

THE MARKET RESPONSE TO BIDDERS OF BANK MERGERS: COMPARING  
RECESSIONARY AND EXPANSIONARY PERIODS

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**Abstract**

This thesis compares the market response to bidding banks of a merger in an expansionary period and a recessionary period upon the announcement of that merger. Bidding banks tend to see negative gains upon announcement of a merger. With the recent financial crisis, this thesis hypothesizes that in a recessionary period bidding banks will experience more negative gains than in an expansionary period due to the market's risk aversion during an economic recession and the lack of shareholder wealth maximization by management. Twenty-three bidding banks are examined to gauge the market's response to the bidding banks upon the announcement of a merger. To conduct this study, two methodologies are applied: Tobin's q and the Capital Asset Pricing Model. The results do not uphold the hypothesis showing no enhanced losses to bidding banks in the recession period. This thesis attempts to see if a recessionary period affects the way the market responds to bank mergers.

KEYWORDS: (Bank Merger, Bidder Returns, Recession)



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## CHAPTER I

### INTRODUCTION

George Santayana, an American philosopher, once said, “Those who cannot remember the past are condemned to repeat it.” In 1929, the United States experienced a grueling time in the face of financial and economic turmoil. As a result, Congress passed certain regulations and laws pertaining to financial institutions to help repair the economy. However, throughout the 20<sup>th</sup> century the system was eventually deregulated and America’s financial structure, a.k.a the men on Wall Street, abused its free market system.

Now, for the past three years, the United States has witnessed one of the largest financial crises since the Great Depression of 1929, and history came very close to “repeating itself.” In 2007, due to the sub-prime mortgages and the bursting housing bubble, among other economic factors, the U.S. underwent a meltdown of its financial system and found itself on the brink of a deep recession. Large financial institutions were heavily invested in mortgage-backed securities and when subprime mortgage payment delinquency rates increased drastically, the banks found themselves in enormous trouble.

Lehman Brothers was the first bank to go under. At the immediate sign of this, then U.S. Treasury Secretary Henry Paulson realized Merrill Lynch was next in line and initiated an arrangement for Bank of America to buy out Merrill Lynch, in hopes of preventing complete destruction of the financial system. This was just the beginning.

Bank of America discovered later that by buying out Merrill Lynch, they had taken on an enormous extra amount of debt than they had initially calculated. Despite pressure from Paulson, how could B of A rush into a merger of such magnitude (paying an all-stock deal of \$50 billion dollars) without fully reviewing Merrill's books? Could it be that Bank of America's CEO Ken Lewis was too blinded by his desire for power and control over a prestigious investment bank such as Merrill Lynch to really see, or care to see, the potential costs to shareholders? This high profile bank merger of one commercial bank, B of A, essentially "saving" an investment bank, Merrill Lynch, sparks the idea that bank mergers in a time of financial turmoil may be motivated differently, and therefore should see a different market response as compared to those in a more stable economy.

Current research shows bidding firms have on average negative gains upon announcement of a merger, while target firms have positive gains upon announcement. However, in a recessionary period managers may have ulterior motives. Instead of engaging in a merger to enhance the value of the firm, reduce costs, or create revenue enhancement, managers may be motivated by power and the desire to have larger resources at their disposal; they may also find better cheaper opportunities to buy out a company. In the case of B of A and Merrill Lynch, Merrill was not cheap; however, B of A had wanted to buy out Merrill for a long time, and finally, when Merrill found itself in financial distress, B of A saw an opportunity. Again, however, was B of A doing the right thing for its shareholders? In addition, shareholders may recognize these ulterior motives and, as a result, the market should react poorly to the bidder. In a recessionary period targets are more likely to have poor financial standing, and therefore the bidder takes on a lot more debt and risk in an unstable period. As a result, the market should

respond favorably to the target because it is saved from going bankrupt, and therefore its shareholders are saved from incurring a loss.

This paper hypothesizes that because of different behavior and motives in a time of economic recession, the market response to a bidding firm and a target firm engaged in a bank merger will hold the same relationship of experiencing losses and gains, respectively, but that those changes will be increased significantly. However, this study focuses solely on the bidding firms. The bidding firm will see a significant increase in losses. To test this hypothesis the reader will need to understand necessary background, theory and past literature, and therefore the paper will be organized as follows.

The current chapter continues with a section on the historical background of U.S. banking regulation. Deregulation was an important occurrence for bank mergers, and therefore three areas will be discussed: bank branching, merger regulation, and financial service integration.

Chapter II discusses the necessary theoretical applications to understand different elements of a bank merger. These include the efficient market hypothesis, shareholder wealth maximization, agency theory and various elements of merger theory, such as the different benefits a company can see from engaging in a merger. Additionally, it discusses two methods, the Capital Asset Pricing Model and Tobin's  $q$ , which will be used to test the hypothesis. From this chapter, it is evident why managers would want to engage in a merger and what sort of problems might arise when tempted by the wrong motives.

Chapter III examines the recent literature on merger gains. It shows how deregulation spurred banks to merge and as a result what was happening to firms upon announcement and post-merger.

Chapter IV presents the case study at hand, in which a number of bidding banks engaged in mergers are analyzed in two periods: a recessionary period and an expansionary period. First, the collection of data is explained and the gathering process described. Second, the two methodologies used to test the hypothesis are presented with the process of each variable broken down, including how each variable is gathered. The recent literature focuses heavily on combined gains, but this study examines the effects on valuation of the individual bidding firms to discover whether the market responds differently in a recessionary period.

Chapter V analyzes the data resulting from Chapter IV and discusses whether the results support or reject this study's hypothesis. Additionally, it discusses limitations and avenues for further research.

Chapter VI concludes the paper. It first summarizes the paper as a whole and then analyzes the results, reflecting on whether the hypothesis was upheld or refuted and discussing the implications. The remainder of this chapter provides historical background on the laws and regulations of the U.S. banking system.

#### Historical Regulation of the U.S. Banking Industry

The U.S. banking industry dates back to the 18<sup>th</sup> century, and since then an array of laws have been implemented to either regulate, or deregulate, the banking system. A number of those laws are specific to the merging of banks, including laws on intrastate and interstate banking, as well as the right of commercial banks to do business, or merge,

with other banks providing other services and products, such as insurance or investments. At first, the laws implemented were installed to highly regulate the banking industry and consequently damaged the expansion of banks; however, more recently the industry is geared towards a more free market ideal and is seeing deregulation enabling banks to expand and consolidate. Three areas of regulation are discussed: bank branching regulations, regulations pertaining to mergers, and regulation of the integration of different financial services.

Banks in the United States were once very limited geographically due to bank branching restrictions. For a long time, the American banking industry consisted of small independent unit banks and was very limited in expansion. The McFadden Act of 1927 gave states the power to regulate state branching, including branching by national banks.<sup>1</sup> It was the first time banks saw some lifting of restrictions. However, banks were still restricted from interstate branch expansion. They used a loophole to get around these restrictions by using bank holding companies to open multiple banks across states lines. This loophole quickly was immobilized, though, and as a result states were given the right to prohibit bank holding companies from operating banks in their state borders.<sup>2</sup> As a result, interstate banking came to a halt until the 1980s. These branching restrictions generate implications for bank mergers, because they restricted banks from expansion and growth, especially geographically. This changed in 1994.

In 1994, the Riegle-Neal Interstate Banking and Branching Efficiency Act was passed with a tremendous effect on the expansion and growth of the banking industry.

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<sup>1</sup> Daniel C. Giedeman, "The Riegle-Neal Act and Local Banking Market Concentration," *International Advances in Economic Research*, Vol 10, no. 4 (Nov 2004): 329.

<sup>2</sup> Giedeman, 329.

The act allowed interstate mergers between adequately capitalized and managed banks, so that bank holding companies were able to acquire banks in any state. The effect on banking was enormous. Prior to the act, 10 commercial banks operated a total of 30 interstate branches. By 2002, 327 commercial banks operated a total of 21,415 interstate branches.<sup>3</sup> The Riegle-Neal Act allowed not only for banks to expand to other regions of the country, but also for greater consolidation. “The number of institutions with more than \$10 billion in deposits grew from 64 in 1994 to 100 in 2002. Even more significantly, the total amount of deposits at the largest institutions increased from 30 percent of total deposits to almost 60 percent of total deposits.”<sup>4</sup> Due to more consolidation, America experienced a shift from small financial companies to large financial institutions. Because at first mergers were uncommon in the financial industry, it is important to examine the regulation that dictated the relationship of a bidder and a target in the process of a merger.

Since this study analyzes the gains to the bidding firm, it is necessary to understand the relationship between the bidding firm and its target firm, and what sort of regulation exists when a bidding firm attempts to buy a target firm. The Williams Act, passed in 1968, creates new regulations for the bidder in tender offers, with three implications concerning mergers and acquisitions. First, bidding firms are required to report to the Securities and Exchange Commission (SEC) the bidding firm’s business plans concerning the target firm, including disclosure of the method of financing the acquisition (whether it will be paid with cash or stocks). Second, tender offers must

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<sup>3</sup> Giedeman, 330.

