks found profit in fees. “Innovation responds to incentives,” and banks had the incentive of

higher profits to motivate them to innovate (Stiglitz, 2010, 90). Banks innovated and came up with new mortgage products, but they did not help borrowers manage risk (Stiglitz, 2010, 84). The innovative mortgage products, instead, were designed to shift risk away from the banks, produce as many fees as possible, and get around regulatory restraints that might restrict risk-taking and lending (Stiglitz, 2010, 84). The new innovations, when misused, had the potential to increase their risk rather than reducing it in the end (Stiglitz, 2010, 84).

There are several innovative mortgages that the banks gave during the housing boom (Stiglitz, 2010, 85). The 100 percent loan had banks lending “100 percent, or more, of the value of the house” (Stiglitz, 2010, 85). The problem with 100 percent loans was that it was “what an economist calls an option,” and this means that the borrower receives a profit if the price of the home goes up and has the option to walk away if the price happens to go down (Stiglitz, 2010, 85). If the borrower could not pay the mortgage payment, they could foreclose and leave the bank holding both the mortgage and the home, and the borrower lost nothing. Lenders utilized adjustable rate mortgages (ARMs) to make houses appear affordable and to put more risk on the home buyer during a time of increasing housing prices (Soros, 2008, xvi). An ARM is “a mortgage whose interest rate changes periodically over time” (FCIC, 2011, 451). Innovation occurred where mortgages were used that had teaser rates and balloon payments (Stiglitz, 2010, 85). Teaser rate mortgages had temporary low rates and increased dramatically after a few years, and balloon payment mortgages took advantage of the low interest rates at the time but had to be refinanced when interest rates went up or the time of the balloon occurred (Stiglitz, 2010, 85). A balloon mortgage only requires the

borrower to make “the interest payment for 10 years but then has to pay a huge amount—the balloon payment” at maturity (Friedman, 2011, 11). Both of these types of mortgages required the borrower to repeatedly refinance their mortgages, and the lenders profited from this because each refinancing required the borrower to pay a new set of fees (Stiglitz, 2010, 85). The teaser period would end, and families would have a difficult time making payments. This cycle would continue over and over. The lenders would assure them not to worry about this because their home price would increase and allow them to easily refinance and have money left over for a vacation or a car (Stiglitz, 2010, 85). The lenders encouraged the borrowers to take a gamble on their mortgages and increase their debt because the lenders had the incentive to do so regardless of how it affected the borrowers in the long run. Lenders had the incentive to originate mortgages in order to sell them off, and once they were sold off, the lenders did not have to deal with how the borrowers were affected by their increasing debt.

Negative amortization mortgages are another innovation of subprime mortgages. Lenders utilized these “mortgages that allowed the borrower to choose how much he paid back,” and there was not even a requirement “to pay the full amount of interest he owed each month” (Stiglitz, 2010, 86). By the end of the year, the borrower would end up owing more than at the beginning, but the lenders persuaded the borrowers by using the increasing house prices as justification (Stiglitz, 2010, 86). Regulators and investors should have been suspicious of all of these new “mortgages that left the borrower increasingly in debt and those that forced him to refinance and refinance” (Stiglitz, 2010, 86). Liar loans “were the most peculiar of the new products” because many borrowers were encouraged to lie and

exaggerate their income; there were also times when loan officers lied about the borrower's income (Stiglitz, 2010, 86). The lenders allowed for these innovative subprime mortgages to be made because they had only one thing in mind and that was that larger mortgages would give them higher fees (Stiglitz, 2010, 86). The lenders would receive fees from the borrower for refinancing. The initial fee that the lender charges on a mortgage is a point, and each point equals one percent of the loan. The charge can be one point or multiple points. The lenders did not think of any of the problems they were causing for the future (Stiglitz, 2010, 86).

Ben S. Bernanke (2013) argues that the increase house prices and the deterioration in the quality of mortgage standards are two key events that led to the 2008 Financial Crisis (41-42). Housing prices were increasing and feeding the bubble while mortgage underwriting standards became worse and worse (Bernanke, 2013, 42). Before the 2000s, borrowers had to provide detailed documents of their finances to convince the bank to give them a loan, but as housing prices increased, the lenders began giving mortgages to borrowers that were less qualified (Bernanke, 2013, 42-43). These mortgages are called "nonprime" mortgages because there were mortgages that were above subprime and below prime that were not up to the traditional standard and "often required little or no down payment and little or no documentation" (Bernanke, 2013, 43). Mortgage quality was declining because lenders were "lending to more and more people whose credit was less than stellar" (Bernanke, 2013, 43). The overall mortgage deterioration can be seen in 2007 where 60 percent of all "nonprime loans had little or no documentation of the creditworthiness of the borrower" (Bernanke, 2013, 43). The difference between subprime and nonprime loans is that subprime loans were

given to those with “weak credit,” and nonprime loans had riskier characteristics but given to borrowers with strong credit (FCIC, 2011, 102). There is, however, still the problem that there was little to no documentation for either subprime or nonprime loans (FCIC, 2011, 482).

The deterioration of mortgage standards became a problem as house prices began to decrease. As house prices increased, “the share of borrowers’ incomes being spent on their monthly mortgage payments went up,” and the increasing costs of homeownership decreased the demand for new houses (Bernanke, 2013, 43-44). The earlier increase in house prices caused an excess in the supply market. Therefore, “the bubble burst and house prices fell” (Bernanke, 2013, 45). Bernanke (2013) argues that “the decline in house prices and the mortgage losses were a trigger,” and they “set afire” the “vulnerabilities in the economy and in the financial system” (48). The borrowers and lenders in the private sector “took on too much debt, too much leverage,” and the banks and other financial institutions were not able to keep up with monitoring the risk of the innovative and complex transactions (Bernanke, 2013, 48-49). Financial firms were also relying “very heavily on short-term funding such as commercial paper,” and their short-term and “liquid form of liability” became “subject to runs in the same way deposits were subject to runs in the nineteenth century” (Bernanke, 2013, 49).

The vulnerabilities in the public sector include an outdated regulatory structure that “did not keep up with the changes in the structure of the financial system” (Bernanke, 2013, 50). The Federal Reserve also created vulnerabilities in the economy by providing poor supervision of banks and poor consumer protection because “the Fed has authority to provide some protections to mortgage borrowers

that, if used effectively, would have reduced at least some of the bad lending” (Bernanke, 2013, 51). Bernanke (2013) makes the final point that the structure of the regulatory system caused weaknesses because there was not much attention paid to problems affecting the entire system due to having many different regulatory institutions being responsible for different, specific financial institutions (51). Bernanke argues that the deterioration of mortgage standards coupled with the decrease in house prices exposed the vulnerabilities in both the private and public sector, leading to the 2008 Financial Crisis.

Alan S. Blinder (2013) makes the claim that it was the regulators, banks and non-bank lenders, and securitizers to blame for leading the country in to the mess of the 2008 Financial Crisis. But he also believes that the problem was rooted in the large amount of risky mortgages that should never have been made in the first place (68). The amount of subprime mortgages increased from \$35 billion (5 percent of all originations) in 1994 to \$625 billion (20 percent of all originations) in 2005 (Blinder, 2013, 70). People previously purchased homes with a 20 percent down payment, but this all changed because of the real estate boom due to the “can’t lose” mentality developed towards real estate (Blinder, 2013, 47). Mortgages that required only 5 percent or less down payment became common, and there were times when the down payment for the house was borrowed (Blinder, 2013, 47).

Banks were making risky mortgages and quickly passing them on before they could bear the consequences (Blinder, 2013, 69). Specific subprime mortgages are highlighted, and they are “low doc” mortgages, “no doc” mortgages, “liar loans,” “option ARMs,” and “negative amortization mortgages” (Blinder, 2013, 70-71). No-doc and low-doc mortgages were about one-third of the total of all subprime

mortgages (Blinder, 2013, 70). NINJA loans were loans “granted to people with no income, no jobs, and no assets,” and “no one seems to know how many NINJA loans were actually granted” (Blinder, 2013, 70). These are all “risky mortgages that should never have been created” (Blinder, 2013, 68). The option ARMs gave the borrower a choice each month of whether to pay the contractual payment, the interest, or pay less than the interest and add the rest to the principle (Blinder, 2013, 71).

It is, however, important to note that these risky mortgages were only risky because of the people they were offered to (Blinder, 2013, 71). Subprime mortgages can be a good risk for people that can afford to gamble with their money, but banks offered these mortgages to people who could not afford a loss (Blinder, 2013, 71). There is a clear difference between “almost qualified” borrowers who would like to own homes and banks looking for anyone who would sign a mortgage document (Blinder, 2013, 69-70). Banks should not have offered loans that were “designed to default” to “unsophisticated borrowers” because it “violates the principle of sound banking” (Blinder, 2013, 71). Blinder does make the point that “mortgages designed to default could not have been a major cause of the crisis” because “mortgages that clearly were not designed to default failed almost as often” (Blinder, 2013, 71).

Subprime mortgages are not the main cause of the 2008 Financial Crisis. Using subprime mortgages as the root of the problem ignores factors that are the root of the problem. For example, Chairman Bernanke claims that the “prospective subprime losses were clearly not large enough on their own to account for the magnitude of the crisis” (FCIC, 2011, 27). Claiming that subprime mortgages were the main cause of the crisis ignores that mortgages were “only one form of

collateralized debt obligations (CDOs), which are a central feature of the crisis” (Mills, 2009, 34). The Garn-St. Germain Act enacted in 1982 is also disregarded when claiming that subprime mortgages are the main cause because it “eliminated statutory restrictions on real-estate lending by banks that had imposed maximum loan-to-value ratios and required repayment of the principal within thirty years for many kinds of loans” (Friedman, 2011, 91).

This Act led to “a regulation that imposed no limitations on real-estate loans” (Friedman, 2011, 91). By eliminating the restrictions on real-estate lending, subprime mortgages were able to be made. Higher interest rates could be used to absorb losses from taking the risk, and no longer having a maximum loan-to-value ratio allowed both the banks and the borrowers to take on more leverage and risk. Although subprime mortgages played a role, the Garn-St. Germain Act was a key step in encouraging such high risk lending in the first place.

Securitization

Securitization is a cause of the 2008 Financial Crisis, but it is not the main cause. The literature suggests that securitization transformed the banking industry and led to the crisis by depersonalizing the loan process, allowing banks to transfer credit risk, and increasing the complexity of investment. Securitization was originally “meant to reduce risks through risk tiering and geographic diversification” and increase the liquidity of mortgages (Soros, 2008, xvii). Near “the end of 2002, as credit markets began to recover from the preceding recession, investment banks extended the prime-mortgage securitization model” to different “riskier asset classes” (Acharya and Richardson, 2009, 187). Through “securitization, the financing of housing via mortgages is extended to the entire

capital market” (Acharya and Richardson, 2009, 187). Securitization, at first, “looked like a great advance for mortgage lending” because it allowed banks to sell mortgages and use the money to write more mortgages or “lend for other purposes” (Mills, 2009, 76).

The process of securitization severed the relationship between the lender and the borrower and worsened problems caused from imperfect information (Stiglitz, 2010, 14). In the past, banks would originate loans and hold onto them, so they had an incentive to ensure that the borrower had the means and the incentive to repay the loan over time (30 years). They would bear the consequences of the borrower defaulting because each mortgage the banks made was held by them (Stiglitz, 2010, 90). Holding onto the loans forced the banks to be held accountable for their loan decisions, so they had to make sure the loan was good. Borrowing was a personal process in the past before securitization, and the bank would know when it was worth it to extend credit and be able help out a borrower that had trouble paying because the bankers had the opportunity to know the borrowers (Stiglitz, 2010, 90). Foreclosure only happened when it was absolutely necessary, and banks could judge this situation because they had a more personal relationship with the borrower (Stiglitz, 2010, 90). Securitization put distance between the lender and the borrower because the lender became an investor that was completely separated from the borrower (Stiglitz, 2010, 90). The shift to lenders becoming the investors put the borrowers at a disadvantage because investors could potentially be very removed from the community and less understanding of hardships. Investors often put restrictions on the loans and made it more difficult for the borrower to refinance if any problems arose (Stiglitz, 2010, 96). The understanding friendly banker no

longer existed because of the new distance between the lender and the borrower put there by securitization (Stiglitz, 2010, 96).

