

# **Risk Taking and Bank Failure Before and After the Onset of the Financial Crisis – A Decade in Review**

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*At the beginning of the 21<sup>st</sup> century, financial institutions were achieving success through risk seeking behavior. While the economy was expanding, many negative consequences of risk were not realized. This study examines firm level factors of banks leading up to and continuing into the onset of the 2008 financial crisis and finds different results before and after the crisis. We test effects of geographic diversification and risk seeking behavior. Our evidence suggests that geographic diversification has no association with bank failure while risk seeking behavior has strong positive association with bank failure at the onset of the financial crisis.*

## **INTRODUCTION**

In the aftermath of the 2008 financial crisis, the United States endured its third highest rate of bank failures since the establishment of the Federal Reserve in 1913 (Acharya & Yorulmazer, 2008; Ng & Roychowdhury, 2014). As the entire US economy is dependent on the banking industry, academics, policy makers, politicians and practitioners have been interested in identifying the causes of these failures (as evidenced by the large number of articles about them in the popular business press) (Saunders & Cornett, 2014). This study examines the impact that risk taking and risk reduction had on bank failure rates leading up to and immediately following the 2008 financial crisis.

### **Banking Industry Crisis Background**

Prior to the 2008 financial crisis, the US banking industry enjoyed a stable decade following much of the deregulation that was occurring in financial services industry (Bolton, Santos, & Scheinkman, 2016; Valdez & Molyneux, 2015). The Federal Reserve lowered the federal funds interest rate to 1% as a counter measure to boost the US economy after the dot-com bubble (Menzel, Feldman, & Broekel, 2017). From 2002 to 2006, the United States housing market was enjoying continuous expansion (Hilsenrath, Ng, & Paletta, 2008). It was during this period that widespread use of multiple financial innovations led to many banks relying on risky subprime mortgages to foster growth (Ashcraft & Schuermann, 2008; Mayer & Pence, 2008). One example of a financial innovation was the securitization and trading of mortgages. Securitization occurs when a non-tradable asset is standardized to become a tradable asset in the market (Hellwig, 2009). In the traditional model of mortgages, a bank would loan out money based on

the deposits it held (Kalotay, Yang, & Fabozzi, 2004). These banks would assume the risk involved with making such loans (Campbell & Cocco, 2015). To minimize risk and increase the amount of loans, banks began to pool mortgages and make them standardized assets by packaging the loans it made and selling them as investments (Hellwig, 2009).

This financial innovation allowed banks to make loans more aggressively which made it easier for borrowers to get credit (Berger, Kyle, & Scalise, 2001; Bluhm, Overbeck, & Wagner, 2016). Easier credit and lower interest rates led to increased demand for housing, which led to higher prices for houses. Consumers realized that they could take out a large home loan and refinance it at a later date once they had some equity established. However, these decisions were based on speculation that the housing market would continue to rise. An increasing number of borrowers took out adjustable rate mortgages (Hellwig, 2009; Menzel et al., 2017). They would pay a steady interest rate for the initial period and pay a different interest rate later on based on the current market rate. Some consumers took out interest only loans where they would only payback the interest, and not the principal, for the first few years of the loan (Jiang, Nelson, & Vytlačil, 2014; Landier, Sraer, & Thesmar, 2015). These consumers anticipated they could refinance the loan in the later years or sell the home at a higher price (Hellwig, 2009). The problem for borrowers with adjustable rate mortgages is that a small increase in interest rates will substantially increase the mortgage payment on such a large loan. Individuals who could barely afford the original payment were unable to absorb an increase in price when the grace period ended.

Banks began capitalizing on the subprime market – providing loans to individuals with a credit score below 620- relatively conservatively (Li & Li, 2013). Initially, they would loan out subprime mortgages at a higher interest rate to compensate for the increased risk-taking (Li & Li, 2013). However, they soon realized that there was a much better payback rate than expected (Demyanyk & Van Hemert, 2008). They were earning a higher rate of return on these subprime mortgages and not encountering a high default rate. As a result, banks were rushing more subprime mortgages to the market (Mayer & Pence, 2008; Schwartz, 2009). Lending became more aggressive, targeting consumers who wouldn't normally qualify for a mortgage.