<sup>4</sup> Giedeman, 330.

remain open for a minimum of ten days. Lastly, the target's rights are increased through its ability to block or delay tender offers by going to court.<sup>5</sup> These new rules provided managers and investors more information and time so that they may make more educated and informed decisions. While the merger process became increasingly deregulated, new rules from the Williams Act kept mergers and acquisitions on a fair and competitive playing field. While the Williams Act displays more regulation than deregulation, the repeal of the Glass Steagall Act brings us back to deregulation of the banking industry with great implications for bank mergers specifically.

Mergers and acquisitions for any business are essentially a way to grow and expand, and in doing so, eliminate competition. However, at the start of the 20<sup>th</sup> century, the Clayton Act outlawed specific practices pertaining to antitrust policy, including mergers that reduce competition.<sup>6</sup> By the time the depression hit in the late 1920s, the banks were blamed for carelessness and an abuse of the public's trust. This sparked the development of the Glass Steagall Act, also known as the Bank Act of 1933, by Senator Carter Glass and Chairman of the House Banking and Currency Committee, Henry Steagall. The Bank Act prohibited commercial and investment banks from merging or doing business with each other, creating a wall between banking and securities. The Glass Steagall Act was further extended in 1956 with the Bank Holding Company Act. This act put a barrier between banking and insurance. Both of these acts were essentially put in place to prevent banks from becoming too large and to force banks to "stick to the

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<sup>5</sup> Paul H. Malatesta and Rex Thompson, "Government Regulation and Structural Change in the Corporate Acquisitions Market: The Impact of the Williams Act," *Journal of Financial and Quantitative Analysis*, Vol. 28, no. 3 (September 1993): 364-365.

<sup>6</sup> Gary A. Dymski, *The Bank Merger Wave* (New York : M. E. Sharpe, Inc., 1999), 34.

basics of taking deposits and making loans.”<sup>7</sup> While over the years banks used certain loopholes to have some involvement in nonbanking services, it wasn’t until 1999 that commercial banking could finally engage in other areas of the financial industry.

In 1999, the Financial Services Modernization Act, also known as the Gramm-Leach-Bliley Act, allowed banks to engage in other financial services. This act allowed the integration of commercial banking, investment banking and insurance, and would “pave the way for the formation of large financial conglomerates.”<sup>8</sup> It would allow companies to expand and diversify and would create a much larger area for banks to merge. Additionally, banks had access to a much larger clientele base while being able to offer each client a much wider variety of services. It’s easy to see how this act provides many incentives for banks to engage in mergers and acquisitions, and why management would want to integrate with other sectors of the financial industry.

These three topics of branch banking, regulation, and financial service integration illustrate how bank mergers evolved and were deregulated. The large financial institutions that are present in our society today are the direct result of these different deregulations. With less regulation and oversight, large financial institutions made poor investment and lending decisions and no one was there to stop them. The deregulation of the 1990s has great implications for the tumultuous economy that the United States still faces today, making it interesting to examine the affects such an economy would have in the event of a bank merger.

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<sup>7</sup> [www.cftech.com/BrainBank/SPECIALREPORTS/GlassSteagall.html](http://www.cftech.com/BrainBank/SPECIALREPORTS/GlassSteagall.html), accessed on October 30<sup>th</sup>, 2010.

<sup>8</sup> Aigbe Akhigbe and Anne Marie Whyte, “The Gramm-Leach-Bliley Act of 1999: Risk Implications for the Financial Services Industry,” *The Journal of Financial Research*, Vol. XXVII, no. 3 (Fall 2004): 436.

The next chapter discusses the necessary economic theory to provide an understanding of the roles of both the shareholder and managers of a company. It explains theory that is necessary to understanding that relationship and how it plays an important role in decision-making that can be applied to the decisions made in a merger.

## CHAPTER II

### THEORY

Many theoretical applications try to teach businesses how to behave and perform efficiently and effectively. Applied in the real world, these theories do not always hold up; still, firms and corporations can benefit greatly from them. This chapter discusses important theoretical concepts and models that provide necessary background for the subject of bank mergers. The chapter begins by discussing the efficient market hypothesis, followed by shareholder wealth maximization, agency theory, and finally various elements of merger theory. Lastly, the chapter concludes with two models, the Capital Asset Pricing Model and Tobin's  $q$ , which serve as methods to test the current hypothesis.

#### Efficient Market Hypothesis

This study evaluates, in part, whether bank mergers are efficient, and to understand that more clearly, one must examine if markets are efficient. The theory claims that markets are so efficient that it is impossible to make above-average, risk-adjusted returns. In other words, it claims that investors cannot outsmart the market. This proposition is based on the idea that, because stock prices accurately reflect and incorporate all relevant information, investors cannot purchase undervalued stock or sell stock at an inflated price.<sup>1</sup>

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<sup>1</sup> Zvi Bodie, Alex Kane, and Alan J. Marcus, *Essentials of Investments* (New York: McGraw-Hill/Irwin, 2008), 232.

A number of factors are assumed to be true for the efficient market hypothesis. First, no single investor can affect the price of any security because many knowledgeable investors analyzing all stocks exist. Second, all information is available to all investors. Third, information on events tends to occur randomly. Lastly, since investors react quickly, prices adjust quickly and accurately. Even so, three versions of the efficient market hypothesis exist: weak-form efficiency, semi-strong form efficiency, and strong-form efficiency. Each is distinguished from the other by having different perceptions of what it means to have all available and relevant information.

The weak form hypothesis states that stock prices already reflect all information that can be obtained by examining market-trading data such as the history of past prices. Therefore, one cannot use historical stock prices to predict future price changes. The weak form implies technical analysis is of no use since past trends and patterns remain nonexistent.

The semi-strong form hypothesis states that all publicly available information must be reflected in the stock price. Publicly available information includes balance sheet composition, earnings forecast, and accounting practices, to name a few. The semi-strong form asserts that this information is reflected immediately in the stock price and that fundamental analysis cannot produce excess returns.

The strong form states that stock prices reflect all information relevant to the firm, including information available only to company insiders. This is the most extreme form of the efficient market hypothesis, because it is unrealistic to believe access to this type of insider information exists or is easily attainable. Furthermore, the Securities and

Exchange Commission puts much effort towards preventing people from finding out this insider information.<sup>2</sup>

Many do not accept the Efficient Market Hypothesis, such as the millions of financial managers who are researching and studying the market hoping to beat it. The various forms of the EMH suggest that technical analysis is of no use. However, above average gains do occur in the market, suggesting that the market is not always efficient. Whether or not the market is efficient, however, managers must remember their assignment to act in the best interest of the shareholders, which is taught in theory and tested in reality.

#### Shareholder Wealth Maximization

Embedded in corporate culture, companies of all products and services have one main objective in common: to maximize shareholder wealth. Taught in theory and challenged in practice, companies who follow this goal often succeed, compared to companies who operate with motives outside this shareholder wealth maximization. Therefore, managers of a bank should engage in a bank merger when it is projected to benefit the shareholders. It is important to understand shareholder wealth maximization, because decisions of managers should be in the best interests of the shareholder, including the engagement in a merger.

Shareholders of a company are the owners of that company. The company is managed and run by a collection of managers. Theoretically, those managers make decisions for the company only if they are in the best interest of the shareholders. The managers' main goal is to maximize the shareholders' wealth by achieving the highest

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<sup>2</sup> Bodie, Kane and Marcus, 235.

possible value for the firm.<sup>3</sup> In theory, shareholder wealth maximization provides the primary motivation for all company decision making, however sometimes the managers' self interest takes over the primary motivation, which can be detrimental to the company. When this happens, agency costs (discussed later) are incurred, first because managers do not attempt to maximize the firm value, and second because the shareholders incur costs to monitor the managers and restrict their actions.<sup>4</sup> This concept of maximizing shareholder wealth is vital, because a merger can often take place between two companies and either one or both firms do not act in the best interest of the shareholders. For example, an offer may be made to a target firm to merge with the bidding firm. While this offer may be attractive to the shareholders of the target firm, it may be unpleasant to the present managers of the target firm who risk being fired or replaced. Therefore, the target managers may try to refuse or divert a merger with another firm, despite possible value enhancement for the firm and its shareholders. While shareholder wealth maximization constitutes the primary objective in the relationship between the shareholder and the managers, one can see how different interests for the two can develop. The relationship between the shareholders and management is essential to a firm, and therefore is further analyzed to show how problems and conflicting interests between the two parties may arise.

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<sup>3</sup> Stanley B. Block and Geoffrey A. Hirt, *Foundations of Financial Management* (New York: McGraw-Hill/Irwin, 2008), 12.

<sup>4</sup> Richard A Brealey, Stewart C. Myers, and Franklin Allen, *Principles of Corporate Finance*, (New York: McGraw-Hill/Irwin, 2011), 13.

## Agency Theory

The relationship between the shareholders and managers of a firm is geared towards shareholder wealth maximization, as just discussed. However, at times the interests of either party may veer off course. Agency theory discusses the problems that can arise in this business relationship and how interests might change. It is important to assess these problems to explain some results in the current study, and why it may be likely that some bank mergers do not result in added value for the firm. First, however, one needs to understand the business relationship between the shareholder and managers.

The shareholder (the principal) is an owner of the company and therefore delegates authority to the managers. The manager (the agent) is an employee of the company, and therefore the one to whom authority is delegated.<sup>5</sup> The principal-agent relationship may be applied in many settings, however for the purpose of this study it will be applied to the shareholder-management relationship. The principal provides the company with risk capital through the purchase of stock in the company. The agent is then expected to use that capital in a way that coincides with the best interests of the principal. Although the agent essentially works for the principal, often a large disconnect exists between the two parties, causing their interests to deviate.