Securitization did not begin as a dangerous innovation, but it became one. “The legitimate and worthy purpose of securitization is to spread risk” (Acharya and Richardson, 2009, 184). Securitization allowed banks to produce bad mortgages and then pass them on as quickly as possible (Stiglitz, 2010, 14). A bad mortgage is one that is made to either a person with bad credit, does not have the income to pay the mortgage back, or the terms of the mortgage are too risky for the borrower. A good mortgage is one that is made to a person with good credit, the income to pay the mortgage back, and a borrower that can withstand the risk involved. The securitization process had banks making subprime mortgages and knowing they should find a buyer for them while they were still good (Blinder, 2013, 72). Investment banks paid cash for the mortgages, bundled them with mortgages from all over the country, packaged them into “well-diversified mortgage-backed securities,” and sold them to investors around the world (Blinder, 2013, 73). The mortgages were pooled like mutual funds and therefore, less risky to invest in because the investment was no longer in an individual mortgage (Blinder, 2013, 73-74). The complexity of securitization does not end there.

Securitization became even more complex with tranching, and tranching was done in order to decrease the risk of the upper tranches to achieve higher credit ratings. Banks had the opportunity to “tranche” the mortgage pools (Blinder, 2013, 74). To do this, the bank sliced up the pool into different tranches. For example, there would be three different tranches: the “toxic waste” tranche, the “mezzanine” tranche, and the “senior” tranche (Blinder, 2013, 74). The tranche bundle of

securities is now a collateralized debt obligation (CDO), and most CDOs had seven or eight tranches (Blinder, 2013, 74). The “toxic waste” tranche was the most junior tranche, and it would absorb the first percentage of losses in the pool (Blinder, 2013, 74). The “mezzanine” tranche was the middle tranche and would absorb the next percentage of losses, and the “senior” tranche was the top-rated tranche and was vulnerable only to losses above the other tranches’ combined percentages (Blinder, 2013, 74). The complexity of securitization, unfortunately, still does not end with these CDOs. Wall Street engineers began to combine the junior tranches of securities into a new CDO and tranche that “CDO of CDOs” (Blinder, 2013, 75). The lowest tranche of the new CDO protected the other four tranches from risk by absorbing the first percentage of losses that accumulated across all of the underlying mortgage pools involved (Blinder, 2013, 75).

The securitization process became extremely complex. Each link in the chain of this process added risk, complexity, and confusion (Blinder, 2013, 76). “The mortgage originators knew something about their local markets and the creditworthiness of their borrowers,” and “the investment banks that did the securitizing knew less” than the mortgage originators (Blinder, 2013, 76). Those on Wall Street “who created the CDOs and the CDO2s were performing mathematical exercises with complex securities; they had no clue about--and little interest in-- what was inside” (Blinder, 2013, 76). “The ultimate investors, ranging from sophisticated portfolio managers to treasurers of small towns in Norway, were essentially clueless” (Blinder, 2013, 76).

There is disagreement among authors in the literature about which is the most important problem that securitization caused. Alan S. Blinder (2013) focuses

on the complexity and confusion that comes from securitization but admits that there was also far too much risk taken (76). In theory, the “financial engineering” of mortgage-backed securities is a good idea because risk is spread out over many investors (Blinder, 2013, 76). The complexity and confusion, however, opens the door for those who do not understand the securities to be taken advantage of (Blinder, 2013, 78). For example, the process of securitization “depended on the greater fool theory” (Stiglitz, 2010, 91). There had to be fools that would purchase “the toxic mortgages and the dangerous pieces of paper that were based on them” (Stiglitz, 2010, 91). Having complexity and confusion in securitization allowed for a decrease in the competition in the securities market because it made it difficult to compare different prices before investing (Blinder, 2013, 77-78). The investment banks that packaged the securities and sold them were therefore, able to make a higher profit by confusing those purchasing with complexity (Blinder, 2013, 77).

Taylor (2009) argues that the risk associated with securitization was at the core of the crisis (159). Complexity was not the only problem with securitization. The complexity helped fuel the underestimated risk that came along with securitization (Taylor, 2009, 159). The bankers “misestimated the extent of correlation among default rates in different parts of the country” (Stiglitz, 2009, 141). The bankers did not realize that a rise in the interest rate or unemployment rate could have effects on multiple parts of the country (Stiglitz, 2009, 141). The banks failed to assess the risks associated with the new financial products such as the low-documentation loans that were the underlying loans for some of the mortgage-backed securities (Stiglitz, 2009, 141). Bankers also did not correctly

predict the risk of a decline in real-estate price or the effect the decline would have in many parts of the country (Stiglitz, 2009, 141).

The complexity and the risk that came with securitization combined to contribute to the 2008 Financial Crisis. Problems were amplified because of the complexity and the underestimated risk of the mortgage-backed securities. The complexity and risk lead to a “queen of spades” problem (Taylor, 2009, 159). As housing prices dropped and foreclosures and delinquency rates rose, no one knew where the securities that had bad mortgages were (Taylor, 2009, 159). Not only was the problem not being able to find the securities with bad mortgages an issue during the crisis, but there was also the problem that no one really knew what the securities were worth. All of the securities that were created had “problems of valuation” (Mills, 2009, 77). The problem that “securities weren’t worth what they had been thought to be worth” led to banks being overvalued because banks owned securities (Mills, 2009, 78).

Focusing the main cause of the crisis on securitization disregards the legislation passed to initially allow banks to be involved with securitization. For example, the passing of the Gramm-Leach-Bliley Act allowed for the conflict of interest that securitization caused (Stiglitz, 2009, 143). Gramm-Leach-Bliley Act “transmitted the risk-taking culture of investment banking to commercial banks” (Stiglitz, 2009, 143). Securitization alone is not the main cause of the crisis.

Credit Rating Agencies

Some argue that the role of the credit rating agencies in the 2008 Financial Crisis was pivotal. The different changes that the credit rating agencies underwent over time and how those changes affected credit ratings are crucial to

understanding their role in the crisis. The original model for the rating agency business was that the “investor pays” for the rating of their potential investment, but in the 1970s, “the firms converted to an ‘issuer pays’ model” (White, 2009, 229-231). This new model has the issuer of the bond paying the rating agency for the rating (White, 2009, 231). U.S. bank regulators, in 1936, allowed banks to only invest in safe bonds and prohibited them “from investing in ‘speculative investment securities’” (White, 2009, 229). The banks could only purchase securities that were rated BBB or higher by the recognized agencies: Moody’s, Standard & Poors, and Fitch. The Securities and Exchange Commission decided, in 1975, that ratings only from a “‘nationally recognized statistical rating organization’ (NRSRO) would be acceptable” (White, 2009, 230). This move allowed for the three rating agencies, Moody’s, Standard and Poors, and Fitch, to form an oligopoly (Friedman, 2011, 13). They, therefore, did not rely on their ability to produce accurate ratings for their financial success (Friedman, 2011, 13). The decision by the SEC to allow the three rating agencies to form an oligopoly reduced their accountability and competition.

The NRSRO category allowed for competition strictly between the three agencies because it “was a potentially fatal barrier to entry” (White, 2009, 230). New bond rating agencies would be ignored by financial institutions and bond issuers (White, 2009, 230). Converting from the “investor pays” model to the “issuer pays” model allowed for a conflict of interest to arise. This change created an incentive system with clear issues such as companies paying for their grades and the desire for the rating agencies to please their customers. Investment banks could participate in “ratings shopping” (Blinder, 2013, 80). If a rating agency did not give the investment bank the grade they wanted, the bank could go to another agency for

it. A rating agency also had an incentive to shade a rating upward for a higher fee or keep an issuer from taking their business to a different rating agency (White, 2009, 231). The barrier to entry caused unhealthy competition between the agencies through the investment banks' use of "ratings shopping" (Blinder, 2013, 80). The "issuer pays" model and the competition between the agencies distorted the incentives for the rating agencies and led to issues that would also distort the ratings given. The ability of investment banks to shop around for their ratings is an example of the competition strictly between the three NRSRO agencies that began with the SEC establishing the NRSRO category of rating agencies.

The credit rating agencies made mistakes that led to the crisis. One way in which credit rating agencies took advantage of their situation was by providing consulting services on how investment banks could receive better ratings (Stiglitz, 2010, 93). They were compensated for consulting and paid again once they gave the rating (Stiglitz, 2010, 93). Investment banks began negotiating ratings (Blinder, 2013, 80). The system of renegotiation allowed the group looking for the rating to inquire what it could do to make the rating AAA and reapply for the rating after (Blinder, 2013, 80). Renegotiation improved products, but it also led to a lot of suspiciously rated AAA paper (Blinder, 2013, 80). The credit rating agencies became compliant in the "ratings shopping" process and even became involved in the creation of the securities (White, 2009, 233). They specified different "components that would allow a very high percentage of securities that were issued from any bundle of subprime mortgages to garner AAA ratings" during negotiations (White, 2009, 233). The credit rating agencies allowed themselves to become too involved

in the rating process through “ratings shopping” and negotiating ratings and ended up distorting the ratings because of the incentive system that had been established.

Credit rating agencies not only had perverse incentives, but they were also assessing the risk of the bonds using flawed and old models. Blinder (2013) argues that the credit rating agencies failed in their duties (79). They used the same bad models that the investment banks did to assess risk and assumed that housing prices would continue to increase everywhere and forever (Stiglitz, 2010, 93). For example, AAA ratings were given to mortgage securities that ultimately were vulnerable because the rating agencies did not believe the housing bubble would burst, and they were not going to cut ratings based on the theory that the bubble would burst (Shiller, 2008, 50-51).

Their outdated model predicted that if any foreclosures were to happen, they would not be correlated (Stiglitz, 2010, 93). The reason to securitize is to diversify risk, but diversification only works if the underlying loans of the securities are not correlated (Stiglitz, 2010, 93). Their thinking ignored the low interest rates, lax regulations, and rising income that were feeding the housing bubble (Stiglitz, 2010, 93). If any of these factors changed, markets around the entire country would be affected. The credit rating agencies neglected to take into account the possibility of a chain reaction from any of those factors because there was no incentive for them to do so, but they did have an incentive to use the old model and not question dubious assumptions (Stiglitz, 2010, 94). The economy had changed with new financial products being used, and the rating agencies did not take the changes into account in their models (Stiglitz, 2010, 95).

Financial institutions played a role in the failure of credit rating agencies by becoming too reliant on their ratings. The “investors, regulators, and analysts alike relied almost exclusively on the opinions of rating agencies rather than performing their own due diligence” (Blinder, 2013, 81). Rating agencies are the only option for ordinary investors because they do not have many resources to analyze potential financial instruments (Blinder, 2013, 81). There is no excuse, however, for the “giant asset managers, regulators, and market professionals” that should have looked more analytically because they had the resources to do so (Blinder, 2013, 81). As securitization became more complex, the credit rating agencies were relied upon heavily to rate the securities for investors (FCIC, 2011, 146). Those running investment vehicles have a fiduciary responsibility to the people that place money with them, and the regulators are responsible for ensuring that the banks have not taken on excessive risk (Stiglitz, 2010, 94). Both parties outsourced their responsibility to the rating agencies instead of doing their own jobs (Stiglitz, 2010, 94).

Housing Initiatives and Other Policy Factors

Housing initiatives from the government combined with monetary policy is discussed as a main cause of the crisis. The gradual increase in housing prices, also known as the housing bubble, exposed the vulnerabilities in the financial system and is also claimed to be the major cause of the crisis.

The Community Reinvestment Act (CRA), after being amended, in 1995 attempted to eliminate discrimination in bank lending (Wallison, 2010, 174). The new amendments took away bank examiner discretion, required banks to prove that there was an even amount of loans across low and moderate income and non-

low and moderate income areas, made it necessary for banks to prove that they had made the loan, and required banks to use “innovative or flexible” lending practices (Wallison, 2010, 174-175). There is disagreement among scholars about how much of a role the Community Reinvestment Act played in causing the crisis.

Wallison (2010) argues that there was an inverse relationship between CRA loans and regulatory ratings (175). He focuses on the role that the CRA played in allowing and suggesting that banks relax standards to give loans to those that would not qualify (Wallison, 2010, 175). Wallison (2010) argues that “once these standards were relaxed,” they “spread rapidly to the prime market and the subprime markets, where loans were made by lenders other than insured banks” (175). The amount of subprime loans “rose from 7.2 percent to 18.8 percent, and Alt-A loans rose from 2.5 to 13.9 percent during 2001-2006” (Wallison, 2010, 176). The CRA, according to Wallison (2010), led to more banks and nonbanks giving subprime loans because of the encouragement from the government to relax standards for loans (176).