The subprime mortgage bubble was relatively stable until interest rates began to rise. High interest rates, low average FICO scores, and low house appreciation created a “perfect storm” (Demyanyk & Van Hemert, 2008; Schwartz, 2009). The system was based on consumer's ability to receive money inexpensively and purchase housing. When interest rates rose, the ability of consumers to purchase a house diminished (Jiang et al., 2014; Schwartz, 2009). Banks suddenly faced a market with fewer credible borrowers to lend to. Additionally, consumers who already had a mortgage and planned to refinance were unable to do so due to tighter credit standards. This led to a dramatic increase in the number of mortgage defaults thus creating an enormous financial burden on exposed institutions. The government bailed out large banks by providing capital to restart lending to avoid a greater economic collapse (Gropp, Hakenes, & Schnabel, 2011). Smaller banks, which were not seen as a vital pillar of the US economy, were left alone to fight for survival (Hakenes & Schnabel, 2010).

### **Strategic Importance of Banking**

Banks are strategically important due to the impact they have on the broader economy; more so than failures of firms in other industries (Demirgüç-Kunt, Feyen, & Levine, 2013). Part of the issue is a result of the financial contagion (Allen & Gale, 2000) or domino effect of bank failures (Cabrales, Gale, & Gottardi, 2015). Since banks are so intertwined financially through lending and borrowing from each other, a failure of any one bank is more likely to spill over to other banks. Banks are considered more susceptible to contagion for three reasons (Kaufman, 1996):

- 1) Banks have low capital-to-assets ratios (high leverage) which provides the bank with little room for losses;
- 2) Banks have low cash-to-assets ratios (fractional reserves) which may require the bank to sell off earning assets to meet deposit obligations;
- 3) Banks have high demand debt and short-term debt-to-total debt ratios (high potential for a run) which may require hurried asset sales to pay off running depositors.

Financial contagion is often more serious in banking than other industries because it: a) occurs faster; b) spreads more widely within the industry; c) results in a large number of failures; d) results in large losses to creditors (depositors) ; and e) spreads beyond the banking industry to other sectors, the macro economy, and potentially other countries (Kaufman, 1994; Kaufman & Scott, 2003). That is why banking, as an industry, is so highly regulated (Dewatripont & Tirole, 1994; Giammarino, Lewis, & Sappington, 1993; Rochet, 2009). Banking is a major public policy concern as governments realize the dangerous ramifications of a failing financial institution.

### **Background on Banking Failures**

The United States banking system is one of the most stable and highly respected financial systems in the world (Bordo, Rockoff, & Redish, 1994; Pozsar, 2013). However, prior to 1913, the United States did not have a central bank (White, 2014). Bank runs would occur, where too many depositors would withdraw their funds all at once, crippling the bank. Without a central bank, other banking institutions or wealthy financiers would have to loan money to the bank or it would collapse (Kroszner & Strahan, 2014; White, 2014).

As a result of early banking crises in 1873, 1884, 1890, 1893 and 1907 (Bruner & Carr, 2007), consumers began to lose faith in the US banking industry. The Federal Reserve was created in 1913 to dispel fears and return consumer confidence (Hetzl, 2008; Meltzer, 2010; Wiles, 2015). Since its establishment, there have only been three large scale bank failures. The noteworthy periods of bank failures include the Great Depression of the 1930s (Robbins, 2011; Rothbard, 1972), the Savings and Loan Crisis of the 1980s and early 1990s (Calavita, Pontell, & Tillman, 1997; Curry & Shibut, 2000), and the current disaster (Acharya, Philippon, Richardson, & Roubini, 2009; Acharya, Cooley, Richardson, & Walter, 2010; Kacperczyk & Schnabl, 2010).

The Great Depression caused many depositors to panic and withdraw all of their funds from commercial banks (Robbins, 2011; Robert, 1941; Rothbard, 1972). Prior to the establishment of the Federal Deposit Insurance Corporation (FDIC) in 1933, bank runs were common as there was no insurance safeguarding deposits (List, 2013; Profile, 2005). Consumers ran the risk of losing their entire savings if their bank were to fail. Under the Banking Act of 1933 (also referred to as the Glass-Steagall Act), the FDIC guaranteed deposits of up to \$2,500 per account (Alper, 2014; Ingram, 2016; Preston, 1933). Within a year, this was raised to \$5,000. Not only did the act subdue consumer fear of losing everything, it also tightened regulation regarding how banks were run.