At times, agents may develop interests other than those in alignment with the principal. This can be due to information asymmetry. Despite the principal being an authority to the agent, the agent almost always has more information regarding the firm than the principal, because the agent is the one directly managing the resources of the company. Therefore, agents often exploit their knowledge of information to enhance

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<sup>5</sup> Charles W. L. Hill and Gareth R. Jones, *Strategic Management Theory* (Boston, MA: Houghton Mifflin Company, 2007), 381.

their own welfare at the expense of the principal.<sup>6</sup> For example, management, who has authority over large amounts of resources and corporate funds, may use that control to engage in a more lavish lifestyle, such as traveling in private jets or hosting expensive parties and events. Abusing power and control is just one agency problem.

Many agency problems exist. These problems include reduced effort, perquisites, and empire building.<sup>7</sup> Reduced effort occurs when management fails to put forth its full effort towards finding truly valuable projects for investment. This task can involve a lot of time and effort and management may be tempted to ignore it. Perquisites, also known in layman's terms as *perks*, are private benefits. These private benefits can be anything from tickets to sporting events or business meetings conveniently located at luxurious hotels and resorts. Lastly, empire building occurs when management buys another business to increase the size of the company. By doing so, management increases its power and authority over a much larger set of resources and funds. This temptation can cause management to overlook an investment with a negative net present value. While the investment increases management's resources and funds in the short run, an investment with a negative net present value will be detrimental to the company and its shareholders in the long run.<sup>8</sup> Despite the agency problems that may arise, many potential benefits exist from mergers and are most often realized when management acts in the shareholders' best interests.

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<sup>6</sup> Hill and Jones, 382.

<sup>7</sup> Brealey, Myers and Allen, 291.

<sup>8</sup> Brealey, Myers and Allen, 291.

## Merger Theory

The United States has seen an unprecedented level of mergers and acquisitions over the past fifteen years, especially in the banking industry. Therefore, it is important to have an understanding of why companies engage in mergers. First, the primary goal of a merger--potential added value--is discussed, followed by several potential benefits a company may incur from a merger.

It is important to assess whether the merger will result in merger synergies for the merged firms. When managers first contemplate a merger, their number one concern is whether or not the merger will result in an economic gain. An economic gain is present if the two firms are worth more together than they are apart.<sup>9</sup> The first step is to find the change in the present value of the combined firms by taking the present value of the combined firm minus the present value of the individual firms.

$$\text{GAIN} = \text{PV}(\text{AB}) - (\text{PV}(\text{A}) + \text{PV}(\text{B}))$$

The gain is the change in the present values of Firm A (bidder) and Firm B (target). If the gain is positive then the merger might be justified. However, the managers must also take into consideration the cost of the merger.

When two firms merge, the managers must consider the associated costs of the merger. Therefore, step two is computing the net present value, which is the difference between the gain from step one and the associated costs the combined firm will incur.<sup>10</sup>

$$\text{NPV} = \text{Gain} - \text{Cost}$$

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<sup>9</sup> Brealey, Myers and Allen, 801.

<sup>10</sup> Brealey, Myers and Allen, 801.

Assuming the merger transaction is paid in cash, the cost to the bidder firm of buying the target firm is the cash paid minus the value of the target firm. Therefore, the net present value can be calculated as:

$$\text{NPV} = \text{Gain} - (\text{cash paid} - \text{PV(B)})$$

If the net present value is positive, then the managers should continue with the merger. According to the shareholder wealth maximization theory discussed earlier, managers would only opt for a merger if the net present value were positive.

Mergers can be characterized as either horizontal or vertical. Horizontal integration occurs when two firms in the same line of business combine entities, while vertical integration involves the merging of firms at different stages of production.<sup>11</sup> This paper focuses on the benefits of horizontal integration because it pertains to bank mergers. Many benefits arise from horizontal integration, including economies of scale, economies of scope, complementary resources, and elimination of inefficiencies. Still, many downfalls exist as well, including diseconomies of scale.

Economies of scale are achieved by selling more of the same product. When two banks merge, economies of scale result, because the efficiency of production increases as the number of goods being produced increases.<sup>12</sup> Typically, banks can best achieve these economies of scale through geographical expansion. Economies of scope exist when the average total cost of production decreases as a result of increasing the number of different goods produced. When two banks merge, they share resources common to different

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<sup>11</sup> Brealey, Myers and Allen, 792.

<sup>12</sup> Brealey, Myers and Allen, 795.

products and therefore achieve economies of scope. Both economies of scale and scope are common motives for managers to engage in mergers.

While a firm can realize economies of scale through a merger, it is important to note that a merger can also result in diseconomies of scale. Diseconomies of scale occur when a company grows so large that the cost per unit increases. We find evidence of this from Stimpert and Laux (2010). The authors discover that while a firm realizes economies of scale as it grows, it reaches a point of becoming too big, in which it becomes less efficient. Therefore, Stimpert and Laux speculate that the largest banks encounter higher average costs and lower profitability.<sup>13</sup> This implies that mergers may not always result in efficiency gains and therefore may be motivated by other factors such as agency problems discussed earlier.

Returning to the benefits of mergers, managers may like to merge with other firms because of complementary resources. Typically, a large firm acquires a small firm. The small firm may fulfill a need of the large firm, such as a unique product, while the large firm can supply the production levels that the small firm needs. This would mean that the large firm complements the small firm and vice versa, making them more efficient and beneficial to each other as a merged entity.<sup>14</sup>

Lastly, mergers can cause the combined firms to eliminate inefficiencies, which can be very attractive to the managers and shareholders of a firm. Many firms have unexploited opportunities to cut costs and increase sales and earnings. For example, the small firm may be lacking in good management. When the large firm merges with the

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<sup>13</sup> Larry Stimpert and Judy Laux, "Does Size Matter? Economies of Scale in the Banking Industry," *Working Paper* (2010): 7.

<sup>14</sup> Brealey, Myers and Allen, 796.

small firm, it replaces the small firm's management and executes a number of things more efficiently than previous managers, such as forcing painful cuts or reorganizing the company's operations.<sup>15</sup> While management may use the motives discussed to justify a merger, however, they should always confirm whether the merger maximizes shareholder value.

#### Capital Asset Pricing Model and Tobin's q

Having discussed key theoretical concepts, it is necessary to have pertinent knowledge of the methods being used to test the study's hypothesis. The first method applied is the Capital Asset Pricing Model. This model relates the risk-return trade offs of individual assets to market returns to find a security's expected returns.<sup>16</sup> The CAPM linear relationship is a market risk premium model, which assumes that for investors to take on more risk, they must expect greater returns. Therefore, investors want higher returns than they can receive from a riskless investment. It aims to find the expected returns of a company given its beta value, the market return and the risk-free rate. The linear relationship is as follows:

$$\text{Expected Returns} = \text{Risk-Free Rate} + \text{Beta} * (\text{Market Return} - \text{Risk Free Rate})^{17}$$

By using the risk-free rate, the investor can gauge the amount of returns they should receive over investing in a riskless asset. The risk-free rate is commonly represented by a short term U.S. Treasury bill, such as the 3-month Treasury bill, which is used in the current study. The expected returns also depend heavily on the beta coefficient. Beta is a

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<sup>15</sup> Brealey, Myers and Allen, 796.

<sup>16</sup> Block and Hirt, 359.

<sup>17</sup> Block and Hirt, 361.

measure of the riskiness of an investment relative to the market.<sup>18</sup> It is essentially the slope of the linear relationship, and measures the volatility of a stock compared to the overall market returns. For example, if a stock has a beta value of 3, when the market goes up, the stock will go up three times as much; however, when the market goes down, the stock will go down by three times as much. Therefore, beta times the market risk premium (market return – risk-free rate) plus the risk-free rate gives the investor a good estimate of expected returns on an individual security based on historical prices. This model is necessary to compute the abnormal returns of the bidding banks in Chapter IV and is analyzed in Chapter V.

In addition to the Capital Asset Pricing Model, Tobin's q is used as a method to test the current hypothesis. The study hypothesizes that during a recessionary period, bidding banks in a merger will experience more losses than they do in an expansionary period. In this study, we look at the market response to bank mergers. The Tobin's q model assesses how the market responds to a company investing in new capital. Therefore, this model can help gauge whether the market responds negatively to a company investing in a new company through a merger. Tobin's q is the ratio of market value to the replacement cost of a company.

$$q = \frac{\text{Market Value}}{\text{Replacement Cost}}$$

The market value represents the value of the economy's capital as determined by the stock market.<sup>19</sup> Essentially it is the price of a stock multiplied by the shares outstanding issued by the company. The replacement cost is the price of the company's

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<sup>18</sup> Block and Hirt, 362.

<sup>19</sup> N. Gregory Mankiw, *Macroeconomics* (New York: Worth Publishers, 2007), 495.

capital if it were purchased today.<sup>20</sup> Therefore, in this study we use the book value of a company for the replacement cost. The ratio measures how excited the market is when a company invests in new capital. If the q value is greater than one, then the market values new capital more than it values the book value of the company, or its replacement cost. If the q value is less than one, then the market values the book value more than installed capital. Tobin's q is a valid method for this study, because it gauges the market response to new capital, which in this study is investing in a new company. In a recessionary period, stock prices should decrease, thus market value should decrease and result in a lower Tobin's q value. Chapter IV uses this method to test how the market responds to bidding banks on and around the announcement of a merger.