Stiglitz (2010) disagrees with the idea that the Community Reinvestment Act played a major role in the crisis. The claim that “had it not been for these efforts at lending to the poor, all would have been well” is “sheer nonsense” (10). Stiglitz (2010) argues that the banks were already engaging in excessive risk-taking without the push from the government, and the default rates from the CRA lending were comparable to other areas of lending (10). The Community Reinvestment Act can only be connected to about six percent of the subprime loans made during this time, and “loans made by CRA-regulated lenders in the neighborhoods in which they were required to lend were half as likely to default as similar loans made in the same neighborhoods” by independent mortgage originators that were not subject to

the CRA (FCIC, 2011, xxvii). Those advocating for an increase in homeownership did not intend for banks to put people in homes and kick them out after a few months with no savings because they could not afford their payments (Stiglitz, 2010, 10). The intention of the advocacy for homeownership was for long term homeownership and not for what ended up happening (Stiglitz, 2010, 11).

The literature on the effect that monetary policy had on the 2008 Financial Crisis focuses on the role that the interest rate played. John B. Taylor (2009) claims that monetary excesses were the main cause of the crisis (150). The Federal Reserve did not follow the typical structure of interest rate decisions because “actual interest rate decisions fell below what historical experience would suggest policy should be and thus provides an empirical measure that monetary policy was too easy” (Taylor, 2009, 152). Taylor (2009) uses regression techniques to measure “a model of the empirical relationship between the interest rate and housing starts” (152). The results from the regression show, according to Taylor (2009), that there would not have been as large of a boom and bust had the “interest rates followed the rule,” and that the “unusually low interest rate policy was a factor in the housing boom” (153). Taylor (2009) uses this to establish “Taylor rule,” and it “shows what the interest rate would have been if the Fed had followed the kind of policy that had worked well during the historical experience of the ‘Great Moderation’ that began in the early 1980s” (151).

Figure 1 “examines Federal Reserve policy decisions—in terms of the federal funds interest rate—from 2000 to 2006” (Taylor, 2009, 151). It shows a large deviation from the Taylor rule which suggests that interest rate decisions were unusually low and implies that monetary policy was too loose at the time (Taylor,

2009, 151). Figure 2 illustrates Taylor’s argument that the “extra-easy policy was responsible for accelerating the housing boom and thereby ultimately leading to the housing bust” (Taylor, 2009, 152). The jagged line in Figure 2 shows the actual number of housing starts, and the line labeled “counterfactual” is Taylor’s “statistically estimated model of housing starts” if the Federal Reserve had followed the Taylor Rule (Taylor, 2009, 153).

Figure 1-Monetary Policy Problem

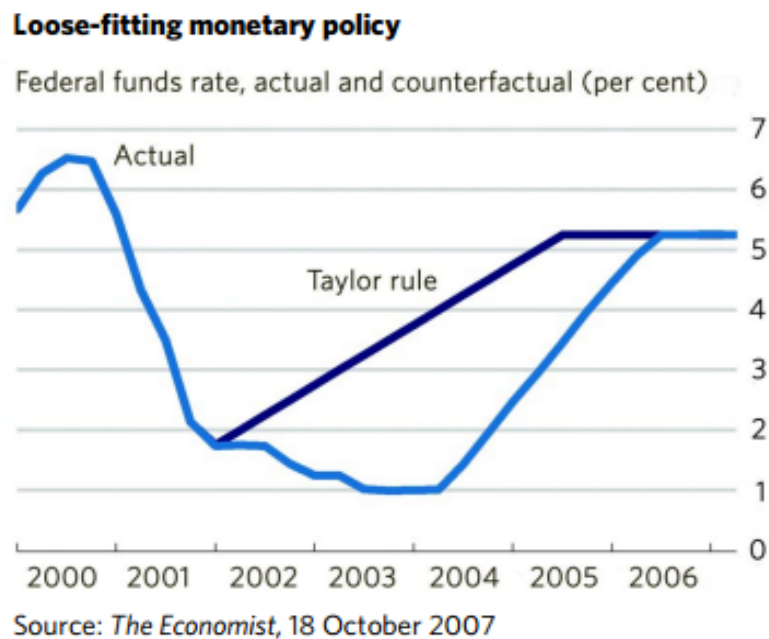
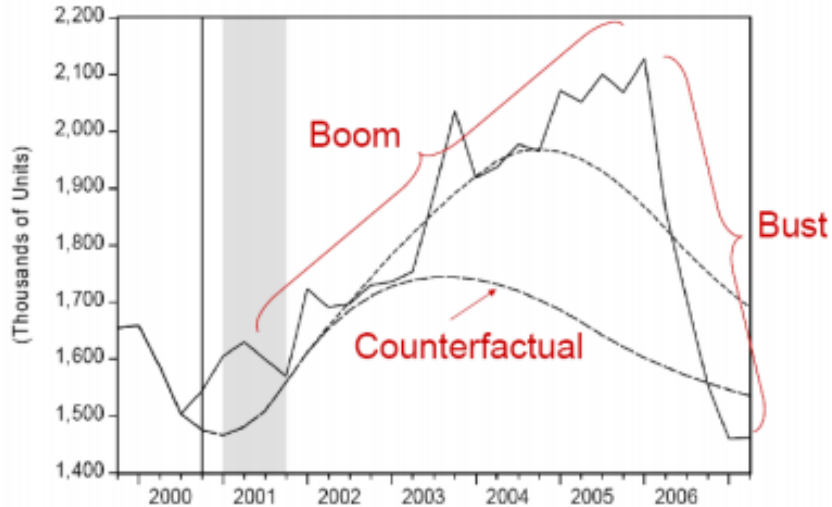


Figure 2- The Counterfactual Housing Boom



Source: (Taylor, 2008, 3)

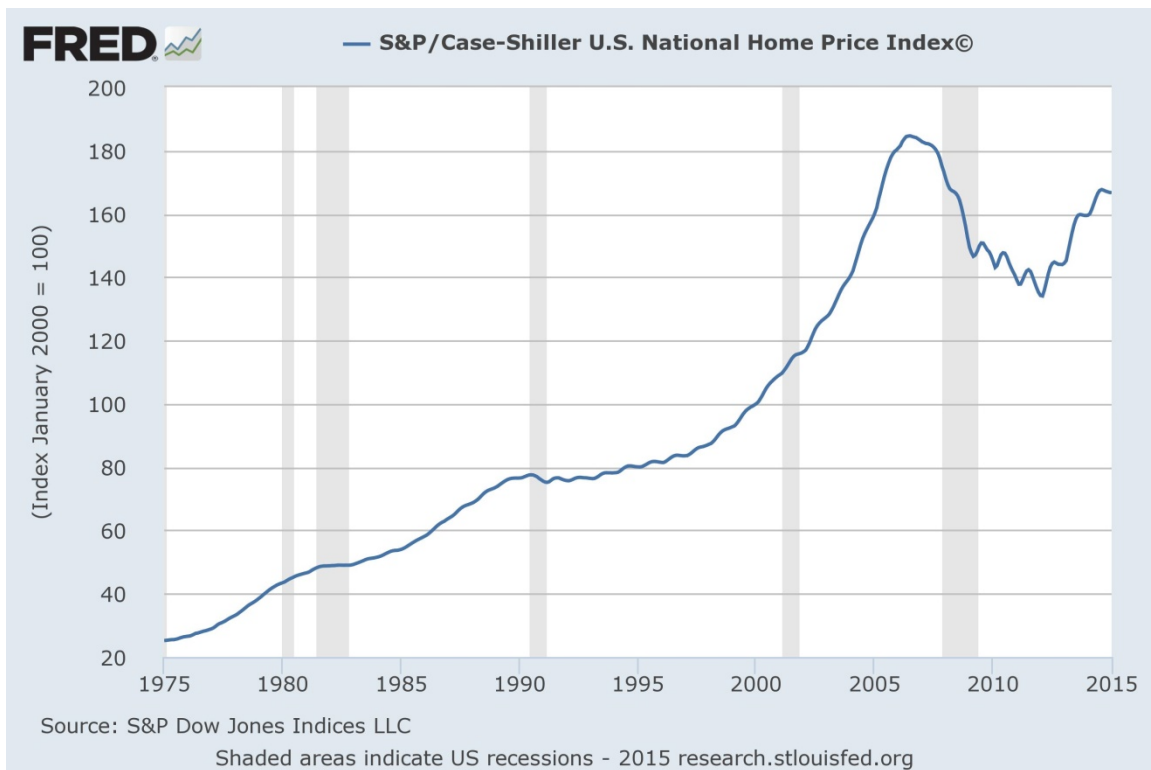
Defenders of the Federal Reserve disagree with Taylor's argument. Robert J. Shiller (2008) argues that the monetary policy was enacted because of the economic conditions due to the stock market bubble (48). The Federal Reserve was focused on preventing a recession and deflation from the stock market bubble (Shiller, 2008, 49). Shiller (2008) points out that the housing boom period is three times as long as the period during which the Federal Reserve lowered interest rates, and the housing boom was accelerating when the Federal Reserve decided to increase interest rates in 1999 (49). Shiller (2008) argues the interest rate cuts cannot explain the housing boom (49). He highlights the impact that monetary policy had on the large amount of ARM's that were issued after 2000 and comes to the conclusion that the rate cuts made by the Federal Reserve may have had an effect of increasing the boom because ARM's are more responsive to the cuts than fixed-rate mortgages (Shiller, 2008, 49-50).

Joseph E. Stiglitz (2009) argues that low interest rates did play a role in feeding the bubble, but “that is not the necessary consequence of low interest rates” (144). Low interest rates are supposed “to help finance needed investment” (Stiglitz, 2009, 144-145). The regulatory agencies and the financial markets let the low interest rates feed the bubble instead of using their power to stop it (Stiglitz, 2009, 145). The financial markets had the choice to use the funds in productive ways, but they chose not to (Stiglitz, 2009, 145). Financial markets and regulatory authorities had the tools to stop the low interest rates from feeding the bubble, but they did not use any of the tools they could have (Stiglitz, 2009, 145). The Federal Reserve could have used open market operations, reserve requirements, or the federal funds rate target in order to slow down the economy.

Shiller (2008) argues that “the housing bubble was a major cause, if not the cause, of the subprime crisis and of the broader economic crisis” (29). The housing bubble created “an atmosphere that invited lenders and financial institutions to loosen their standards risk default” because of the perception that housing prices could only go up (Shiller, 2008, 29). The Case-Shiller Index shows the real housing prices which means that they are deflated by the Consumer Price Index (CPI) and show how housing prices have changed “relative to the prices of other things consumers buy” (Blinder, 2013, 31). Figure 3 of the Case-Shiller Index shows that real house prices increased by 85 percent between 1997 and 2006 (Blinder, 2013, 32). As housing prices rose, the share of income spent on monthly mortgage payments increased (Bernanke, 2013, 43-44). People felt rich during the bubble because the increasing prices of their homes, so they borrowed more than they could afford (Bernanke, 2013, 46-47). After the bubble burst, mortgage

delinquencies increased, people were not paying on time, and banks were taking over properties to resell (Bernanke, 2013, 47). Although the bursting of the housing bubble caused banks and other holders of mortgage related securities to suffer sizable losses, it is not the major cause of the 2008 Financial Crisis (Bernanke, 2013, 47). Bernanke (2013) argues the bursting of the housing bubble is an important trigger of the crisis that “set afire” the vulnerabilities that already existed in the economy and financial system (47-48).