The bank failures of the late 1920s and early 1930s are easily be grouped into broad geographical groupings and bank types (Stauffer, 1981). More than one-third of all existing banks failed in the immediate aftermath of the Great Depression (Robbins, 2011; Rothbard, 1972; Walter, 2005). Part of that was attributed to the banking industry being overbuilt. In the 1930s, there were over 30,000 banking institutions operating in the United States. Most of the new small banks were formed in small towns and rural communities. Many of these banks were started without adequate financial or managerial resources (Robbins, 2011; Rothbard, 1972; Walter, 2005). Once there was an economic shock, many ill-prepared banks suddenly failed. Most of these failures were attributed to falling agricultural prices (Temin, 1976a, b; Temin & Wigmore, 1990) as the difficulties suffered by farmers triggered the failures (Robbins, 2011; Walter, 2005). By comparison, the bank failures of the late 2000s are largely associated with housing price decline rather than agricultural issues (Lu & Whidbee, 2013; Paulson, Li, Escalante, Epperson, & Gunter, 2013). During this crisis, failure rates were highest in areas with the largest decline in housing prices and largest increase in mortgage delinquency rates (Aubuchon & Wheelock, 2010; Gerardi, Goette, & Meier, 2010). These were the same states that had the largest housing price increases as well as the largest increases in the number of subprime mortgages (Hanweck, 2014; Jiang et al., 2014).

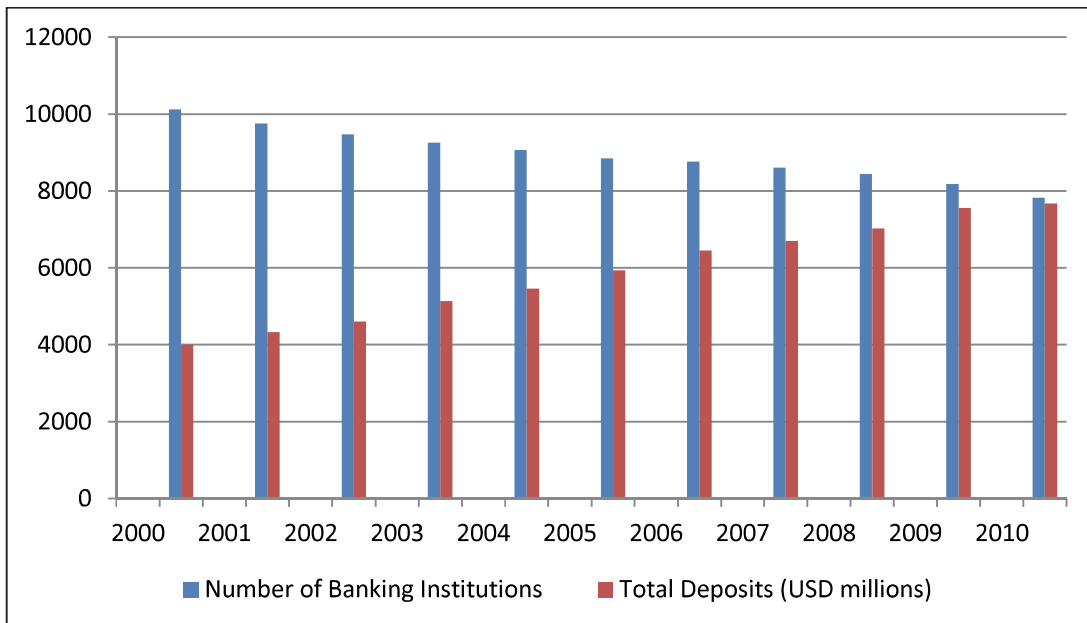
From the late 1930s through the 1970s, banking markets were stable. This period incurred very little regulatory and technological change. However, in the 1980s, significant changes began to alter the market structure and increase competition (Burns, 2014; Gunther & Robinson, 1990). As a result, the number of banks has dramatically decreased as a result of failures, mergers, and acquisitions.