These theoretical concepts provide a solid base and understanding for the current study. The Efficient Market Hypothesis reveals that the market reflects all available and relevant information, however, in society, markets do not always act efficiently. Shareholder wealth maximization explains the primary goal of management; still, it is evident from agency theory that management often diverges from that goal. A main goal in a merger is to add value, because it is in the best interest of the shareholder. However, this current study evaluates how the companies of a merger benefit (or do not benefit) when markets act inefficiently, a possible outcome in a recessionary period. In a recessionary period, it is plausible that management may have ulterior motives when engaging in a merger and as a result agency problems can be enhanced. Therefore, the gains of the individual firms of a merger during a recessionary period may result in different gains than in a non-recessionary period. To test the hypothesis, the Capital

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<sup>20</sup> Mankiw, 495.

Asset Pricing model and Tobin's  $q$  are valid methods to gauge and analyze the market response to bidding banks. The next chapter discusses past literature on bank mergers and specifically focuses on the gains associated with the merging of bank firms.

## CHAPTER III

### LITERATURE REVIEW

Banking in the United States has evolved over the past couple of decades. What was once an industry consisting of small state banks has now transformed into an industry of nation wide banks so large that some are considered “too big to fail.” Due to recent deregulation and such acts as the Riegle-Neal Interstate Banking and Branching Efficiency Act of 1994, a spur of bank merger waves has occurred which in turn has prompted a vast amount of literature on the subject of bank mergers and acquisitions. The literature on bank mergers includes merger motives and the associated gains of a merger, among other topics. For the purpose of this study, the current chapter focuses primarily on the literature pertaining to merger gains.

The literature on merger gains is predominantly studied using two approaches. The first method is to analyze merger gains using accounting data to assess the pre- and post-merger performance. The second method looks at stock price performance on the announcement date, or leakage date, of the bank merger to assess the market reaction and how the market values the individual bank merger upon announcement. Accounting data is used to analyze merger performance, while abnormal returns are used to analyze the market valuation of the merger. In some case studies, both methods are used and cross sectional analysis performed. This chapter begins by discussing literature written from 1989 to 2001 and finishes with bank merger literature from 2005 to 2009.

## Early Bank Literature

One main aspect separates the early (1989-2001) literature from the recent (2005-2009) literature. The earlier literature finds no significant enhanced value or gains to the combined firms of the merger, while some of the later literature starts to find benefits, such as increased shareholder wealth. Hannan and Wolken (1989), Houston and Ryngaert (1994), and Pillof (1996) all find no significant gains realized for the two firms, the bidder and the target, combined. Hannan and Wolken investigate whether or not the policy of liberalization in the banking industry, due to the lifting of geographic restrictions, enables mergers to realize new synergies and the benefits of geographic diversification. In their study, Hannan and Wolken use stock price analysis to evaluate 69 target firms and 43 bidding firms. When examining stock price performance, a merger is assumed to create value if the combined value of the bidder and target increases on or around the announcement of the merger.<sup>1</sup> Using mean abnormal returns and cumulative abnormal returns, they find that shareholders of target firms have significant abnormal returns, but bidding firms experience significant losses.<sup>2</sup> These findings are consistent with literature prior to 1989. Unlike previous studies however, the authors test for combined gains of the bidding and target firms and find no significant increase in

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<sup>1</sup> Joel F. Houston, Christopher M. James, and Michael D. Ryngaert, "Where Do Merger Gains Come From? Bank Mergers from the Perspective of Insiders and Outsiders," *Journal of Financial Economics*, Vol 60, no. 2 (May 2001): 290.

<sup>2</sup> Timothy H. Hannan and John D. Wolken, "Returns to Bidders and Targets in the Acquisition Process: Evidence from the Banking Industry," *Journal of Financial Services Research*, Vol 3, no. 1 (1989): 14.

shareholder wealth for the combined firms.<sup>3</sup> Instead they find that the “acquisitions in the banking industry on average have resulted in a transfer from the shareholders of bidding to the shareholders of the target banking organizations.”<sup>4</sup> When splitting the merger groups into low-capitalized target firms and high-capitalized target firms, Hannan and Wolken find that bank mergers with low-capitalized target firms experience significantly positive combined wealth effects, while those in the high-capitalized group experience significantly negative combined wealth effects.<sup>5</sup> This might suggest that taking on high-capital firms in a merger makes it harder for the combined firm to cut costs.

Similarly to Hannan and Wolken, Houston and Ryngaert (1994) use stock price analysis to evaluate the overall gains from bank mergers and to examine whether “the market believes that bank acquisitions are value enhancing.”<sup>6</sup> After computing the total abnormal returns for the combined firms, the authors find that the returns are only slightly positive and do not differ significantly from zero. In addition, they find that over half the deals have negative abnormal returns. Therefore, they conclude that the average merger does not create value, and in fact half the time is value decreasing.<sup>7</sup> Houston and Ryngaert go a step further to try to explain the factors influencing total merger returns. They perform a cross sectional regression including variables such as overlap, the market

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<sup>3</sup> Timothy H. Hannan and John D. Wolken, “Returns to Bidders and Targets in the Acquisition Process: Evidence from the Banking Industry,” *Journal of Financial Services Research*, Vol 3, no. 1 (1989): 11.

<sup>4</sup> Hannan and Wolken, 14.

<sup>5</sup> Hannan and Wolken, 13.

<sup>6</sup> Joel F. Houston and Michael D. Ryngaert, “The Overall Gains From Large Bank Mergers,” *Journal of Banking & Finance*, Vol. 18, no. 6 (1994): 1157.

<sup>7</sup> Houston and Ryngaert, 1162.

ratio, net return on assets, and other performance measures. They find that the market responds favorably to merger announcements by firms with a good past operating performance as well as to mergers that contain a higher degree of overlap.<sup>8</sup> The authors define overlap as “the percentage of offices of the combined firms that can be closed as a result of a merger.”<sup>9</sup> Overlap is seen positively, because it has greater potential for cost savings due to the fact that the combined firms can then combine branches in similar geographic areas and reap cost savings by reducing the number of employees and other associated costs, such as closing branch offices. Lastly, Houston and Ryngaert find that the return to bank mergers is related to whether the bidder uses cash or stock to finance the merger. When a merger is financed primarily with stock, the merger results in negative gains. Interestingly though, the use of conditional or preferred stock results in more positive returns than common stock.<sup>10</sup>

While Houston and Ryngaert use performance measures as variables in their regression, their study is primarily focused on the stock price performance through analyzing abnormal returns to the bidder and target, and to the two firms combined. Pillof (1996) carries out a study to combine both methods of comparing accounting data pre- and post-merger by evaluating stock price performance upon merger announcement to examine whether there are consistent implications of merger gains between both methods. In concurrence with Hannan and Wolken, and Houston and Ryngaert, Pillof finds no gains for the combined firms. In addition, he runs a regression of fourteen

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<sup>8</sup> Houston and Ryngaert, 1174.

<sup>9</sup> Houston and Ryngaert, 1165.

<sup>10</sup> Houston and Ryngaert, 1169.

variables and finds that abnormal returns are unrelated to changes in performance. This implies that the market is unable to forecast performance gains or losses when a merger is announced.<sup>11</sup> While this constitutes the main focus, the author also discovers other findings from running the regression. Like Houston and Ryngaert, Pillof finds that the market values mergers that have the most geographic overlap, because they have the greatest potential for cost savings. Pillof also finds that abnormal returns are positively related to expense reduction, showing that mergers can create more efficiency.<sup>12</sup> While the author does find relations between performance measures and other variables, and between abnormal returns and other variables, he concludes that the relation between performance measures and abnormal returns is inconsistent and therefore provides “direct evidence that market expectations are unrelated to subsequent merger related gains.”<sup>13</sup> The previous three studies find no increased value to a merger upon announcement; however, it appears that the market does value overlap (because it can create greater cost savings for the combined bank firms) and that mergers can increase efficiency.

As we now look at two other articles in 2001, the reader will begin to see different outcomes for merger gains. DeLong (2001) analyzes the abnormal returns between geography and activity diversified mergers, and geography and activity focused mergers. The author defines a diversifying bank merger as one that involves merging with a firm that is engaged in either different activities (activity diversifying) or is located in a

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<sup>11</sup> Steven J. Pillof, “Performance changes and shareholder wealth creation associated with mergers of publicly traded banking institutions,” *Journal of Money, Credit, and Banking*, Vol. 28, No. 3 (August, 1996): 309.

<sup>12</sup> Pillof, 308.

<sup>13</sup> Pillof, 309.

different market (geographic diversifying).<sup>14</sup> Similarly, a focused merger is one that involves staying within its own market and industry. Although in theory both diversified and focused mergers could create value, DeLong finds that mergers focusing both activity and geography enhance stockholder value by three percent, but the other types of bank mergers (geography diversifying, activity diversifying, solely activity focusing, etc.) do not create value.<sup>15</sup> The author runs a regression using twelve variables and solving for cumulative abnormal returns. Two hundred and eighty domestic U.S. mergers from 1988 to 1995 are used. Interestingly, in 1990 investors bid down the price of mergers that focus both geographically and activity. During this time, the United States was in a recession, which the author defines as an eight-month contraction of real gross domestic product.<sup>16</sup> DeLong's results show that in 1991, after the eight-month contraction, focused bank mergers were appreciated again, suggesting that in a recession diversified bank mergers are more attractive to the market, because it spreads risk.<sup>17</sup> It is important to keep in mind that this finding was in 1991, before the impact of deregulation hit the banking industry. Therefore, the study presented in the current paper hypothesizes such mergers will not be as attractive during a contraction, that the market responds more heavily to the risk involved than to any potential benefits.