Figure 3- Case-Shiller Index



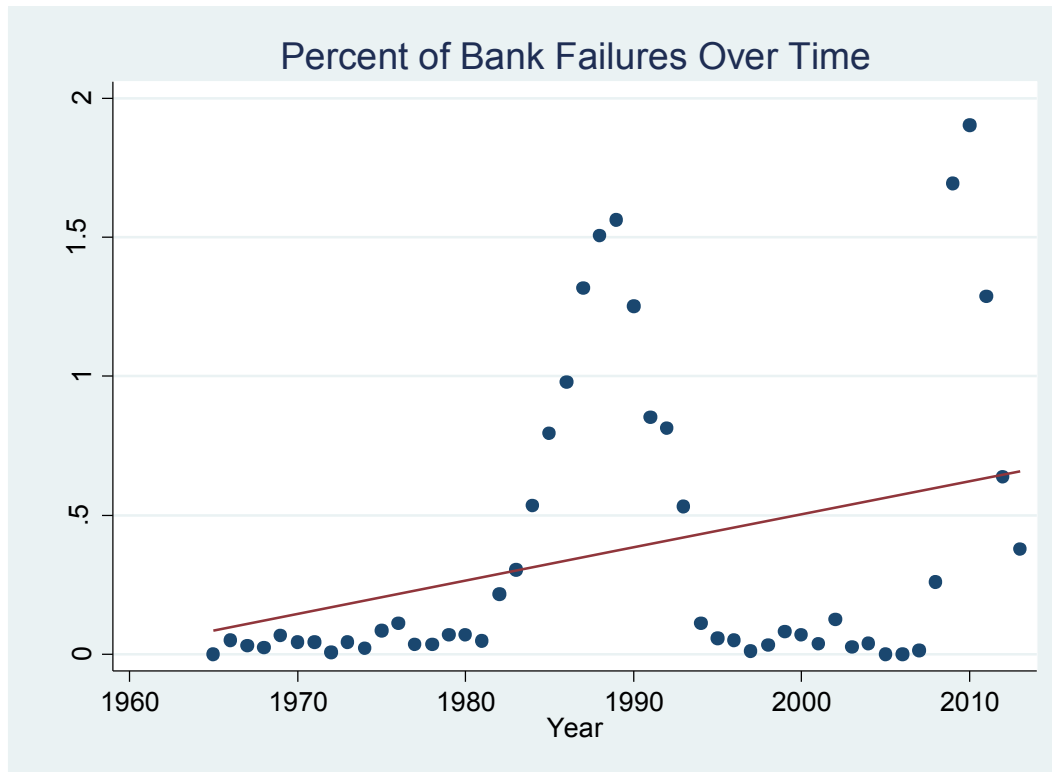
Chapter 3 Deregulation at the Core

Deregulation is at the core of the 2008 Financial Crisis. The attempt to decrease the government involvement in the financial system backfired and was the underlying problem of other potential causes.

Deregulation put depositors, consumers, and banks at risk. Problems that banks face include adverse selection, and moral hazard. Moral hazard affects banks because borrowers may not use the loan for what they indicated they would. Borrowers could use the money from the bank in a way that would put them at a higher risk for default, and therefore, the bank would take on more risk unknowingly. Adverse selection causes problems for banks because banks are more often giving loans to the riskiest customers because they are the ones that are the most aggressive in securing it. These are problems that are harder for banks and often lead to regulations to improve the market failure.

Deregulation began in the 1960s but had long lasting effects on the 2008 Financial Crisis. Amar Bhide (2009) argues that “elected officials and appointees from both political parties –and respected economists – had so undermined the banking system that anything could have triggered a collapse” (101). Deregulation began in the 1960s because there was a new wave of bankers who had not experienced the Great Depression and wanted more competition, especially from foreign banks, and innovation (Bhide, 2009, 87). The large banks led the way towards “aggressiveness and risk taking” and “began pressing at the boundaries of allowable activities” because the “rules to limit ‘ruinous’ competition were also relaxed” (Bhide, 2009, 88). The banks could now expand and compete in a way they could not before, and they took advantage of it.

Figure 4- Percent of Bank Failures Over Time



Source: Federal Deposit Insurance Corporation *Changes in Number of Institutions*

The regulations from the Depression-era were relaxed, and the Riegle-Neal Interstate Banking and Branching Efficiency Act of 1994 allowed for states to liberalize branching laws while the Gramm- Leach Bliley Financial Services Modernization Act of 1994 gave banks the authority for bank holding companies to be used as vehicles for multi-office banking and entering new product markets (Bhide, 2009, 88). There were some new rules as well, but they were not geared towards regulating bank behavior (Bhide, 2009, 88). Bhide (2009) makes the argument that during the 1970s, “loan losses and bank failures jumped” due to the previous decade’s deregulation (88). Figure 4 shows the percent of bank failures annually over time, and there is an increase in the 1970s. The increased risk-taking hurt banks in the 1970s and not the 1960s because the economy was performing better in the 1960s (Bhide, 2009, 88).

The original reasons for regulations of banks were to protect depositors and consumers, maintain monetary stability, and provide an efficient and competitive financial system (Spong, 1994, 6-10). Depositors take on “the role of bank creditors and become linked with the fortunes of the bank” (Spong, 1994, 6). The U.S. fractional reserve system of banking is designed in a way that deposits are partially backed by reserves, and therefore, “depositor safety is linked to many other factors as well, including the capital in a bank and the condition and value of its loans, securities, and other assets” (Spong, 1994, 6). Regulations are put in place to protect the depositors because of this complex system that would be too costly and difficult for depositors to make judgments about (Spong, 1994, 6). The Glass-Steagall Act of 1933 put regulations in place to separate investment banking and commercial banking in order to protect the depositors from the commercial banks “gambling” with their deposits, as they could before the Great Depression. The banks created liquidity problems for themselves by loaning out too much of their depositors’ money (FDIC, 1984). The Financial Institutions Reform, Recovery, and Enforcement Act of 1989 imposed stricter standards on thrift institutions, but it also increased the enforcement authority of bank regulators. For example, regulators can prohibit behavior of banks that may put deposit insurance funds at risk (FDIC, 2015). The Federal Deposit Insurance Corporation Improvement Act of 1991 greatly improves protection for depositors by increasing insurance power, enforcing new regulations, establishing new capital requirements, and creating new Truth in Savings provisions (FDIC, 2015). It works to prevent bank runs by increasing the FDIC’s ability to provide deposit insurance because “deposit insurance has reduced the probability of runs by depositors” (Benston & Kaufman, 1998, 7). Increasing the

FDIC's insurance power helps ensure depositors that they will have their money even if the bank fails, and the new Truth in Savings provisions force banks to disclose information to depositors to help them understand their deposits.

Another goal of regulation is to provide monetary stability because "banks play an important role" in the monetary system due to "their deposit obligations" making them "major issuers of money in the economy" (Spong, 1994, 7). Banking regulations provide monetary stability by fostering "the development of strong banks with adequate liquidity" and discouraging "banking practices that might harm depositors and disrupt the payments system" (Spong, 1994, 8). For example, the Glass-Steagall Act of 1933 prohibited commercial banks from being involved with investment banks. Creating the separation between commercial banks and investment banks keeps the riskier transactions of investment banks from disrupting the deposits at commercial banks and therefore provides monetary stability because "their deposit obligations make them the major issuers of money in the economy" (Spong, 1994, 8).

Banking regulations aim to strategically restrict certain activities of commercial banks, allow them to be competitive with less regulated firms, such as Savings and Loans associations and credit unions, as well as serve the needs of their customers (Spong, 1994, 9). The Financial Institutions Reform, Recovery, and Enforcement Act of 1989, for example, gives regulators the authority to restrict activities deemed to pose a risk to the insurance funds, and the Federal Deposit Insurance Corporation Improvement Act of 1991 restricts activities such as depositor solicitation and insider activities (FDIC, 2015). Banking regulations play

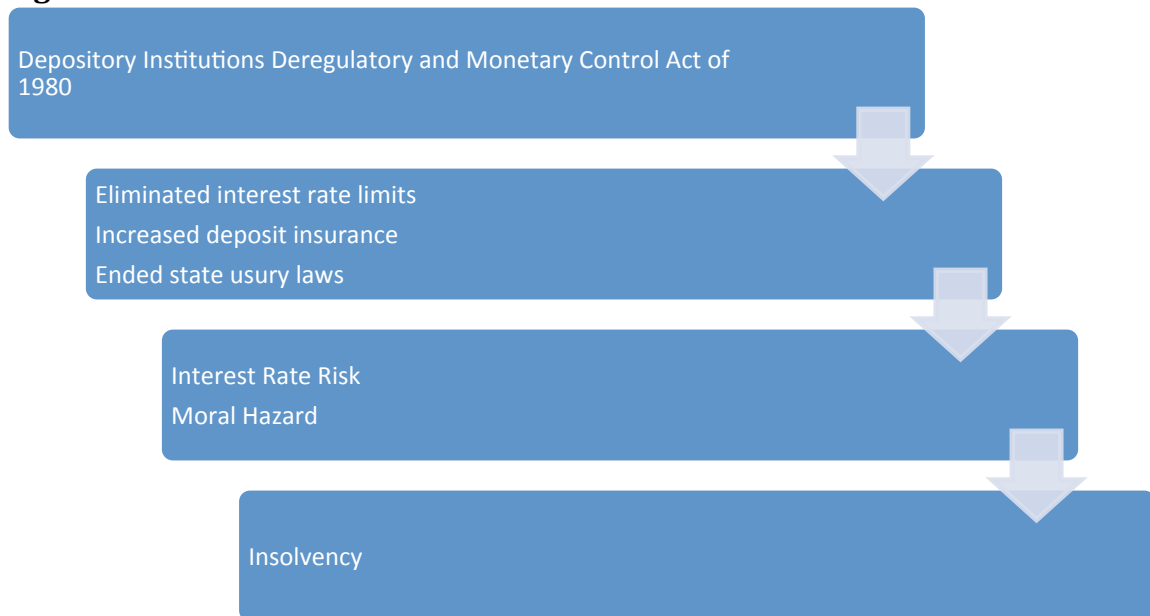
the important role of increasing competition between banks (Spong, 1994, 9). Competitive banking systems force banks to “operate efficiently and utilize their resources wisely if they are to keep their customers and remain in business” (Spong, 1994, 9). Competition keeps individual banks from gaining “higher prices for their services by restricting output or colluding with other banks” (Spong, 1994, 9). Competition, however, can also lead to fewer banks which “could encourage monopolization or collusion” (Spong, 1994, 9). The result of this is less competition in the banking system. Innovation and the design of new services also come from a competitive banking system (Spong, 1994, 9). Regulations play an important role in the competitiveness of the banking system by taking the “approach that does not needlessly restrict activities of commercial banks, place them at a competitive disadvantage with less regulated firms, or hinder the ability of banks to serve their customers’ financial needs” (Spong, 1994, 9-10). Banking regulations are also designed to “foster a banking system that can adapt quickly to changing economic conditions and technological advances” (Spong, 1994, 10).

The final goal of banking regulation is to protect the financial consumers (Spong, 1994, 10). Regulations accomplish this by requiring banks to disclose deposit and credit terms in order for customers to make educated decisions and compare financial institutions (Spong, 1994, 10). Banking regulations, such as the Equal Credit Opportunity Act, also protect consumers by ensuring “equal treatment and equal access to credit among financial customers” (Spong, 1994, 10).

Stiglitz (2010) makes the argument for regulation because it keeps banks from taking advantage of the poor or less educated and it provides stability in the

financial system (80). Regulation also becomes necessary because of the existence of deposit insurance and the moral hazard that comes with it (Stiglitz, 2010, 82). Strong regulation is needed with deposit insurance in order to control for “excessively risky lending” because deposit insurance increases moral hazard, and regulations have the ability to control for it (Stiglitz, 2010, 82). The U.S. deregulators took away regulations and therefore allowed banks to invent ways to benefit from homeowners, “many of whom were poor and buying a house for the first time” (Stiglitz, 2010, 80). The subprime mortgage innovations were all “designed to maximize fees” even though good financial markets are supposed to be efficient and run at low transaction costs (Stiglitz, 2010, 80). Fees are what those in the mortgage game “live off of, so they strive to maximize fees, not minimize them” (Stiglitz, 2010, 81). Deregulation allowed for banks to devise ways to profit from homeowners and led to the 2008 Financial Crisis.