The banking failures of the 1980s and early 1990s have been attributed to market forces, regional and sectoral recessions, and excessive risk taking (Curry, Hanc, O’Keefe, Davison, & Reidhill, 1997; Hanc, 1997). Similar to the 1930s, geography played a significant role in determining which banks failed. For example, over one-third of all bank failures in the 1980s and 1990s occurred in Texas (Curry et al., 1997; Hanc, 1997). The sharp increase of bank failures in the 1980s along with the apparent vulnerability of banks to sudden shifts in local economic conditions led the federal government to relax branch banking restrictions (Aubuchon & Wheelock, 2010). O’Driscoll (1988) and Kane (1989) pointed to federal deposit insurance for promoting excessive risk taking during the 1980s. Since depositors are insured against loss, there is no incentive to monitor bank activities or demand risk premia on deposit interest rates (Saunders & Cornett, 2014; Wheelock & Kumbhakar, 1994). Insurance encouraged banks and S&L institutions to take excessive risk, leading to increased failures (Benston & Kaufman, 1998; Calomiris & Jaremski, 2016; Wheelock & Kumbhakar, 1995).

Considerable regulatory change occurred in the 1990s (see Appendix 2). The Riegle-Neal Interstate Banking and Branch Efficiency Act of 1994 (IBBEA) permitted healthy bank holding companies to acquire banks in any state (Aguirregabiria, Clark, & Wang, 2016; Mulloy & Lasker, 1995). Beginning on June 1, 1997, IBBEA allowed for interstate mergers between banks, thus ushering a new era of large mega-banks (Kane, 1996).

In 1999, The Gramm-Leach-Bliley Act (GLBA) removed the restrictions imposed on banks by the Glass Steagall Act (1934) and the Bank Holding Company Act (1956) (Aharony & Swary, 1981; Cuaresma, 2002; Kroszner & Rajan, 1994). Also known as the Financial Services Modernization Act, the GLBA repealed longstanding prohibitions on banks, securities firms and insurance companies. Banks are now able to operate all three lines of business under one entity. By eliminating barriers between insurance, banking, and securities industries, the organization of the financial services industry underwent extreme change (Yildirim, Kwag, & Collins, 2006). Between 2000 and 2010, the number of banking institutions has dropped 30% while total deposits grew 90%. As a result, the average size of an institution has grown 248% during that period (Yildirim et al., 2006).

**FIGURE 1**  
**BANK INDUSTRY CHANGE - NUMBER OF INSTITUTIONS AND TOTAL DEPOSITS;**  
**2000-2010**



## **Risk and Financial Performance**

Singhvi (1980) states that “risk, like beauty, lies in the eyes of the beholder,” which means that under similar conditions various groups of stakeholders estimate different levels of risk. In addition, risk is a multifaceted notion which implies multitudes of perspectives on what risk is. For instance, the notion of risk in the literature may include: (1) levels of financial leverage (Combs & Ketchen Jr, 1999; Gale, 1972), (2) levels of diversification of the company (Jensen, 1989; Lang & Stulz, 1993), (3) unevenness of the incoming cash flow (Miller & Bromiley, 1990), and even (4) perceptions of top executives (Sitkin & Weingart, 1995; Weber, Blais, & Betz, 2002).

The majority of research papers in the field of finance found a positive relationship between levels of corporate risk taking and financial performance (Aaker & Jacobson, 1987; Jegers, 1991). Using accounting data from PIMS database Aaker and Jacobson (1987) found positive relationship between two types of risk, systematic and unsystematic and corporate performance. There were few studies that argued that there is no association between performance and risk levels (Bettis & Mahajan, 1985). There were research papers where risk and return levels has correlation, but that correlation changed over time (Figenbaum & Thomas, 1986).