Houston et al. (2001) study sixty-four large bank mergers over a twelve-year period from 1985 to 1996. They find that more recent mergers in the twelve-year period

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<sup>14</sup> Gayle L. DeLong, "Stockholder Gains from Focusing versus Diversifying Bank Mergers," *Journal of Financial Economics*, Vol. 59, no. 2 (2001): 225.

<sup>15</sup> DeLong, 240.

<sup>16</sup> DeLong, 236.

<sup>17</sup> DeLong, 236.

result in positive revaluations of the combined firm's value.<sup>18</sup> This is possibly due to more deregulation of the banking industry. The authors examine the sample of bank mergers from the perspective of the managers who are making projections for the merger, and also of analysts and investors who are valuing the merger in the market place. They do this by calculating the expected net present value of the merger's net benefit management has projected.<sup>19</sup> From this calculation Houston et al. discover that it is the cost savings that are related to merger gains and that projected revenue enhancement, which is thought to enhance the value of a merger, is not attributable to the merger gains.<sup>20</sup>

Thus far, the earlier literature finds no significant gains for the combined firms of a bank merger but shifts in the last study to finding positive revaluations for the combined firms. Results also show that the market values overlap and that mergers can increase efficiency for the combined firms. Focused mergers enhance value, though interestingly the literature finds that, when in a recessionary period, diversified bank mergers are more attractive to the market because risk is more widely spread. Lastly, we show consistent findings that targets have significant gains upon announcement while bidders have negative gains. This information is important to the current study, which analyzes individual bidders and compares them in a recessionary period and an expansionary period. The next section focuses on more recent bank merger literature and discovers divergence in results from the earlier literature.

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<sup>18</sup> Joel F. Houston, Christopher M. James, and Michael D. Ryngaert. 2001. Where do merger gains come from? Bank mergers from the perspective of insiders and outsiders," *Journal of Financial Economics*, (May, 2001): 287.

<sup>19</sup> Houston, James and Ryngaert, 295.

<sup>20</sup> Houston, James and Ryngaert, 304.

### More Recent Literature

More recent literature further investigates whether mergers create or destroy value and what factors most influence those gains and losses. It also investigates geographically diversified bank mergers and activity diversified bank mergers, and we start to see a shift from literature that once favored focused mergers to ones now that favor diversified mergers.

Early literature mostly involves studies in the 1980s and early 1990s, however during the 1990s full interstate banking deregulation occurred. As discovered earlier in the chapter, any value creation from a merger was related to the cost savings from overlap of merging bank branches. Becher and Campbell (2005) find that bank mergers in the post deregulation of the 1990s (defined as after 1996 because the Riegle-Neal Act of 1994 wasn't implemented until that year) fail to create value and that mergers with more overlap are actually related to significant losses.<sup>21</sup> Becher and Campbell compare two groups of bank mergers. The first group is from 1990 to 1996 while the other group is from 1997 to 1999, which is before and after the time that the Riegle-Neal Act was implemented. Their goal is to examine whether an economic shock (the Riegle-Neal Act) can significantly impact or alter an industry structure.<sup>22</sup> The authors find from regression analysis in the pre-Riegle-Neal Act group that the more overlap from the merger, the higher the combined returns, an outcome that is consistent with previous literature. However, in the post-Riegle-Neal Act group, larger mergers with more overlap result in

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<sup>21</sup> David A. Becher and Terry L. Campbell, "Interstate Banking Deregulation and the Changing Nature of Bank Mergers," *Journal of Financial Research*, Vol. 28, no. 1 (Spring, 2005): 19.

<sup>22</sup> Becher and Campbell, 2.

lower combined and bidder returns.<sup>23</sup> Becher and Campbell find that the economic shock does affect the banking industry. In addition they find that analysts and investors more strongly reward geographic diversification and are less keen on geographically focused mergers.<sup>24</sup> This refutes the finding by DeLong in the earlier literature.

Similar to Becher and Campbell, Cornett et al. (2006) analyze bank mergers before and after the Riegle-Neal Act, but contrary to their results, Cornett et al. find that performance gains are larger after the implementation of the Riegle-Neal Act. Cornett et al. analyze the operating performance around bank mergers. They distinguish between activity- and geographic-focused and diversified mergers, as well as look at the relation of the performance gains to revenue enhancement and cost reduction, two widely used claims for mergers of the managers of both the bidder and target. Operating performance of merged banks is found to increase significantly after a merger. In addition, the authors discover that “large bank mergers produce greater performance gains than small bank mergers, activity focusing mergers produce greater performance gains than activity diversifying mergers, and geographically focusing mergers produce greater performance gains than geographically diversifying mergers...”<sup>25</sup> They also find that improved performance is the result of both revenue enhancements and cost reduction, which refutes the earlier literature that concluded revenue enhancement had no relation to performance gains.<sup>26</sup>

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<sup>23</sup> Becher and Campbell, 15.

<sup>24</sup> Becher and Campbell, 19.

<sup>25</sup> Marcia M. Cornett, Jamie J. McNutt, and Hassan Tehranian, “Performance Changes Around Bank Mergers: Revenue Enhancements versus Cost Reductions,” *Journal of Money, Credit & Banking*, Vol. 38, no. 6 (2006): 1015.

<sup>26</sup> Cornett, McNutt, and Tehranian, 1015.

Other literature takes a more managerial perspective approach to analyze merger gains. Gupta and Misra (2007) hypothesize that the relations among aggregate merger gains, deal size, and bid premiums are asymmetric across value-enhancing versus value-reducing transactions. They hypothesize how value-maximizing managers and value-reducing managers would make merger decisions and what the corresponding merger gains would be with relation to deal size and bid premium.<sup>27</sup> Some results discovered include: acquiring firms lose, target firms gain, and the value of the combined firms increases on average; combined gains are found to be positive in approximately one-half of the bids, which suggests that mergers are not on average tremendously value enhancing; and target firms make large gains in value-enhancing mergers, while acquiring firms do not lose.<sup>28</sup> After running a regression, the authors also find that their hypothesis holds true, and merger gains, deal size, and bid premium are asymmetric across value-enhancing versus value-reducing transactions.<sup>29</sup>

From the literature reviewed thus far, bank mergers can and do create value; however it is not an overwhelmingly majority that do. Block (2006) wants to find out where bank mergers stand, given the transformation in literature conclusions due to the changing state of the banking industry from deregulation of the 1990s. Using a three-page questionnaire about bank mergers sent to the largest 150 banks in the country, the author finds that of the 130 respondents, 52 percent chose maximization of shareholder wealth as their primary goal for a merger. Block interprets this as a large increase from

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<sup>27</sup> Atul Gupta and Lalatendu Misra, "Deal Size, Bid Premium, and Gains in Bank Mergers: The Impact of Managerial Motivations," *Financial Review*, Vol. 42, no. 3 (2007): 374.

<sup>28</sup> Gupta and Misra, 398.

<sup>29</sup> Gupta and Misra, 398.

previous studies and suggests that disasters such as Enron caused managers to refocus their managerial decisions.<sup>30</sup> He finds that sixty-two percent of bank managers thought there was a positive reaction for the bidding firm, which is contrary to the majority of past literature that finds bidding firms lose and target firms gain.<sup>31</sup> The literature has shown that, where focused mergers were once favored, diversified mergers are now more attractive. Block's study confirms this with 74.1 percent of the respondents saying geographic diversification was preferred to focused mergers (in-state mergers). Block also finds that 53.4 percent of banks chose revenue enhancement over cost reduction (44.8 percent) as their main motivation for a merger.<sup>32</sup> He concludes "the emphasis on revenue generation over cost savings again reflects the current deregulatory environment, where new opportunities exist."<sup>33</sup> This confirms Cornett et al. who show that mergers no longer solely benefit from cost reduction but instead relate to both cost reduction and revenue enhancement. Block further finds that revenue enhancement is the more preferable motivation among larger banks.<sup>34</sup>

As the banking industry evolves, it becomes more common for commercial banks to merge with other firms of the financial sector that offer other services. These services include, but are not limited to, investment banking, asset management, and financial

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<sup>30</sup> Stanley Block, "Bank Mergers and Valuation: An Empirical Study," *Bank Accounting and Finance*, Vol. 20, no. 1 (Dec 2006): 18.

<sup>31</sup> Block, 20.

<sup>32</sup> Block, 20.

<sup>33</sup> Block, 23.

<sup>34</sup> Block, 20.

infrastructure services such as clearance or settlement.<sup>35</sup> Schmid and Walter (2009) extend their study to examine these larger financial conglomerates that are more abundant in our society today. The authors attempt to discover if this activity diversification is value-enhancing or value-destroying in the financial services industry. They attempt this by investigating whether activity diversification is associated with a share price premium or discount. Schmid and Walter discover that activity diversification is associated with a conglomerate discount, meaning that the conglomerate's share price is undervalued.<sup>36</sup> They test this more specifically to investigate whether certain conglomerates are more likely to destroy or enhance value and find that combinations of commercial banking and investment banking, and commercial banking and insurance companies both display a valuation premium.<sup>37</sup> This suggests that some combinations of activity diversification can create value, but the overall average of all activity diversifying conglomerates does not.