Figure 5- DIDMCA Effect



The passage of the Depository Institutions Deregulatory and Monetary Control Act of 1980 (DIDMCA) began the deregulation of the banking industry and

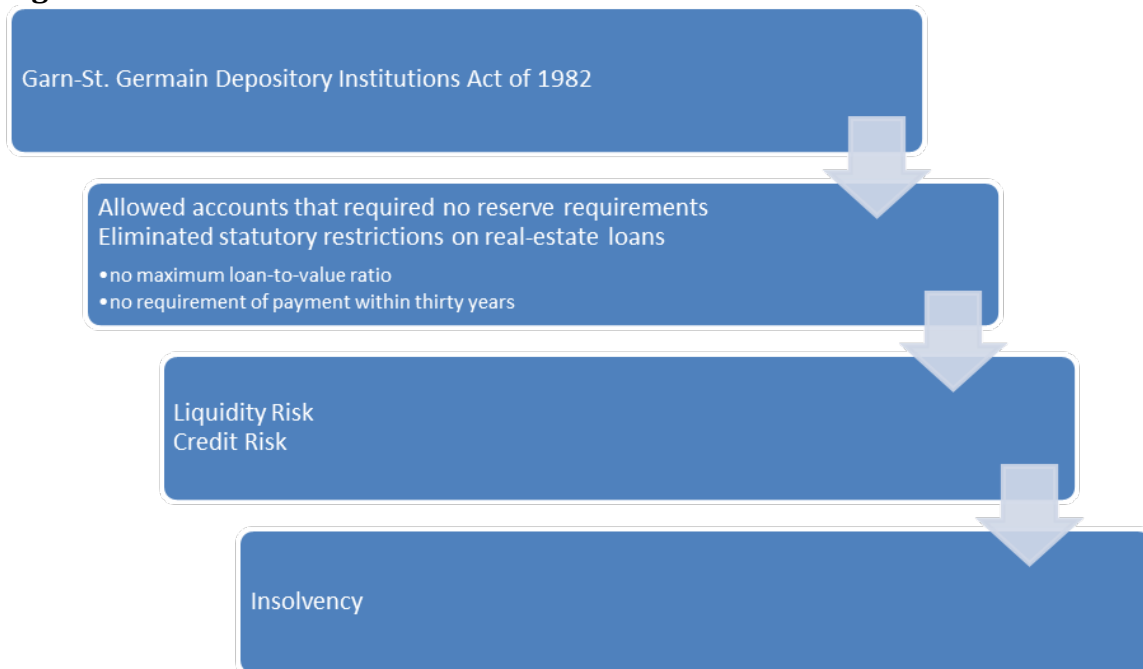
contributed to the crisis. It was the first major piece of legislation in the 1980s. Money market mutual funds made it difficult for banks to compete for deposits because money market mutual funds offered higher interest rates and caused disintermediation. Disintermediation occurs when people use financial intermediaries less and make direct investments instead. The law “allowed banks to start offering competitive rates on checking accounts and mandated that all other interest-rate limits” be eradicated by March 1986 (Bhide, 2009, 91). The DIDMCA was passed in response to the desire for “competitive equality among financial institutions” (FDIC, 1997, 91).

In response to the banks’ inability to compete with the increasing interest rates of money market mutual funds, the DIDMCA eliminated the restrictions on the interest rates, Regulation Q and D, allowed to be paid on deposits (Federal Reserve Bank of Boston). The elimination of interest rate ceilings gave banks the opportunity to compete with other investment options for deposits, and it also encouraged saving because of the competitive interest rates banks were now able to offer. Giving banks the ability to set competitive interest rates opened them up to interest rate risk. In order to avoid interest rate risk while competing for deposits, banks would have to increase interest rates on loans. Savers were helped by the elimination of interest rate ceilings because they now had the ability to earn more on their deposits, and banks were able to compete better for those deposits. More deposits for banks also gave banks the advantage of having more money to loan out for those looking to borrow.

The passing of the DIDMCA contributed to aggressive lending instead of working to control it (Shiller, 2008, 51). The new law “effectively ended state usury

laws, and made it possible for originators to make a profit with subprime lending by charging a high enough interest rate to offset the costs of the inevitable defaults and foreclosures” (Shiller, 2008, 51). The increase in deposit insurance coupled with the elimination of restrictions on the charges with respect to residential mortgages set the banks up to take more risks and be able to fall back on the insurance from the FDIC. This is an example of the DIDMCA contributing to moral hazard. The law also allowed for a “shadow banking system’ of nonbank mortgage originators” to develop that were not subject to regulations even close to the regulations that banks were subject to, such as capital and reserve requirements (Shiller, 2008, 51). The Depository Institutions Deregulatory and Monetary Control Act further deregulated the financial system by allowing interest rates and new mortgage originators to operate under fewer rules and oversight. Figure 5 outlines the problems mentioned with the DIDMCA.

Figure 6- Garn-St. Germain Effect

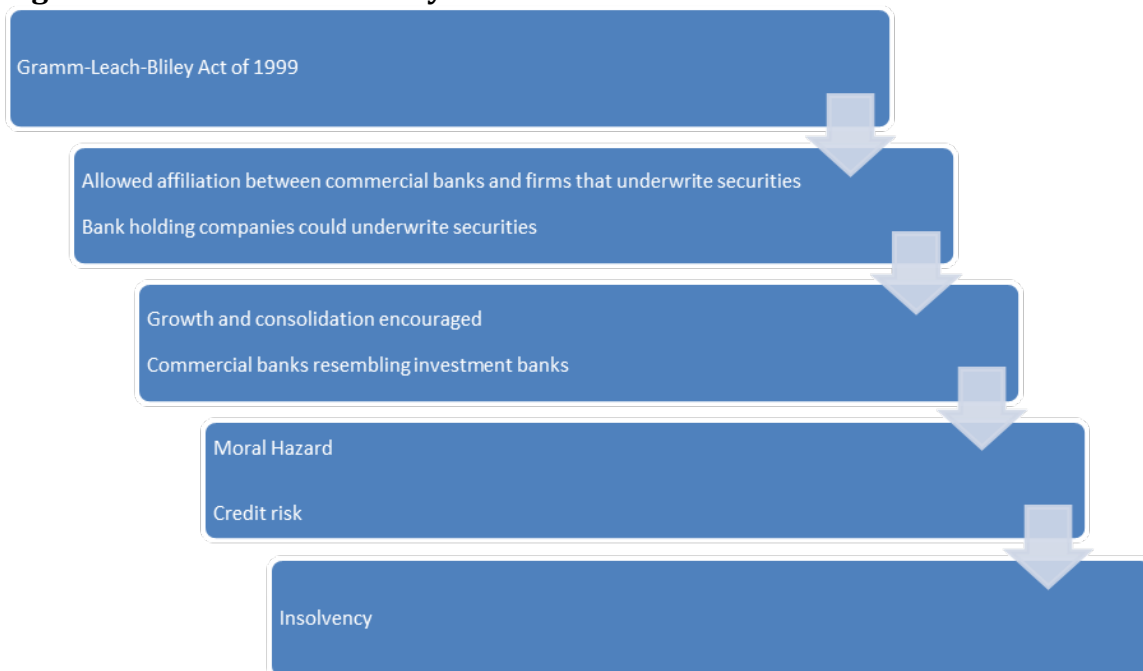


The Depository Institutions Act of 1982 (also known as the Garn-St. Germain Act) further deregulated banking and increased the competition between banks and Savings and Loan associations. Garn-St. Germain increased competition by allowing banks to offer accounts that required “no reserve requirements or restrictions on rates” (Bhide, 2009, 91). Without being obligated to hold reserves for certain accounts, banks could increase their lending greater than before because they did not have to hold on to any of the reserves in those accounts. Banks were able to increase the amount they loaned out without increasing their reserves, leading to an increase in liquidity risk.

Garn-St. Germain was passed in response to national banks feeling a competitive disadvantage to state banks and to rescue Savings and Loan associations (FDIC, 1997, 94). It “eliminated statutory restrictions on real-estate lending by national banks that had imposed maximum loan-to-value ratios and required repayment of the principal within thirty years for many kinds of loans” (Bhide, 2009, 91). The Act gave the power of setting these kinds of rules to the Office of the Comptroller of the Currency (OCC), and the OCC then chose to impose no limitations on real-estate loans in 1983 (FDIC, 1997, 95). The OCC wanted to allow banks to be able “to respond to changes in the real-estate markets” (Bhide, 2009, 91). By eliminating the maximum loan-to-value ratio, the law gave banks the ability to increase their credit risk and the power to loan large amounts of money potentially to people who could not handle it because they did not initially have money to cover a larger portion of the value of the property. The elimination of the thirty year required repayment time opened the door for banks to allow people to

continually refinance, giving the banks opportunities to earn more money through fees and interest payments. The outlined problems with Garn-St. Germain can be seen in Figure 6. Garn-St. Germain heightened the FDIC's ability "to provide aid to troubled institutions" (FDIC, 1997, 95). The Act did this by giving "regulators the authority to make a loan to a failing institution, make a deposit in such an institution, purchase its assets, purchase securities it had issued, and assume its liabilities" (FDIC, 1997, 95). The banks could now further rely on the FDIC to save them if they happen to take on too much risk. Moral hazard increased because banks and Savings and Loans associations could then be less concerned with making sure they were safe and more concerned with making loans to generate a profit.

Figure 7- Gramm-Leach-Bliley Effect



The Gramm-Leach-Bliley Act of 1999 (GLBA) was a crucial deregulatory move in the United States. Figure 7 highlights the main issues with the Act. The Act repealed most of the restrictions that remained from the Glass-Steagall Act (FCIC,

2011, 55). After it passed, commercial banks were allowed to be affiliated with firms that “engaged in underwriting or dealing in securities” (Wallison, 2011, 19). Bank holding companies could also engage in underwriting or selling of “banking, securities, and insurance products and services” (FCIC, 2011, 55). GLBA “also established a hybrid regulatory structure known colloquially as ‘Fed-Lite’” that was designed to have the Fed rely on “reports of those agencies regarding subsidiaries of the holding company, including banks, securities firms, and insurance companies” (FCIC, 2011, 55). Both aspects of GLBA caused problems in the 2008 Financial Crisis. The new “Fed-Lite” system of regulating “made it difficult for any single regulator to reliably see the whole picture of activities and risks of large, complex banking institutions” (FCIC, 2011, 55).

After the Act was passed, growth and consolidation were encouraged “within and across banking, securities, and insurance,” (FCIC, 2011, 56). The encouragement of the growth and consolidation between banks, securities, and insurance firms implies that there was a more cohesive relationship between them than just being affiliated, and this relationship put the banks at risk because they engaged in behavior that increased their credit risk. The largest “bank holding companies became major players in investment banking,” and “the strategies of the largest commercial banks and their holding companies came to more closely resemble the strategies of investment banks” (FCIC, 56, 2011). The commercial banks resembled investment banks because they were taking on more risk and affiliating themselves with securitization, which was a main cause for their failures in 2008. The bank holding companies affiliated with the commercial banks were growing larger, and the regulators were finding it harder to do their job simultaneously.

The problem with allowing banks to grow bigger brings up the issue of banks that are “too big to fail” (Stiglitz, 2010, 83). Banks that become “too big to fail” come to the realization that if they are ever in financial trouble, the government would have to rescue them, and this allowed banks to take on excessive risk knowing that the government would save them in the end (Stiglitz, 2010, 83). This is an example of an increase in moral hazard due to the GLBA. Banks that were “too big to fail” are a serious risk to the economy, and the risk can be seen when “the top five banks accounted for more than 80 percent of total trading revenues earned by all commercial banks in 2001” (Bhide, 2009, 97). The “too big to fail” banks did not have to worry about bearing the consequences of a mistake, and this can lead to moral hazard. Moral hazard is the problem “that, absent the threat of a run on the bank (which was effectively removed by deposit insurance), nothing but capital minima could keep bankers from making wild, speculative investments” (Friedman, 2011, 60). The problem of moral hazard can be applied to the large, complex financial institutions that were “considered too big to fail” due to “implicit government bailout guarantees” (Acharya and Richardson, 2009, 186). The “too big to fail” banks become less responsible for their actions and more encouraged to take on excessive risk in hopes of high reward because they know the government will be there to rescue them if anything goes wrong.

The Federal Reserve and the Federal Government also contributed to the push for deregulation. Former Chairman Greenspan and President Bush attempted to minimize the government’s role in the economy (Stiglitz, 2010, 16). Greenspan and President Bush believe in small government, and Greenspan “ignored the external costs of banking in thinking that the banks’ own incentives would suffice to

minimize macroeconomic risk” (Posner, 2011, 285). Greenspan confessed “that he had placed too much reliance on the expectation of self-regulation by market participants” (Mills, 2009, 49). Former Chairman Greenspan made the situation worse because he allowed banks to engage in risky lending, and he also permitted ARMs knowing that payments could easily increase (Stiglitz, 2010, 8). In 2004, Former Chairman Greenspan suggested that ARMs were the right option for mortgages because interest rates had gone down to one percent in 2003 (Stiglitz, 2010, 87). Interest rates, however, could only go up from there. For example, interest rates increased from one percent in 2003 to 5.25 percent in 2006 (Stiglitz, 2010, 87). Variable rate mortgages were a risk for borrowers, and payments could easily increase because of the low interest rates that were occurring at the time (Stiglitz, 2009, 145). Variable rate mortgages put the interest rate risk onto the borrower as opposed to fixed-rate mortgages putting the interest rate risk on the banks.