Literature suggests that risk is a multidimensional concept and should be regarded as such (Haimes, 2009; Resek, 1970). The multidimensional nature of risk implies that there are a number of factors that affect corporate levels of risk. For example, on the firm level, if one applies the view that a firm is a coalition (Cyert & March, 1963), also called relevant stakeholders view (Hannan & Freeman, 1984), it becomes clear that various risk dimensions reflect the multitudes of interests of coalition members. Differences in risk dimensions have bearings on performance; for instance, income stream uncertainty negatively influences corporate performance (Bromiley, 1991; Miller & Bromiley, 1990; Wiseman & Bromiley, 1996), while downside risk positively influences subsequent corporate performance (Miller & Leiblein, 1996). Many constructs from the behavioral theory of the firm affect corporate risk levels. For example, risk-taking is increased if corporate performance is below the aspirations levels, and there is a strong positive relationship between these constructs, i.e. the larger the gap between corporate performance and aspirations, the higher the risk-taking will be. Interestingly, organizational slack generally reduces risk-taking tendencies (Moses, 1992; Singh, 1986; Su, Xie, & Li, 2009). In accordance with predictions of agency theory, strong corporate governance systems appear to mitigate risk-aversion of managers, whereas, the general effect of stock ownership is increased risk-taking of managers (Palmer & Wiseman, 1999; Rochet, 1999).

In this paper we will be using bank failure as a proxy for risk and analyzing two firm level factors: (1) geographic dispersion and (2) risk seeking behavior. Geographic dispersion was linked to corporate decision making (Landier, Nair, & Wulf, 2009). For instance, it was established that geographically dispersed companies are (1) less pleasant for employees, (2) more frequently dismiss divisional employees and (3) divest out-of-state divisions first (Landier et al., 2009).

## **Hypothesis Development**

This paper examines two firm level factors, geographic dispersion and risk seeking behavior and their impact on bank failure during the onset of the financial crisis of 2008. The expectation is that geographic dispersion of banking activities will reduce the local market risk and subsequently insulate banks from adverse economic development in a particular region. An adverse market will not necessarily affect other customers in other markets (Emmons, Gilbert, & Yeager, 2004). Leading up to the crisis, US Banks have grown larger – spreading their operations across multiple markets. Due to the imperfection of banking markets, spreading assets across multiple markets may provide diversification benefits (Morgan & Samolyk, 2003).

Previous geographic restrictions on interstate banking were lifted by passage the Riegle-Neal Interstate Banking and Branch Efficiency Act. Geographic diversification has been shown to reduce bank risk (Morgan & Samolyk, 2003), likelihood of failure (Emmons et al., 2004) and increase bank stability (Dick, 2008). Unlike the previous large scale bank failure in the United States (1930s and 1980s) this

environment didn't possess the same geographic or technological limitations. As such, banks that didn't take advantage of those opportunities were more likely to fail. Hence, we hypothesize:

*H1: Increased bank geographic diversification prior to the financial crisis will be associated with lower failure rates.*

Additionally, the early 2000s saw low interest rates and government incentives provide an ample situation of high risk and high returns for many banks. At the time, real estate prices were increasing regularly, giving banks a sense of security when making decisions that would be considered high risk. At the time, the situation was seemingly universally positive. Banks could loan money to high risk candidates and high rate. If those individuals defaulted, the banks could sell the asset at a higher, newly appreciated price. To compound the situation, these mortgages were being paid back at a higher rate than expected (Demyanyk & Van Hemert, 2008) leading to many taking on additional risk. Unfortunately, this model couldn't last forever. As the economy collapsed, this once high risk/high return ventures became an albatross. The advantages realized during the boom economy were now erased and left many banks in a very difficult position.

*H2: Increased risk seeking behavior of banks at the onset of the financial crisis will be associated with higher failure rates.*

## **METHODOLOGY**

This study examined the 181 bank failures occurring between June 30, 2009 and June 29, 2010 and the 27 bank failures from 2000 to 2007. The disparity in the number of bank failure in the two periods makes the comparative analysis interesting. From 2000 through 2007, no more than 11 bank failures occurred in any given year. In fact, 2005 and 2006 saw no bank failures all together. By comparison, at least 11 banks failed in nine of the 12 months during 2010.

During the latter half of 2008, banks started failing at an alarming rate. The federal government created the TARP program, in an attempt to curb the financial crisis. TARP gave the US Treasury purchasing power of \$700 billion to buy up mortgage backed securities (MBS) from institutions across the country to create liquidity and open up the money markets. Since TARP was used to prevent bank failure, firms that received any TARP funds were omitted from all analysis.