The later literature discovers changes from the earlier literature discussed. First, the authors start to see that bank mergers do create value. Second, they find that not only is cost reduction associated with performance gains, but that revenue enhancement is related as well. Lastly, while focused mergers seem to produce greater merger gains, Block finds that managers prefer diversified mergers, and Schmid and Walter discover that some combinations of diversified mergers do create value. While the literature finds shifts over time, it still finds the relationship of the target and the bidder to be the same.

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<sup>35</sup> Markus M. Schmid and Ingo Walter, "Do financial conglomerates create or destroy economic value?" *Journal of Financial Intermediation*, (2009): 193-194.

<sup>36</sup> Schmid and Walter, 214.

<sup>37</sup> Schmid and Walter, 210-211.

The target realizes significant gains while the bidder realizes losses. This study suggests that bidders will still realize losses upon announcement, but bidders will realize a greater loss in a recessionary period than in an expansionary period.

The literature discussed as a whole focuses on many different aspects of the gains of bank mergers, including diversified versus focused mergers. Because of deregulations discussed in the introduction chapter, diversified versus focused bank mergers were of great interest. More importantly, the literature saw significant shifts in results. The bank merger literature shifted from no combined gains to positive combined gains, showing that bank mergers can create enhanced value. The literature also saw a shift in the factors affecting performance. Cost saving was once thought to be the only factor related to merger gains, however recent literature shows that both cost savings and revenue enhancement are related to performance. This was further supported by Block's survey that discovered revenue enhancement as the leading motivation of managers to engage in a merger. Lastly, although not studied in all of the literature discussed, the one consistent result is that bidding firms experience significant losses while target firms experience significant gains.

In the next chapter, this study revisits the individual bank firm gains of the bidding bank in a merger, as previous literature has done, however it analyzes two different periods: a recessionary economic period and an expansionary economic period. Data of individual bidder banks engaged in a merger are collected and analyzed to discover whether different economic times have any influence on gains. If the gains differ significantly in a recessionary period, it may shed some light on whether the motives of managers differ in a recessionary period when engaged in a merger.

## CHAPTER IV

### DATA AND METHODOLOGY

Having reviewed the literature and applicable economic theory, this thesis presents the current study in this chapter. An event study analysis of bidding bank firms involved in a merger is performed to test the hypothesis that bidding banks show more negative gains upon announcement of the merger in a recessionary period than in an expansionary period. The study is performed using stock price performance to gauge the market response of the bidding banks. The chapter is organized as follows. First, an overview of the study is presented and the hypothesis revisited. Second, a recessionary period is distinguished from an expansionary period. Fourth, the data collected are presented and the gathering process explained. Lastly, the two methods for analyzing the data are described.

#### Data

The purpose of this study is to examine the market response of bidding banks when a merger is announced. We know from past literature that bidding banks tend to, on average, incur significant losses. We add to the literature by hypothesizing that bidding banks incur more losses during a recession than those during an expansionary period. We attempt to see whether the market responds less favorably to mergers during a recession or if there is no significant difference. Therefore, we use methods that gauge how the market values and responds to these bank mergers. To do this, we look at the

abnormal returns on and around the announcement date of the merger in which each bidding firm is involved. The study is modeled after Hannan and Wolken, discussed in the literature chapter, who focus more heavily on individual bidding and target firms than the other authors discussed.<sup>1</sup> Unfortunately, due to lack of availability of data for target firms, the focus of this study will be solely on bidding firms. Like Hannan and Wolken, this study uses event-study methodology to analyze the abnormal returns using daily stock prices for time periods before, during, and after the announcement date. All firms analyzed are public firms with stock prices found on popular stock exchanges, such as the New York Stock Exchange. With the merging companies and their announcement dates, we then use the Capital Asset Pricing Model to assess the expected returns for the given time frames of the bidding firms in both the recessionary period and the expansionary period. In addition, we use Tobin's q to assess whether the market responds favorably to a company taking on new investment. First, a recessionary period and an expansionary period are distinguished as follows.

The current study adds to the literature by examining merger returns in two different periods: a recession and an expansion. Therefore, to carry out the study, one must define and distinguish between the two. "When the economy experiences a period of falling output, or real gross domestic product, and rising unemployment, the economy is said to be in a recession."<sup>2</sup> Alternatively an expansionary period is one in which output rises and unemployment falls. It is said that a recession is a period of at least two

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<sup>1</sup> Timothy H. Hannan and John D. Wolken, "Returns to Bidders and Targets in the Acquisition Process: Evidence from the Banking Industry," *Journal of Financial Services Research*, Vol 3, no. 1 (1989): 14.

<sup>2</sup> N. Gregory Mankiw, *Macroeconomics* (New York: Worth Publishers, 2007), 252.

consecutive quarters of declining real gross domestic product, however the National Bureau of Economic Research does not follow any one rule, but instead looks at a variety of economic time series and uses its judgment when choosing the starting and ending dates of recessions.<sup>3</sup> Conveniently, the National Bureau of Economic Research has the last four recession periods on the home page of their website. This study uses the most recent recession dated by the National Bureau of Economic Research as lasting eighteen months from December 2007 until June 2009.<sup>4</sup> The previous two recessions before the most recent one are in 2001 and 1990 to 1991. Therefore, the expansionary period chosen for this study is 1995 to 2000, in which the economy has a steady increase in real gross domestic product and a clear decrease in unemployment. Once these time frames are established, banking firms involved in a merger are gathered.

To perform the study, bank firms in the two different time periods are compiled. Lists of merging bank firms are found online on the SS Gold Star website on their message board as well as from journal articles, such as Alan Gart's "The Long Reach of Banking's Acquisition Wave."<sup>5</sup> Additionally, some are found by typing in bank mergers on Google. A total of 21 bank mergers are used; 11 for the expansionary period and 10 for the recessionary period. Next, the announcement dates are found for the banks by again searching on Google for the merger and sifting through news articles. Usually this means typing in a key phrase, such as "Bank of America buys Merrill Lynch," and finding the earliest announcement date. Once the announcement dates are found, the

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<sup>3</sup> Mankiw, 253.

<sup>4</sup> [www.nber.org](http://www.nber.org), accessed November 13, 2010.

<sup>5</sup> Alan Gart, "The Long Reach of Banking's Acquisition Wave," *Mergers and Acquisitions*, Vol. 32, no. 6 (May, June, 1998): 33.

companies are then narrowed down by availability of data. A list of the banks and their announcement dates can be found in Appendix A.

### Methodology

To analyze the returns for the companies, we use the Capital Asset Pricing Model and Tobin's  $q$  discussed in the theory chapter. We use the CAPM to find the returns for each bidding bank for four periods: 90 days prior to announcement date to ensure no leakage of information on the merger, fifteen days prior, the announcement date, and fifteen days after the announcement. These are based on Hannan and Wolken's time periods. We use Tobin's  $q$  to assess how the market gauges a company investing in new capital, which in this case is a new company itself. To find Tobin's  $q$  we determine the market value and book value on and around the announcement dates. First discussed is the Capital Asset Pricing Model, for which we need to find the risk-free rate, the beta value, and the market return for each bank for each time period.

In most studies, the three-month Treasury Bill rate is considered to be interchangeable with the risk-free rate. Therefore, historical three-month T-Bill rates are found on the U.S. Department of the Treasury website under interest rate statistics. They are gathered for each bank for all four time periods. For example, Wells Fargo announced a merger on April 10, 2000, so daily T-bill rates are recorded for 90 and 15 days prior to April 10, 2000, for April 10, 2000 itself, and for 15 days after April 10, 2000. Sometimes these days are not posted so the next closest day is used.

After finding the risk-free rate, beta values are researched. Beta is a measure of the relation of a stock's return to the overall market. In this study, the S&P 500 is used to represent the overall market value. Gathering the beta values for banks are more

difficult. It is possible to locate current beta values for companies, however historical betas can only be found on websites not available to this study. Therefore, individual five-year beta values are calculated for all bidding banks. To calculate beta, five years of monthly stock prices are found on Yahoo! Finance for both the bidding bank and the S&P 500, which is used to gauge market returns. The monthly prices ended on the announcement date month and started on the month five years prior. Only one five-year beta is calculated and used for each bank for all four time periods. Each is copied into an Excel spreadsheet and a slope function used to run a regression on the data to find beta.

Lastly, the market returns are calculated by taking daily stock prices of the S&P 500 for all four time frames around each bank's announcement date. For the announcement date itself, the opening and closing stock prices for that day are used. Actual market returns are used instead of expected market returns, creating a more accurate assessment of the overall returns. Therefore we subtract the beginning period from the ending period and divide by the beginning period to find the market returns for the given time period. For example, for the fifteen-day period prior to the announcement date (-15,0), the announcement date (0) is the ending period and the fifteen days prior (-15) is the beginning period. Used for all stock prices in this study, the adjusted closing price (which takes into account any stock splits or dividends paid) is easily attainable on Yahoo! Finance.<sup>6</sup> Now that the risk-free rate, the market return and the beta value are collected for each company around their four corresponding time frames, they can be inserted in the Capital Asset Pricing Model to find the expected returns.

$$\text{Expected Return} = \text{Risk-Free Rate} + \text{Beta} * (\text{Market Return} - \text{Risk-Free Rate})$$

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<sup>6</sup> <http://finance.yahoo.com/>

The next step in finding the abnormal returns is to calculate the actual returns for each bank.