The uncharacteristically low interest rates implied that the variable rate mortgages were a good choice for homeowners when former Chairman Greenspan was encouraging them. Any increase in interest rates, however, would increase payments for the borrowers. The American government “intentionally reduced the rigor of regulatory oversight of the financial markets” (Mills, 2009, 48-49). Greenspan and President Bush’s efforts to minimize the role of the government in the economy ended up backfiring, and the government is now the owner of the world’s largest auto company, largest insurance company, and some of the largest banks. The largest government intervention in market history was caused by the

belief that markets have the ability to take care of themselves without government intrusion (Stiglitz, 2009, 145).

As seen in Figure 5, the DIDMCA eliminated interest rate limits on deposit accounts, increased deposit insurance from \$40,000 to \$100,000 per account, and ended state usury laws. These increased the banks' interest rate risk and moral hazard. Figure 6 highlights the Garn-St-Germain Act that allowed accounts that required no reserve requirements and eliminated statutory restrictions on real estate loans. Maximum loan-to-value ratios and required repayment within thirty years are the restrictions that were eliminated. These changes increased liquidity risk and credit risk for banks. Figure 7 shows the implications of the Gramm-Leach-Bliley Act that allowed banks to affiliate with firms that underwrite securities and allowed bank holding companies to underwrite securities. Growth and consolidation were then encouraged among different institutions, and commercial banks began resembling investment banks. The Gramm-Leach-Bliley Act increased the credit risk and moral hazard of banks. Each of these deregulatory laws increased different risks or moral hazard for the banks and therefore, increased the likelihood of insolvency. The banks were deregulated and allowed to increase their risk and moral hazard, and when the housing bubble burst, the vulnerabilities of the banks were exposed.

Chapter 4 Testing the Hypothesis

Data-Model I

The hypothesis that the deregulation of banks led to the 2008 Financial Crisis will be tested using regression analysis. Independent variables have been collected to represent the discussed causes of the crisis, and the dependent variable will be the percent of bank deletions annually. This variable is supposed to capture the performance of commercial banks. The independent variables in both models will be adjusted to include a one year lag in order to account for the time it takes for different events/changes in policy to affect the banks.

The annual percent of deletions of commercial banks is collected from the Historical Statistics on Banking from the Federal Deposit Insurance Corporation. Deletions include unassisted mergers, both paid off and merged failures, and the category "other." Unassisted mergers account for the voluntary mergers, absorptions, or consolidations of two or more institutions. Failures are separated by paid off and merger categories. The paid off section refers to institutions that the FDIC paid the insured deposits for because the institutions were declared insolvent. The merger component of failures counts the absorptions, consolidations, and mergers that were done due to supervisory actions, and FDIC assistance may or may not have been required. The category "other" accounts for institutions that withdrew from FDIC insurance, voluntarily liquidated, or converted to an institution that is not considered a commercial bank. These variables have all been added together to create one deletion variable which will represent the number of total commercial banks that have been eliminated annually. This variable has data starting in the year 1965.

The institutions at year end variable is collected from the Historical Statistics on Banking from the Federal Deposit Insurance Corporation. It shows how many commercial banks that the FDIC considers solvent at the end of the year. It begins in 1965. It is similar to the deletions of commercial banks variable, but it is just looking at it a different way. The variable will increase when there are additions and conversions. Additions occur when there is a newly chartered or licensed institution either by the OCC or state banking authorities, and institutions that acquire charters due to failure and de novo institutions are included. Conversions occur when an existing institution applies for and receives FDIC insurance. The variable will decrease when there are deletions, and deletions are defined above.

The percent of deletions of commercial banks annually is created by dividing the number of deletions in one year by the number of institutions of the previous year. This variable shows what percent of banks were deleted out of the total of number of institutions that were open in the beginning of the year.

Independent variables have been collected from different sources to proxy for the different causes discussed earlier: securitization, housing initiatives and other policy factors, subprime mortgages, and credit rating agencies. A deregulation independent variable has been created to test the hypothesis that deregulation is the cause of the 2008 Financial Crisis. Securitization will be measured using data collected from the Federal Housing Finance Agency. The annual total dollar amount of Fannie Mae and Freddie Mac Single-Family Mortgage Backed Securities Issuances from the Federal Finance Housing Agency's 2013 Annual Report to Congress will be used to represent securitization in the model. The annual dollar amount of single-family mortgage backed securities are reportedly separately by each Government

Sponsored Enterprise(GSE), and therefore, the reported annual dollar amount of single-family mortgage backed securities from each GSE are added together to make one single-family mortgage backed securities issuances variable.

The independent variable used to measure the effect of the housing bubble is the House Price Index. The variable is collected from the Federal Reserve Bank of St. Louis' FRED data download program. The House Price Index is the annual average of the quarterly reported House Price Index. The data for the House Price Index begins in 1975. The index is originally measured quarterly, but it is averaged to produce annual data. The index is equal to 100 in the first quarter of 1980.

Monetary policy will be represented by the Federal Funds Rate. Data on Federal Funds Rate is collected from the Federal Reserve Bank of St. Louis. The Federal Funds Rate is the rate at which banks are able to borrow money from each other. This variable is used to measure the effect of monetary policy on the banking industry.

To test the effect of the Community Reinvestment Act on the dependent variable, the amount of the Community Development Lending loans were collected from the Federal Financial Institutions Examination Council. The data begins in 1996 and is measured in dollars. The Community Development Lending is aimed at targeted low- and moderate-income areas and individuals, and the loans are geared towards promoting affordable housing and economic development through loans to individuals, businesses, and farms (OCC, 1, 2014).

The Home Equity Index Composite (HEIC) will act as a proxy for subprime mortgages. The HEIC "consists of loans in pools belonging to three major categories," and the three categories are subprime, high loan-to-value, and

traditional home equity loans (Moody's, 2014, 2-3). Although there are three categories, "the subprime sector represents the largest part of the index and has represented more than 80% of the total since 1997" (Moody's, 2014, 3). The specific aspect of the index being used is the 60 plus delinquent/current balance category, and it is the "sum of the unpaid principle balance of mortgage loans whose payments are 60 days past due; including loans that are in foreclosure, bankruptcy and Real-Estate Owned, as a percentage of current pool balance" (Moody's, 2014, 3). The 60 plus delinquent/current balance variable "does not reflect the actual dollar level of delinquencies but rather measures the level of delinquencies relative to the current pool balance" (Moody's, 2014, 3).

The independent variable being used to represent the actions of the credit rating agencies is from Moody's, one of the three NRSROs involved in the crisis. The credit rating agency independent variable created from Moody's to measure the actions of the credit rating agencies is the percentage of investment grade ratings to the total of all ratings given by Moody's. This credit rating data is taken from the Annual Default Study: Corporate Default and Recovery Rates, and the data begins in 1965.

In order to test whether or not the deregulatory laws have an effect on the number of bank deletions or number of institutions at the end of the year, deregulation and regulation regimes have been identified according to the various laws that were passed at the time. Regime I will be a regulation regime consisting of the time 1965 to 1979 because the first deregulatory law was passed in 1980. Regime II will be a deregulation regime and will consist of the years 1980 to 1988. Regime III will be a regulation regime and will account for the years 1989 to 1993.

Regime IV will be a deregulation regime and will consist of the years 1994-2010. Regime V will consist of the years 2010-2013, and it will be a regulation regime. Deregulation and Regulation variables are then generated by combining all of the respective regimes to form one variable each. Regression analyses will be run on both dependent variables and each of the independent variables acting as proxies for the different causes.

As you can see in Table 1, not all of the variables have the same amount of observations. The Home Equity Index Composite only has 21 observations. The Mortgage Backed Securities has 33 observations and the Community Reinvestment Act variable has 30 observations. The deletions variable has 49 observations. This shows that there are numerous variables with large amounts of missing data. This is a problem with the model that will affect the results. The deletions variable mean is 0.03, and this means that each year, an average of 3 percent of commercial banks are deleted. The Federal Funds Rate has a mean of 6 percent, but it also has a maximum value of 16 percent and a standard deviation of 4 percent.

Table 1: Model I Descriptive Statistics

Variable	Observations	Mean	Std. Dev.	Min.	Max
Year	49	1989	14.29	1965	2013
Deletions (in %)	49	0.03	0.02	0	0.06
House Price Index_(t-1)	39	200.41	94.68	61.11	375.64
Federal Funds Rate_(t-1) (in %)	49	0.06	0.04	0	0.16
Community Reinvestment Act_(t-1) (\$ in Thousands)	30	24200000	24800000	0	75500000
Mortgage Backed Securities_(t-1) (\$ in Millions)	33	559746.8	492619.6	717	1902180
Investment Grade Ratings_(t-1) (in %)	44	0.67	0.09	0.52	0.80
Home Equity Index Composite_(t-1) (in %)	21	0.15	0.13	0.01	0.38
Deregulation_(t-1)	49	0.53	0.50	0	1
Regulation_(t-1)	49	0.47	0.50	0	1

Model I

$$\%Deletions = \beta_0 + \beta_1 \text{Subprime Mortgages} + \beta_2 \text{MBS} + \beta_3 \text{IG\%} + \beta_4 \text{CRA} + \beta_5 \text{FFR} + \beta_6 \text{Housing} + \beta_7 \text{Deregulation} + \varepsilon$$

Results

Table 2: Model I Results

Independent Variable	Estimated Coefficient (St. Er.)
House Price Index _(t-1)	-0.0001 (.0000852)
Federal Funds Rate _(t-1)	0.2369 (.2268)
Community Reinvestment Act _(t-1)	1.75E-10 (2.52E-10)
Mortgage Backed Securities _(t-1)	-5.97E-09 -7.71E-09
Investment Grade Ratings _(t-1)	0.0733 (.1169)
Home Equity Index Composite _(t-1)	0.0467 (.0390)
Deregulation _(t-1)	0.0037 (.00088)
Constant	0.0107
Adj. R ² : .41	(.0815)

** Denotes significance at the 1% level. * Denotes significance at the 5% level.
*Denotes significance at the 10% level.

Table 3: Model I Variable Correlation

	Deletions	HPI	FFR	CRA	MBS	Investment Grade Ratings	HEIC	Deregulation
Deletions	1.00							
HPI	-0.62	1.00						
FFR	0.60	-0.48	1.00					
CRA	-0.54	0.90	-0.44	1.00				
MBS	-0.71	0.55	-0.70	0.48	1.00			
Investment Grade Ratings	0.29	-0.46	0.37	-0.43	-0.18	1.00		
HEIC	-0.33	0.46	-0.76	0.39	0.36	-0.74	1.00	
Deregulation	0.26	0.14	0.48	-0.25	-0.17	0.62	-0.56	1.00
Regulation	-0.26	-0.14	-0.48	0.25	0.17	-0.62	0.56	-1.00

As seen in Table 2, none of the variables are significant in explaining the percent of deletions of banks. One problem with this model is multicollinearity, and

multicollinearity is when there are two or more independent variables that are highly correlated with each other. Table 3 shows the correlation coefficients for Model I. Multicollinearity is occurring because there are factors, such as the Federal Funds Rate, that affect all of the variables. The variables are highly correlated with one another due to these factors. For example, a shift in the Federal Funds Rate affects the interest rates on mortgages, which would mean that it would also affect mortgage backed securities and the Home Equity Index Composite. The data collected is also limited and each of the variables do not have observations that range from 1965 to 2013. Due to the issue of multicollinearity in this model, Model II is designed in a way to correct for it. Model II, instead of using variables for each cause, uses the encompassing factors that can account for all of the causes to look at the effect of deregulation on the percent of deletions of banks.

Data-Model II & III

The hypothesis that deregulation is the cause of the 2008 Financial Crisis will also be tested using a different method and two different models because of the multicollinearity issue in Model I. The dependent variable for both Model II and Model III will be the annual percent of deletions of commercial banks. The independent variables in both models will be adjusted to include a one year lag in order to account for the time it takes for the changes in the variables to affect the banks. The deregulation variable used in Model I will be the same one used in Model II and Model III.