### **Dependent Variable**

The dependent variable is the unobserved hazard rate for bank failures (Kim & Miner, 2007). If the bank is no longer in existence and appears on the FDIC list of failed banks it is considered a failed bank for the analysis. However, if the bank remains in existence until the following period of analysis it is considered "not failed". Banks that were voluntarily merged or acquired were not part of this analysis. The list of failed banks was gathered from the FDIC database. All failed banks from June 30, 2009 to June 29, 2010 were analyzed along with a matched pair survivor (D'Aveni, 1989; Hambrick & D'Aveni, 1988).

### **Control Variables**

Return on assets (ROA) is a metric showing how effective a company's assets are at generating revenue. It is a measure of firm performance. It shows how many dollars a firm earns per dollar it has. ROA is very useful in comparing profitability intra industry as the competitors have similar structures. ROA is a common performance measure used in banking (and other financial institutions) as most assets will have a carrying value that is close to the actual market value. The banks return on assets was collected from the FDIC database. Bank performance is used as a control variable.

Local unemployment indicates the health of the local economy. Businesses survival is dependent on its customers. When a large segment, or sub segment, of these customers become unemployed, the bank

loses a large income base. When there is high unemployment, the average consumer is less likely to take out a new loan or pay back an existing loan. Since banks are reliant on interest from loans, less money is generated when consumers don't engage the business. Unemployment figures are collected during the failure as it has a rather immediate impact. Once an individual loses his or her job, loan repayment will immediately suffer. Unemployment figures (US Department of Labor) were collected for the metropolitan area that the bank was headquartered in and did most of their business. The unemployment figure used was the percentage of unemployed persons in the month that the bank failed. Data on unemployment was collected from monthly unemployment reports provided by The Bureau of Labor Statistics.

### **Independent Variables**

*Total risk based capital ratio* (Risk) is defined as the bank's total capital divided by its risk-based assets. This will show how well the bank manages risk. If the bank holds low risk assets, such as government bonds, it will have a much higher risk based capital ratio than if it held primarily personal loans. Since government bonds are considered virtually riskless, they often have a risk rating of zero. In contrast, a personal loan carries a risk weight of 100 since there is often no collateral. Banks with high risk-weighted assets are required to have more capital on hand. Risk data was collected from the FDIC database.

Total risk-based capital ratio: 
$$\frac{\text{Total Capital}}{\text{Risk-based assets}}$$

*Geographic diversification* opportunities were made available to banks after the passage of GLBA and IBBEA. As a result, banks were no longer location bound as in the past. IBBEA permitted banks to operate across state lines. To capture the level of geographic diversification, the number of deposits outside of the market is divided by the total number of deposits. A bank that is well diversified geographically will have a lower percentage of total deposits residing in the home market. Data was collected using the FDIC database.

### **Matching Process**

A central part of the research design was to identify a matched survivor for each failed bank as Hambrick & D'Aveni (1988) had done. The initial step was to collect information on all 181 banks that failed between June 30th, 2009 and June 29th, 2010 and the 27 bank failures between 2000 and 2007. Since local banking markets are often limited in the number of similar banks, the matching sample was expanded to the state level. Following D'Aveni (1989) firms were matched based on size and environment. As such, matched survivors were based on home state and total deposits. The same-state was used to analyze banks that had a similar environment. It would be problematic to analyze a bank headquartered in New York that operates in Los Angeles because they face different environmental conditions. The size parameter ensures that functionally different banks aren't matched. Comparing a large-national bank to a small community bank would create similar problems as their operations are uniformly different.

### **Data Analysis**

Survival analysis is used to estimate the unobserved hazard rate of bank failure (Kim & Miner, 2007). This method uses all information provided by right-centered cases, and avoids biases that logistic regression could display (Allison, 1984). Parametric estimates of a hazard rate require assumptions about the effect of time on the occurrence of the events of interest (Kim & Miner, 2007) which is bank failure in this case. The hazard model controls for each bank's period at risk. It is important to control for the fact that some banks fail immediately while others fail over time. Static models fail to control for each firm's period at risk. Unlike static models, hazard models can incorporate macroeconomic variables that are the same for all firms at a given point in time (Shumway, 2001). Time, in this study, is length of survival during the period of excessive bank failures. The clock was started on June 30th, 2007 which is two

calendar years before the sample period. This date was selected because (a) June 30th is the date when FDIC institutions report their financial data (b) 2007 was the last year with less than 10 bank failures; and (c) Failures began increasing towards the end of 2008, making analyzing the entire year problematic. A hazard model (Cox regression) is created using SPSS, a statistical program, to test the hypotheses.