To find the bank's actual returns, each company's daily stock price for each time frame is gathered. The actual return is then calculated by subtracting the beginning period from the ending period and dividing by the beginning period, done the same as in the previous paragraph. Again, this is executed for all four time periods. Now we subtract the actual returns from the expected returns calculated from the Capital Asset Pricing Model to find the difference between the two. Essentially, the aim is to determine whether the company did as well as the CAPM projected. To further validate the study, a second methodology is performed.

After calculating the abnormal returns, we employ Tobin's q model. As discussed in the theory chapter, Tobin's q is the ratio of market value to the replacement cost value. First to find the market value, we take the shares outstanding multiplied by the price of the stock for each time period. Again, the daily stock prices are found on Yahoo! Finance. The shares outstanding are located on Capital IQ.<sup>7</sup> Capital IQ is not normally available, however in this case is accessed through a personal contact with login information. The shares outstanding are listed under the company's financials on the balance sheet. Occasionally, the shares outstanding are not found on Capital IQ, in which case we refer to Mergent Online.<sup>8</sup> One quarterly statement is used for the -15, 0, and 15 time periods and the previous quarterly statement is used for the -90 period. Once the

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<sup>7</sup> [www.capitaliq.com](http://www.capitaliq.com)

<sup>8</sup> [www.mergentonline.com.tiger.coloradocollege.edu/](http://www.mergentonline.com.tiger.coloradocollege.edu/)

shares outstanding are gathered, we multiply them by their corresponding daily stock price to find the bank's market value.

After the market value is calculated and recorded, the book value is collected. Again Capital IQ is used to find the replacement cost. We use the book value as the replacement cost. The book value is a company's net worth, or the stockholder's equity minus the preferred stock obligation.<sup>9</sup> The stockholder's equity is listed on the balance sheet under company financials, while the preferred stock obligation is found on the income statement. At times, it is not easily accessible and is retrieved from the financials from Mergent Online. In using two databases to collect data, it is necessary to be aware of the scale used on each site when recording the data. Capital IQ scales the numbers in millions, while Mergent scales the numbers in thousands. Once both market and book value are recorded, we take the market value and divide by the book value to get Tobin's q. This methodology is another way to determine the market response to a bank investing in new capital, or buying another bank, and from this we can determine how the market values new capital.

The data are analyzed by looking at the directional significance for both the CAPM and Tobin's q methodology, as well as performing a test of means for the abnormal returns. The results and analysis are presented in the following chapter.

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<sup>9</sup> Stanley B. Block and Geoffrey A. Hirt, *Foundations of Financial Management* (New York: McGraw-Hill/Irwin, 2008), 30.

## CHAPTER V

### RESULTS AND ANALYSIS

After gathering the necessary data and calculating the Capital Asset Pricing Model and Tobin's q, we now test the hypothesis and look at any significant directional changes of the banks between a recessionary and an expansionary period. First, the Capital Asset Pricing Model is analyzed by examining the actual returns and the abnormal returns. Second, Tobin's q is analyzed to assess whether the market responds less favorably to a company taking on new capital in a recessionary period. Lastly, the chapter discusses limitations the study encountered and avenues for further research.

When analyzing the data from the Results and Analysis, we first look at the actual returns. From the hypothesis we expect to see lower returns to bidding banks in the recessionary period compared to an expansionary period. From the average actual returns displayed in Appendix B, it is evident that, to the contrary, expansionary periods experience more losses upon announcement than bidding banks in a recessionary period. Still, the results confirm prior literature that bidding banks experience negative returns upon announcement. In the expansionary period, the average actual returns are -44.77% with a range of -83.08% to -17.90%, while the recessionary bidders experience an average of -3.36% with a range from -13.19% to 34.51%. We find slightly positive gains for actual return averages for both periods fifteen days after the announcement with the expansionary period experiencing 0.56% returns and recessionary with 6.63% return. It

is interesting to note that for both periods, the bank samples experience gains during the 90 days prior to the announcement and experience losses for the (-15) and (0) times, giving support that the markets respond negatively to bidding banks involved in a merger. While the actual return results show the market responds negatively to bidding banks on and around the announcement date of a merger, the results still refute the hypothesis that bidding banks experience more losses in a recessionary period than in an expansionary period.

Secondly, using the Capital Asset Pricing Model, abnormal returns, found in Appendix C, are examined. As a reminder, abnormal returns are the difference between the expected return of a security (derived from the CAPM) and the actual return. Abnormal returns are a common way to analyze the market's response. On the announcement day (t=0) the expansionary period experiences a mean of 40.59%, while the recessionary's mean yields 7.85% abnormal returns. Both means appear to be exceptionally high when compared to other studies, however it supports our hypothesis that recessionary bidders experience lower returns than expansionary bidders. Hannan and Wolken show mean abnormal returns of -1.45% for bidding firms on the announcement date.<sup>1</sup> The mean abnormal returns for the present study appear to be more aligned with those of Hannan and Wolken during the -90, -15, and 15 day time frames. The results show the expansionary period to have mean abnormal returns of -0.39%, 1.20%, and -0.49 for the -90, -15, and 15 day time frames, respectively. The recessionary period saw means of -5.74% (-90), 3.23% (-15), and -3.13% (15). These results show

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<sup>1</sup> Timothy H. Hannan and John D. Wolken, "Returns to Bidders and Targets in the Acquisition Process: Evidence from the Banking Industry," *Journal of Financial Services Research*, Vol 3, no. 1 (1989): 9.

more negative gains for the recessionary period in the (-90) and (15) day periods, however the abnormal returns are greater for the (-15) day period. This study's results show abnormally high means for bidder abnormal returns on the announcement date, possibly due to the limited data sample, which is discussed later in this chapter. To test for significance, a t-Test is performed in Excel for all four time periods to determine whether any significant difference exists between the market response of bidding banks in a recessionary period and those in an expansionary period. The abnormal returns are tested at the critical p-value of .05, a common percentage level of significance. For the -90, -15, 0, and 15 day periods, the p-values are 0.53, 0.55, 0.0005, 0.70 respectively. The announcement date (0) period is the only period that shows a statistically significant difference for the abnormal returns between the expansionary period and the recessionary period, because its p-value is less than 0.05. The other three time periods show no statistical difference between the two groups because their p-values are greater than 0.05. Therefore, the results conclude that the null hypothesis that bidder banks experience the same market response in an expansionary and recessionary period is accepted for the -90, -15, and 15 day time frames. However, the null hypothesis is rejected for the announcement date (0).

Now that the results from the Capital Asset Pricing Model are analyzed, we look at Tobin's q, displayed in Appendix D. As a reminder, Tobin's q argues that investment decisions and stock market prices depend on a lot of the same factors, such as expected future profits and expected future interest rates.<sup>2</sup> Therefore, if stock prices are low, investment in new capital is not favored, and as a result a company has a low Tobin's q

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<sup>2</sup> Olivier Blanchard, *Macroeconomics* (New Jersey: Pearson Prentice Hall, 2009), 346.

value. If the value is less than 1, then the market does not value capital, but if it is greater than 1 the market does value new capital, because the profit generated from the new capital exceeds the cost of the firm's assets. Therefore, the higher the  $q$ , the higher the value of capital relative to its current purchase price, and the higher the investment should be.<sup>3</sup> For this study, we hypothesize in a recessionary period higher investment is less favorable, because there is more risk involved. Appendix D indicates that a significant difference does not exist. Citizens Bank, from the recessionary period, is significantly higher than the rest and is dropped as an outlier from the sample. When Citizens is left out, the average for the recessionary period for each time frame ranges from 1.55 to 1.63 while the expansionary period ranges from 1.73 to 1.77. The lower averages exist in the recessionary period, suggesting that the market is slightly less willing to invest in new capital during harsher economic times, and therefore does not value a bank merger as much as it does in expansionary periods. Interestingly, during the recessionary period, the highest average, 1.63, is during the (-90) period, suggesting that as news begins to break about the merger, the market responds less favorably to new capital. Still, the results show that the market is willing to take on new capital during a recessionary period, because the majority of Tobin's  $q$  values are greater than 1 and therefore does not uphold the hypothesis. This could be due to many factors. One suggestion is the market sees a bargain in a recessionary period, because premiums on the purchase price of a company are significantly lower, and therefore the bidder receives a better deal than in an expansionary period. The current hypothesis tested believed that the market's response to the riskiness of bank mergers in uncertain economic times

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<sup>3</sup> Blanchard, 345.

would overshadow any chance of a better deal for stockholders; stockholders would value less risk during an unstable market more than they would a better premium. In other studies that used Tobin's q methodology, such as Doukas (1995), Tobin's q values less than one were deemed low and high Tobin's q values were greater than one.<sup>4</sup> Therefore, while the recessionary Tobin's q values were lower than the expansionary values, to be significant they needed to be on average less than one. This methodology also does not support the hypothesis.