The independent variables for Model II are the House Price Index, Federal Funds Rate, and deregulation. Model II will regress the House Price Index, Federal

Funds Rate, and deregulation on the percent of deletions of commercial banks annually. The goal of this model is to explore the effect that the bad assets, the monetary policy, and the deregulation had on bank deletions. The independent variables for Model III are the House Price Index, Federal Funds Rate, deregulation, Keefe, Bruyette, and Woods (KBW) Index, and Asset-Backed Securities (ABX) Index. Model III will regress the KBW Index, the ABX Index, the Federal Funds Rate, and deregulation on the percent of deletions of commercial banks annually. The goal of this model is to show the effect of monetary policy, deregulation, and the bank assets and performance on deletions using the indices because they are a more specific measure of the net worth of banks than HPI is.

The House Price Index is collected from the Federal Reserve Bank of St. Louis, and it will proxy for the bad assets that were being held by the banks. The data begins in the year 1975. The index is originally measured quarterly, but it is averaged to produce annual data. The index is equal to 100 in the first quarter of 1980. The House Price Index is used because the fluctuations in asset worth are tied to the house price fluctuations. The Federal Funds Rate is also collected from the Federal Reserve Bank of St. Louis. It will proxy for the monetary policy being implemented at the time, and it will also account for policy shocks, such as temporary price shifts, that cannot be controlled. The data for the Federal Funds Rate begins in the year 1965.

The KBW Index and the ABX Index will be used together to proxy for the bad assets being held by the banks. The KBW Index is “composed of approximately 24 companies representing leading national money centers and regional banks or thrifts” (Keefe, Bruyette, & Woods). The KBW Index is supposed to “reflect the

performance of companies that do businesses as banks or thrifts that are publicly-traded in the U.S.” (Keefe, Bruyette, & Woods). The KBW Index begins in the year 1993. The ABX Index references “a basket of 20 subprime mortgage-backed securities” (Markit). The ABX Index begins in the year 2005. Both indices are collected from Yahoo Finance because it is the only source publicly providing the historical data on the indices. These indices are a better measure than Model I because they measure the performance of the banks and the subprime mortgages without having to use multiple variables that are highly correlated with each other.

These two indices are the preferred measure to the House Price Index because they directly measure the net worth of the assets being held by the banks, but there is limited data from each of them. Model III uses the KBW Index from 1993-2004 and the ABX Index from 2005-2013. The ABX Index is preferred to the KBW Index because it specifically focuses on the subprime mortgages. The ABX Index, however, only has data beginning in 2005, so the KBW Index is used with the ABX Index for this reason.

Table 4: Model II & III Descriptive Statistics

Variable	Observations	Mean	Std. Dev.	Min.	Max
Year	49	1989	14.29	1965	2013
Deletions	49	0.03	0.02	0	0.06
House Price Index_(t-1)	39	200.41	94.68	61.11	375.64
Federal Funds Rate_(t-1) (in %)	49	0.06	0.04	0	0.16
Deregulation_(t-1)	49	0.53	0.50	0	1
Regulation_(t-1)	49	0.47	0.50	0	1
KBW Index_(t-1)	48	16.53	31.56	0	99.22
ABX Index_(t-1)	48	6.11	14.1	0	48.68

As seen in Table 4, the statistics for deletions, House Price Index, Federal Funds Rate, deregulation, and regulation are all the same as Model I. The new

variables are the KBW Index and the ABX Index. The average KBW Index is 16.53, and the average ABX Index is 6.11. The KBW Index measures the performance of about 24 companies that are deemed as doing bank or thrift business, and the ABX Index measures the performance of mortgage backed securities. The larger mean for the KBW Index shows that on average the KBW Index performs better than the ABX Index.

Model II

$$\%Deletions = \beta_0 + \beta_1 \text{House Price Index} + \beta_2 \text{Federal Funds Rate} + \beta_3 \text{Deregulation} + \varepsilon$$

$$\%Deletions = \beta_0 + \beta_1 \text{Federal Funds Rate} + \beta_2 \text{Deregulation} + \varepsilon$$

Results

Table 5: Model II Results

Independent Variable	Estimated Coefficient (St. Er.)
House Price Index_(t-1)	3.64E-06 0.000046
Federal Funds Rate_(t-1)	-0.1585* (.1118)
Deregulation_(t-1)	0.01254* (.0071)
Constant	0.038
Adj. R ² : .41	(.0108)

*** Denotes significance at the 1% level. ** Denotes significance at the 5% level.

*Denotes significance at the 10% level.

Table 6: Federal Funds Rate Effect

Independent Variable	Estimated Coefficient (St. Er.)
Federal Funds Rate _(t-1)	-0.1691*** (.0570)
Deregulation _(t-1)	0.0217*** (.0052)
Constant	0.0303
Adj. R ² : .44	(.0044)

*** Denotes significance at the 1% level. ** Denotes significance at the 5% level.

*Denotes significance at the 10% level.

As seen in Table 5, deregulation has a significant effect on the deletions of banks at the 10 percent significance level, and the Federal Funds Rate has a significant effect on the percent of deletions of banks at the 10 percent significance level. The results suggest that deregulation has a positive effect on the deletions of banks. In the regimes with laws that deregulated the financial industry, more banks became insolvent and disappeared. The Federal Funds Rate has a negative effect on the deletions of banks, which is not to be expected. A positive coefficient is expected because as the Federal Funds Rate increases, banks become less likely to be able to pay the higher interest rate to borrow from other banks, and therefore, banks have a higher chance of failing. The negative coefficient, however, can be explained. When the federal funds rate decreases, adjustable rate mortgages also decrease, and there are now more people who qualify for them and can afford the monthly payments. These people, however, cannot actually afford the payments, so they are more likely to default. An increase in the federal funds rate would make the banks be more cautious of who they are lending to because not everyone can afford the rate, so there is less of a chance of the bank failing and deletions would decrease.

As seen in Table 6, the Federal Funds Rate has a similar coefficient as in Table 5, but it is significant at the 1 percent level. Deregulation in Table 6 also produces a similar coefficient to Table 5, and it is also significant at the 1 percent level. These results suggest that being in a deregulation regime increases the percent of deletions of banks by 1.25 percent, and a 1 percent increase in the Federal Funds Rate decreases the percent of deletions of banks by 15.85 percent. The large coefficient that is consistently associated with the Federal Funds Rate in each of the models can be explained by the many different areas of the economy that the Federal Funds Rate can affect. The Federal Funds Rate, for example, can also affect the mortgage rates or interest rates on credit cards. Its effects on mortgage rates can explain the small and insignificant coefficient on the House Price Index variable. These results suggest that Federal Funds Rate, which accounts for the monetary policy and policy shocks in the economy, played a large role in the failure of banks leading up to the crisis. The results also suggest that the deregulatory banking laws had a positive and significant effect on the failures of banks leading up to the crisis, which supports the hypothesis of this thesis.

Model III

$$\%Deletions = \beta_0 + \beta_1 KBW \text{ Index} + \beta_2 ABX \text{ Index} + \beta_3 \text{Federal Funds Rate} + \beta_4 \text{Deregulation} + \varepsilon$$

Results

Table 7: Model III Results

Independent Variable	Estimated Coefficient (St. Er.)
Federal Funds Rate _(t-1)	-0.1729* (.0995)
ABX Index _(t-1)	-0.000054 (.0002)
KBW Index _(t-1)	0.000027 (.0001)
Deregulation _(t-1)	0.0212*** (.0057)
Constant	0.0307 (.0066)
Adj. R ² : .42	

*** Denotes significance at the 1% level. ** Denotes significance at the 5% level.
*Denotes significance at the 10% level.

The results in Table 7 show similar results that are observed in Model II. The ABX Index and the KBW Index are used because they are a more accurate measure of the assets of banks. They are, however, very limited in data. The coefficients on each of them are both small and insignificant. This can be explained by the fact that the time series data begins in 1965 and ends in 2013. The KBW Index begins in 1990, and the ABX Index begins in 2005. The limited amount of observations can help explain their small and insignificant coefficients. The coefficient on the Federal Funds Rate variable is, again, negative and significant at the 10 percent level. The size and sign of the coefficient are also consistent with the results of Model II.

The coefficient on the deregulation variable is positive and significant at the 1 percent level. The size of the deregulation coefficient is also similar to the coefficient in Model II. The results in Table 7 suggest that a 1 percent increase in the

Federal Funds Rate will have the effect of a 17.29 percent decrease in the percent of deletions of banks, and being in a deregulation regime has the effect of a 2.12 percent increase in the percent of deletions of banks. The large coefficient on the Federal Funds Rate is explained by the fact that it has the ability to affect a large portion of the economy, which makes sense because the Federal Reserve uses it to control the money supply.

Autocorrelation and Heteroskedasticity

The Breusch-Pagan test was performed on each model, and it yielded no heteroskedasticity in Model I (with a probability of .6851), Model II (with a probability of .5202 and .4429), or Model III (with a probability of .5512).

Heteroskedasticity occurs when the error terms are not random and are being driven by one or more of the independent variables. Durbin's alternative test was performed on each model. Autocorrelation occurs when the past values of the dependent variable affect the future values. Model I yielded no autocorrelation. Model II and Model III yielded autocorrelation with each model having a p-value of zero. This means that the null hypothesis that there is no serial correlation is rejected. In order to correct for autocorrelation in Model II and Model III, the standard errors were adjusted using the Newey-West estimator. The Newey-West estimator adjusts the standard errors for the effects of autocorrelation. The Durbin-West statistic was then generated for Model II (.241 and .282) and Model III (.287). All three statistics indicate no autocorrelation.

Further Research

The results suggest that there is a positive relationship between deregulation and deletions. The results also suggest a negative relationship between the Federal Funds Rate and deletions. The coefficient on the Federal Funds Rate and the insignificant coefficient on the House Price Index suggest that there may be a more accurate variable to measure the effects of monetary policy and bad assets. Future models may collect quarterly data and use a shorter time series in order to utilize the KBW and ABX Indices with the Federal Funds Rate to study the effects of deregulation on the deletions of banks.

Conclusion

The results in both Model II and Model III suggest deregulation plays a significant and positive role in the deletions of banks. Model I does not show any significant results, and this can be attributed to the multicollinearity between the independent variables. Model II and Model III, therefore, are designed with the intention of avoiding multicollinearity by using independent variables that encompass the different potential causes.

The negative coefficient on the Federal Funds Rate independent variable in Model II and III is not expected because as the Federal Funds Rate increases, banks become less likely to be able to pay the higher interest rate to borrow from each other and more likely to fail. A positive coefficient was expected. The positive coefficient on deregulation was expected. The positive and significant coefficient on the deregulation independent variable helps to support the theories of Bhidé, Shiller, and Stiglitz that deregulation played a crucial role in leading to the 2008 Financial Crisis.

Chapter 5: Looking to the Future

The causes of the 2008 Financial Crisis are still being discussed today and will continue to be discussed for years to come. The impact of the crisis was felt worldwide. Pinpointing the cause of the crisis is important in order to attempt to prevent or ease the impact of the next crisis. The different causes of subprime mortgages, securitization, credit rating agencies, housing initiatives and other policy factors, and deregulation are argued among the scholars. This thesis set out to show that deregulation was at the core of the 2008 Financial Crisis.

Subprime mortgages made the economy vulnerable, but they were not the cause of the crisis. New mortgage products were invented, but these new products were geared towards moving risk away from the banks (Stiglitz, 2010, 84). New mortgage products, such as negative amortization mortgages or adjustable rate mortgages, left the borrower continually refinancing and gave the banks a chance to profit from the fees associated with refinancing (Stiglitz, 2010, 85-86). The mortgage standards deteriorated, and the regulators either did not act when they could or were not given the authority to act (Bernanke, 2013, 50). Subprime mortgages have the ability to be a good bet, but they were offered to the wrong borrowers who could not afford the risk (Blinder, 2013, 71). The subprime mortgages, however, subprime losses were not large enough on their own to be the root of the 2008 Financial Crisis (FCIC, 2011, 27).