## DISCUSSION

When the financial crisis began in 2008, the negative impact of risk-seeking behavior was realized. Although risk-seeking behavior was not a significant determinant of bank failure pre-crisis, it certainly was afterward ( $p < 0.001$ ). Banks could engage in riskier activity without a greater likelihood of failure prior to the banking market decline. During that timeframe, higher risk would often lead to higher rewards (returns). During the crisis, however, higher risk led to higher failure rates. To test for causality, variables were lagged 1 year and 2 years respectively to capture banks at the onset of the crisis and one year prior to it. Risk-seeking behavior was found to be the only significant variable ( $p < .001$ ) that influenced the failure rate. This supports the conclusion that risk-seeking behavior becomes more harmful when there is a crisis. The risk-seeking behavior didn't have strong negative consequences until the financial crisis occurred.

Hypothesis 1 tested geographic diversification's relationship to bank failure. Geographic diversification was not associated with bank failure rates in either period. It has been discussed how bank outcomes are severely tied to their local economy. Still, small banks are often not well diversified (Köhler, 2015; Neely & Wheelock, 1997). Even though geographic diversification reduces overall bank risk (Liang & Rhoades, 1988) and subsequently their risk of failure by expanding into multiple markets (Emmons et al., 2004), many small banks lack the capacity or desire to expand. This study primarily utilized small to medium sized banks and therefore didn't include large banks that achieved diversification advantages. It is possible that an entire population of banks, containing large and small banks alike, would have significant results showing survival advantages for geographically diversified banks.

Hypothesis 2 tested risk seeking behavior as a factor of bank failure. As expected, banks that engage in riskier practices were more likely to fail during the financial crisis. Michael Lewis (2010), in his book The Big Short, mentions that Wall Street greed was behind much of the crisis. Subprime mortgages were created in the search for greater profits. While housing prices were rising, customers of subprime mortgages could be charged a premium. Since the housing prices were continually rising, the risk of these mortgages was minimal. Once real estate prices began to plummet, these risks (along with others) backfired. Banks were stuck with tremendous liabilities. Risk adverse institutions, that didn't engage heavily in these practices, remained relatively unharmed. Conversely, risk seeking behavior had no significant effect on bank failure rates prior to the crisis as the negative consequences of risk were not realized during the economic expansion.

### Limitations and Future Research

A limitation of this study was that all banks in the United States were not included. Due to considerations of time and availability, only the data on failed banks, along with a matched-pair, was collected. This significantly reduced collection time as data for a few hundred, rather than several thousand banks was used. This may not be representative of the entire population as there were certainly not an equal number of failed and non-failed banks. Only about 2% of all banks in the U.S. failed during the timeframe of the study. Future research could include the entire population of U.S. banks.

The lack of managerial decision making data was another limitation of this study. No hypothesis tested risk at the time of the decision making. Furthermore, no primary data was used to determine the managerial competency of the bank leaders. Only post hoc analysis of their decisions was used. A future study could collect primary data from those key decision makers at the banks.

Finally, this study examined the first few years of the financial crisis. As this decade look back concludes, the economy still has many question marks. After some additional time has passed, it would be



interesting to take another look back. Alston et al. (1994) conducted a study on the Great Depression bank failures 50 years after it had ended.

## CONCLUSION

During the financial crisis, risk seeking behavior by banks was associated with bank failures. In stable economic conditions, risk seeking behavior may lead to higher profitability. Banks are insured against losses which gives them more latitude to take risks. However, when the market takes a downturn, the risk seeking backfires and leads to higher failure rates. As a result, the government is taking steps to reduce risk-seeking behavior. The Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010 contained “The Volcker Rule” section which bans most proprietary trading by banks with federally insured deposits. Trades related to market-making were exempt, if they met at least seven standards, or principles. The Volcker Rule was implemented to limit risk-seeking behavior.

To conclude, risk-seeking behavior after the economic downturn was strongly tied to this recent bank failure crisis. More banks failure occurred after the 2008 financial crisis than any other period in US history except for the Great Depression and the Savings and Loan Crisis. Managers and policy makers should take note. Risk-seeking behavior can potentially earn greater profits during an economic expansion, but may lead to failure when the expansion ceases.

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**APPENDIX 1**  
**STATISTICS ON 10 YEAR PERIOD OF THE US BANKING INDUSTRY AND HOUSING**  
**MARKET**

Year	Banks	% Growth	Branches	% Growth	Deposits (1,000s)	% Growth	Deposits/ Institution	% Growth	Median House Price	% Growth
2010	7,821	-4.7	98,515	-1.1	7,675,620,512	1.5	981,412	6.3	189,830	-2.95
2009	8,185	-3.1	99,550	0.9	7,559,615,705	7.6	923,594	11.0	195,600	-5.15
2008	8,441	-1.9	99,164	1.9	7,025,791,283	4.8	832,341	6.9	206,230	-7.38
2007	8,605	-1.9	97,274	2.7	6,702,052,747	3.9	778,856	5.9	222,670	0.22
2006	8,767	-1.0	94,752	2.9	6,449,863,880	8.7	735,698	9.8	222,190	6.06
2005	8,856	-2.4	92,043	2.5	5,933,762,988	8.6	670,027	11.1	209,490	10.38
2004	9,066	-2.1	89,785	2.2	5,464,782,399	6.5	602,778	8.7	189,790	9.37
2003	9,256	-2.4	87,790	1.4	5,132,110,038	11.4	554,463	14.0	173,520	7.67
2002	9,474	-3.0	86,578	0.6	4,606,091,939	6.5	486,182	9.6	161,150	7.09
2001	9,757	-3.7	86,069	0.7	4,326,207,001	8.1	443,395	12.0	150,480	6.96
2000	10,119	-2.2	85,492	1.4	4,003,744,079	5.8	395,666	10.5	140,690	6.70
10 Year Change	****	-29.4	*****	15.2	*****	91.7	*****	248.0	*****	28.6

- Banking statistics include deposits in domestic offices (50 states and DC), Puerto Rico, and U.S. Territories. Banking statistics are as of 6/30 of stated year.
- Housing statistics are a four-quarter average derived FHFA Housing Price Index

**APPENDIX 2**  
**KEY REGULATORY CHANGES IN THE US BANKING INDUSTRY**

**Riegle-Neal Interstate Banking and Branching Efficiency Act of 1994**

- Permits adequately capitalized and managed bank holding companies to acquire banks in any state one year after enactment.
- Concentration limits apply and CRA evaluations by the Federal Reserve are required before acquisitions are approved.
- Beginning June 1, 1997, allows interstate mergers between adequately capitalized and managed banks, subject to concentration limits, state laws and CRA evaluations.
- Extends the statute of limitations to permit the FDIC and RTC to revive lawsuits that had expired under state statutes of limitations.

**Gramm-Leach-Bliley Act of 1999**

- Repeals Glass Steagall Act of 1933.
- Modifies Bank Holding Company Act to allow affiliations between banks and insurance underwriters.
- Prohibits state actions that may prevent bank-affiliated firms from selling insurance on an equal basis with other insurance companies.
- Law creates new financial holding company authorized to engage in: underwriting and selling insurance and securities, conduction both commercial and merchant banking, investing in and developing real estate and other “complementary activities”
- Amends the Community Reinvestment Act to require that financial holding companies cannot be formed before their insured depository institutions receive and maintain a satisfactory CRA rating.
- Requires public disclosure of regulatory relief to small institutions in the shape of reducing the frequency of their CRA examinations if they have outstanding or satisfactory ratings.
- Prohibits affiliations and acquisitions between commercial firms and unitary thrift institutions.
- Significant changes to the Federal Home Loan Banking System. Eases membership requirements and loosens restrictions on the use of FHLB funds.