Securitization transformed the banking industry. The original purpose of securitization was to reduce credit and liquidity risk, diversify geographically, and increase the liquidity of mortgages (Soros, 2008, xvii). Banks could sell their mortgages and use the money for loans (Mills, 2009, 76). Problems caused by

imperfect information were worsened, and the past incentives for banks to originate good loans were gone (Stiglitz, 2010, 90). The lenders became investors, and the personal banking relationship was severed (Stiglitz, 2010, 90). Subprime mortgages were sold and bundled into mortgage backed securities to be sold to investors around the world (Blinder, 2013, 73). Securitization became more complex with tranching. The bundles of securities were sliced and tranced in order to achieve higher credit ratings, and the tranches were tranced (Blinder, 2013, 74-75). The housing prices dropped, and the “queen of spades” problem was exposed (Taylor, 2009, 159). The important aspect of securitization is that the Gramm-Leach-Bliley Act allowed for commercial banks to become affiliated with firms that underwrite securities and resemble investment banks.

The credit rating agencies shift from the investor-pays rating to the issuer-pays rating led to skewed incentives (White, 2009, 229-231). The Securities and Exchange Commission designated three nationally recognized statistical rating organizations, and in doing so, allowed Moody’s, Standard and Poors, and Fitch to form an oligopoly (Friedman, 2011, 13). This move reduced competition and their accountability. The three agencies then had to compete with each other for the business of the issuers because the investment banks could shop around for their ratings (Blinder 2013, 80). The rating agencies then began providing consulting to issuers on how to receive higher ratings, and the issuers could pay for consulting and then pay for a new rating upon reapplying for a rating (Stiglitz, 2010, 93). The credit rating agencies also assessed the ratings using old models even though the economy innovated and began using new products (Stiglitz, 2010, 95).

Housing initiatives and policy factors are argued as main causes of the crisis by Wallison and Taylor. The Community Reinvestment Act (CRA) was an attempt to eliminate discrimination in lending by encouraging flexible lending practices to lend money to low income and non-low income areas equally (Wallison, 2010, 174-175). The argument that these flexible lending practices spread to the prime and subprime markets and caused the crisis is negated by the fact that the CRA can only be connected to about six percent of the subprime loans at the time (FCIC, 2011, xxvii). The Taylor Rule is used to show that monetary policy accelerated the housing boom and led to the housing bust (Taylor, 2009, 152). The monetary policy enacted at the time, however, was done in order to prevent a recession from the stock market bubble, and the housing boom period actually began before the implementation of the loose monetary policy (Shiller, 2008, 49). The housing bubble was a trigger of the crisis, but it was not the cause; it only exposed the vulnerabilities that were already existent in the economy (Bernanke, 2013, 47-48).

This thesis set out to show that deregulation was at the core of the 2008 Financial Crisis. The banking laws used for the purpose of this thesis are seen in Table 8. The Depository Institutions Deregulatory and Monetary Control Act of 1980 (DIDMCA) eliminated interest rate restrictions and allowed banks to compete with money market mutual funds (Federal Reserve Bank of Boston). Giving banks this freedom opened them up to interest rate risk. This law also made it possible for originators to profit off of subprime lending by being allowed to charge a high enough interest rate to offset the costs of defaults and foreclosures (Shiller, 2008, 51). The increase in deposit insurance coupled with the elimination of interest rate restrictions shows how the DIDMCA contributed to moral hazard. Banks were

allowed to take on more risk while gaining more protection from the FDIC. The banks did not have to be concerned with how much risk they were taking on because they knew the FDIC would be there to save them if anything went wrong.

The Depository Institutions Act of 1982 (Garn-St. Germain) allowed banks to offer accounts that did not require them to hold reserves, so banks could increase the loans given without worrying about holding reserves and therefore, contribute to liquidity risk (Bhide, 2009, 91). The law also eliminated restrictions on real-estate lending that only allowed a certain maximum loan-to-value ratio and required repayment of the principal within a certain number of years (Bhide, 2009, 91). This allowed banks to increase their credit risk and gave them opportunities to profit from continual refinancing by the borrowers. Garn-St. Germain also further increased the FDIC's ability to aid troubled institutions and therefore, increased moral hazard (FDIC, 2010, 95).

The Gramm-Leach-Bliley Act of 1999 (GLBA) repealed restrictions and allowed for banks to be affiliated with firms that can underwrite or deal in securities (Wallison, 2011, 19). Bank holding companies could, however, go farther than just affiliation and could be engaged in the underwriting or selling of securities (FCIC, 2011, 55). Growth and consolidation were then encouraged, and the credit risks of banks increased because the strategies of some of the larger commercial banks and their bank holding companies began to resemble the strategies of investment banks (FCIC, 56, 2011). The growth and consolidation led to banks that were "too big to fail," and this contributes to moral hazard because banks know that upon threat of failure, the government would have to rescue them in order to save the rest of the economy (Stiglitz, 2010, 83).

The regression analyses in Model II and Model III has shown a positive and significant relationship between deregulation and the deletions of banks. The deregulatory banking laws have increased the credit risk and liquidity risk of the banks. These underlying risks made them vulnerable when the house prices began to decline and mortgages began to default. The laws also contributed to moral hazard and gave banks more room to take on these risks knowing the FDIC would be there to assist them if anything happened.

The banking laws are aimed towards saving institutions once they have failed or trying to lessen the impact of failing institutions on the rest of the system. In doing this, the FDIC has encouraged banks to take the risks because they have them to fall back on. However, the relationship between deregulation and deletions implies a need for a change in the system. Having a positive and significant relationship between deregulation and deletions also means that there is a negative and significant relationship between deletions and regulation. The significance and sign of the Federal Funds Rate coefficient implies that there are other factors that contribute to the deletions of banks, but deregulation can be controlled. Although there will never be zero deletions of banks, the results imply that deregulations positively contribute to the amount of bank deletions. The significant and positive relationship between deregulation and deletions suggests that the impact of the housing bubble may have been lessened had there been proper regulation in place.

Table 8- Banking Laws

<p>The McFadden Act of 1927</p>	<p>National banks can now branch within the city of their location. No banks could branch across state lines.</p>	<p>Regulation</p>
<p>The Glass-Steagall Act of 1933</p>	<p>Commercial banking and investment banking are separate.</p>	<p>Regulation</p>
<p>Depository Institutions Deregulation and Monetary Control Act of 1980</p>	<p>All transaction accounts at depository institutions subject to reserve requirements by the Fed Established fees for Fed services Extended the power of thrift institutions</p>	<p>Deregulation</p>
<p>The Garn St. Germain Depository Institution Act of 1982</p>	<p>Expanded power of S&L's and savings banks Removed statutory restrictions on real estate lending by national banks</p>	<p>Deregulation</p>
<p>The Financial Institutions Reform, Recovery, and Enforcement Act of 1989</p>	<p>Response to the S&L crisis Imposed stricter standards on thrifts Expanded powers of enforcement authority of bank regulators</p>	<p>Regulation</p>
<p>The Federal Deposit Insurance Corporation Improvement Act of 1991</p>	<p>Reformed the deposit insurance system Increased FDIC ability to cover insurance losses Required federal banking agencies to categorize institutions Sought to limit the "too big to fail" policy</p>	<p>Regulation</p>
<p>Riegle-Neal Interstate Banking and Branching Efficiency Act of 1994</p>	<p>Allowed interstate banking and branching for U.S. and foreign banks Reversing McFadden Act</p>	<p>Deregulation</p>
<p>Gramm-Leach-Bliley Financial Services Modernization Act of 1999</p>	<p>Repeal of Glass-Steagall Banks could engage in investment</p>	<p>Deregulation</p>

Federal Deposit Insurance Reform Act of 2005	Merged Bank Insurance Fund and Savings Association Insurance Fund Increased deposit insurance on individual retirement accounts	Deregulation
Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010	Created the Financial Stability Oversight Council Changed agency oversight Increased regulation of securitization Credit Rating Agency reform	Regulation

Effective Regulations

Bank regulations must be aimed at solving the problems that cause banks to fail rather than increasing the ability to help and assist the banks once they are deemed to be failing. Since the 2008 Financial Crisis, efforts have been made to regulate the financial system. The Dodd-Frank Wall Street Reform and Consumer Protection Act was passed in 2010, and it has attempted to stabilize the financial institutions. There are, however, a few concerns about the new law, such as the labeling of certain institutions as being systemically important.

One positive aspect of the Dodd-Frank Act is that it “prohibits insured depository institutions, like commercial banks, from dealing in derivatives” (Goodwin, 2010). This is an example of a proactive banking law because it keeps banks from engaging in risky behavior rather than just watching the banks to see if something bad is going to happen to them. This aspect of Dodd-Frank decreases the credit risk of banks. Another example of a proactive and positive aspect of the Dodd-Frank Act is that it “requires banks, lenders, and others, whenever they securitize an

asset, to hang on to a portion of the credit risk” (Goodwin, 2010). In doing this, moral hazard is decreased because the banks have more of an incentive to produce good mortgages to become securities. The Dodd-Frank Act, however, is aimed towards more supervision and oversight.

The Dodd-Frank Act gives the Federal Reserve special authority over certain institutions that are defined as a “significant nonbank financial company” or a “significant bank holding company” (Board of Governors, 2013). Once an institution is given this definition, the Federal Reserve is given special supervision over it, and the institutions also are required to “submit reports to the Federal Reserve, the FSOC, and the Federal Deposit Insurance Corporation on the company's credit exposure to other” companies that have the same designation (Board of Governors, 2013). These large institutions are deemed “systemically important” and are a product of deregulation (Board of Governors, 2013).

The Gramm-Leach-Bliley Act encouraged consolidation, and these systemically important institutions are a result of consolidation. Rather than providing these designated institutions with more supervision, there needs to be regulations put in place to prevent the institutions from becoming large enough to need special supervision. General Electric, for example, recently decided to make adjustments in order to no longer be determined as systemically important because of the regulatory standards the institutions are required to meet (Spross, 2015). General Electric did not want to put up with the inconveniences that come with being a systemically important institution and is making changes to be below the threshold for these designated institutions (Spross, 2015). Effective regulatory laws

could result in not having to establish special supervision for certain institutions because they pose such a risk to the market.

One way in which Dodd-Frank has attempted to decrease liquidity risk is through establishing a minimum liquidity coverage ratio that can be implemented applied to banks. It is, however, mainly being used for banks that have a total of \$250 billion or more in assets or \$10 billion or more in foreign exposure (FDIC, 2014, 61443). Dodd-Frank also establishes a similar minimum liquidity coverage ratio for bank holding companies (FDIC, 2014, 61443). This minimum liquidity coverage ratio will help the banks that it is applied to better absorb losses or shocks that may occur. This rule also has the stipulation that a higher liquidity coverage ratio may be enforced if deemed necessary (FDIC, 2014, 61444). This is important because it gives the regulators a way to proactively respond to the liquidity problems of banks rather than waiting for them to fail and helping them then. The minimum liquidity coverage ratio, when used proactively, can decrease the liquidity risks of banks and bank holding companies.

Dodd-Frank decreases the credit risk of banks by not only requiring banks to hold onto portions of assets in the process of securitization, but it also focuses on mortgage reform that will help decrease the credit risk of banks. Dodd-Frank requires lenders to disclose additional information for consumers looking for a mortgage (Senate Committee on Banking). The “lenders must disclose the maximum a consumer could pay on a variable rate mortgage,” and they must warn the consumer that “payments will vary based on interest rate changes” (Senate Committee on Banking). By requiring this, banks will have more informed consumers and therefore, fewer defaults on mortgages due to the consumer failing

to pay. A “simple federal standard for all home loans” is established in Dodd-Frank in order to ensure that borrowers are able to repay their loans (Senate Committee on Banking). Having a simple federal standard will not only make it easier for the lenders to assess whether or not to approve the mortgage, but it will also decrease the credit risk of banks because it will decrease the chance of defaults. The mortgage aspects of Dodd-Frank will work to make sure that subprime mortgages do not make banks vulnerable the way they did in 2008.

Instead of watching institutions carefully and waiting for them to harm the market before stepping in, regulatory laws should be more proactive. Dodd-Frank currently has special requirements for the institutions that are deemed systemically important, but these requirements should be changed. The requirements should be designed in a way to incentivize the institutions to decrease their threat to the economy just as General Electric has chosen to do. Providing a systemically important institution with more oversight and requirements does not solve the problem because it does not make them less of a threat to the economy. It, instead, just attempts to better prepare for the institution to fail. The requirements that are currently in place still allow the institutions to pose a threat to the economy. The regulations in Dodd-Frank that proactively work to decrease moral hazard, liquidity risk, and credit risk should be prioritized. Being more proactive could provide a more stable economy that does not fear that one institution failing will cause an economic downturn as great as the one experienced from the 2008 Financial Crisis.

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