The results from both methodologies do not strongly support the hypothesis. Although a significant difference for the abnormal returns between the expansionary period and recessionary period on the announcement date is shown, the figures are questionably large and positive given that other studies show negative or only slightly positive abnormal returns for bidders. Al-Sharkas and Hassan report in the literature review of their study twelve previous studies with bidder returns ranging from -3.25% to 1.77%, eight of which are negative returns.<sup>5</sup> The 7.85% and 40.59% figures from the current study clearly are questionably high. Our hypothesis is not supported by either methodology, and therefore is rejected. Still, many limitations exist for this thesis, and therefore the unsupportive results may be due to a number of factors. The chapter continues by discussing limitations as well as avenues for further research.

### Limitations

Many limitations exist for this thesis. Initially, the hypothesis aims at testing both the bidding banks and target banks, however finding information for target banks in the

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<sup>4</sup> John Doukas, "Overinvestment, Tobin's q and Gains from Foreign Acquisitions," *Journal of Banking and Finance*, vol 19, no. 7 (1995): 1287.

<sup>5</sup> Adel A. Al-Sharkas and M. Kabir Hassan, "New Evidence on Shareholder Wealth Effects in Bank Mergers During 1980-2000," *Journal of Economic Finance*, vol 34 (2010): 329.

expansionary period is difficult due to the time frame. Also, some acquired firms are private and therefore are not listed on the New York Stock Exchange. Additionally, to find the beta values, one must gather five years of monthly stock prices prior to the announcement date. Many of the target banks do not have historical prices dating that far back. Therefore, there were not a sufficient number of target banks to analyze, given that the present sample is small to begin with. The bidding bank sample was limited as well. Finding lists of bank mergers was not easy, and the ones that were found contained many bidding banks with limited data. Primarily, historical stock prices were not always available to the expansionary period banks. Therefore, the bidding bank sample analyzed is small. The sample is also small simply due to difficulty of locating lists of mergers. A limitation exists in the methodology process too. When calculating Tobin's  $q$ , there are many ways to define the replacement cost. This study uses the book value of the firm, or its stockholder's equity. Chung and Pruitt, however, use the book value of the firm's total assets, which may be another way to conduct the method.<sup>6</sup> Lastly, many databases, such as Datastream and Bloomberg, sites that offer large amounts of historical data, are not available to this study. Therefore, the thesis was restricted to databases with less information. Despite restrictions, numerous studies and research can be followed up on this topic.

#### Avenues for Further Research

This study allows many avenues for further research. First, the current study can be tested again with a larger data set to obtain more accurate results and conclusions. In addition to repeating the present study with a larger data set, cumulative abnormal returns

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<sup>6</sup> Kee H. Chung and Stephen W. Pruitt, "A Simple Approximation of Tobin's  $q$ ," *The Journal of the Financial Management Association*, Vol 23, no. 3 (Autumn 1994): 71.

would be useful to analyze as they are used in many prior studies on bank mergers, but that opportunity is beyond the means of this study. Other topics of interest are also intriguing. In researching the present topic of bank mergers, many studies on CEO compensation in the event of a merger were encountered. Is the CEO compensation amount appropriate, and what effect does it have on the stockholders? Is there a negative market response? This too can be evaluated in an expansionary versus a recessionary period. For example, when Bank of America bought Merrill Lynch, there was great uproar in response to bonuses paid out to high executives at Merrill Lynch. Was it because of the recessionary time or because the public simply thought such payouts were too excessive, recession or no recession? Further research on bank mergers is necessary to investigate whether a basic principle of finance – acting in the best interest of the shareholder – is upheld throughout the financial world, as well as any corporation. With the recent financial crisis however this thesis was drawn more to the financial sector that appears to be losing sight of its basic financial principles.

Having analyzed the results of both methodologies, the Capital Asset Pricing Model and Tobin's  $q$ , the hypothesis is unsupported by the data, possibly due to the numerous limitations discussed. The next chapter will conclude with a review of the thesis and discussion of the study's topic.

## CHAPTER VI

### CONCLUSION

Based on the proposal that agency problems are enhanced in a recessionary period, this thesis presents an event study based on two samples of bank mergers; it hypothesizes that the sample of bidder banks in a recessionary period results in a greater loss than the sample in an expansionary period. Past literature finds that on average bidder banks see a negative market response or only slightly positive response as compared to the target bank's market response. To the contrary, this study, perhaps due to a limited data sample, finds inconclusive results, as well as results that do not concur with previous literature. To review the thesis, this chapter summarizes the previous chapters, recites the results of the study presented, and revisits the initial idea of the hypothesis to show why further study and investigation of the market response to bank mergers is essential.

Chapter I introduced the initial suggestion, specifically speaking to the Bank of America/Merrill Lynch merger in the wake of a financial crisis. This merger displayed agency problems such as the desire for power from Bank of America's CEO Ken Lewis. Ken Lewis agreed to this merger without being fully aware of Merrill Lynch's troubled assets. Later, Ken Lewis tried to back out of the merger but was denied and forced to continue with the merger by Henry Paulson. This suggests that Lewis's initial agreement to the merger was based on his desire for the company, as opposed to buying a company

that made sense for its shareholders. Therefore, the thesis hypothesized that bidding banks, such as Bank of America, would see a greater loss in a recessionary period as opposed to an expansionary period. To give the reader a better background on the bank merger industry, a few laws and regulations were discussed as well. These included the Mcfadden Act of 1927, the Riegle-Neal Interstate Banking and Branching Efficiency Act, the Williams Act, and the Glass Steagall Act. These four acts address bank branching regulations, regulations pertaining to mergers, and regulation of the integration of banks employing different financial services.

Chapter II discussed the relevant theoretical applications pertaining to bank mergers. It began by discussing the Efficient Market Hypothesis, shareholder wealth maximization and agency theory. The EMH states that the market is efficient, and therefore stock prices accurately reflect all relevant information. The various forms of the EMH – the weak form, the semi-strong form, and the strong form – differ by what it means to have all available and relevant information. Secondly, shareholder wealth maximization was touched upon. It is key to recognize that a publicly held company is responsible to its shareholders, and therefore must always act and manage the company in the shareholders best interest. Ideally management practices shareholder wealth maximization, however this is not always the case. At times, management makes decisions based on other motives. Therefore, agency theory was discussed, displaying reasons why a company may not act in a shareholder's best interest. Some agency problems include reduced effort and empire building. Chapter II continued with merger theory, showing the possible benefits of a merger, including merger synergy, economies of scale and scope, complimentary resources and eliminating inefficiencies. The chapter

concluded with theoretical background on the Capital Asset Pricing Model and Tobin's  $q$ , the two models used to perform the study. While the CAPM is a linear equation that provides the expected return for a company, Tobin's  $q$  is a ratio of the market value to the replacement cost to measure how willing the market is when a company invests in new capital. Both models serve to gauge the market's response to bidding banks during the announcement of a merger as well are commonly used in previous literature.

Chapter III examines recent literature pertaining to bank mergers. In particular, the literature reviewed focuses on merger gains. The chapter was divided into two sections: the earlier literature and the more recent literature. The earlier literature finds no significant gains for the combined firms, and more importantly, target banks have significant gains upon announcement while bidder banks experience negative gains. The more recent literature finds that merger gains are realized for the combined firms. Consistent with the earlier literature, the same holds true for the target and bidder banks. In some studies, bidder banks begin to see positive gains, but they are not significantly different from zero and target gains upon announcement remain significantly greater. This study further investigates the bidder banks of a merger and expands the literature by examining bidder banks in a recessionary period versus an expansionary period.

Chapter IV discussed in detail how the data were gathered and how the methodologies were applied. The data section included details such as how the recessionary and expansionary periods were distinguished and the way in which the list of bank mergers and their announcement dates were gathered. The methodology section broke down each method and described the gathering of each variable needed to calculate the Capital Asset Pricing Model and Tobin's  $q$ .

Chapter V analyzed the results and discussed limitations and avenues for further research. The results from both the Capital Asset Pricing Model and Tobin's  $q$  do not provide sufficient support to the study's hypothesis. After running a t-Test on the abnormal returns over four periods for the bidder banks, three out of four periods showed no significant difference between a recessionary and an expansionary period. While the announcement date showed a significant difference with a p-value of 0.0005, the abnormal return figures in the recessionary and expansionary period both proved to be questionably high, and therefore unreliable. While a recessionary period may have no effect on the gains to bidding banks involved in a bank merger, it may also be due to the limited sample presented in this study. This thesis is limited by many factors, including access to databases and lists of bank mergers. Despite these limitations, this topic contains many areas for further research, including performing this same study but with a larger data sample and resources.

When the financial crisis took place, the public was frightened for another Great Depression. The United States and the rest of the world came close to a complete financial meltdown. It is feasible to assume that during such a recessionary time, public opinions as well as risk aversion can change. Although this study is unable to show that the market reacts more negatively to bidding banks during a recession, different economic periods should be studied more in the future, and researchers should focus on decisions being made by companies. Perhaps the right or wrong decision is even more crucial during a recession.

## Appendix A

## BANK MERGERS AND CORRESPONDING ANNOUNCEMENT DATES

BIDDING BANKS	TARGET BANKS	ANNOUNCEMENT DATE
<u>Expansionary Period</u>		
PNC Financial Services	Midlantic Corporation	July 10, 1995
Wells Fargo	First Interstate Bank	January 24, 1996
Regions Financial	First Commercial Corp.	February 9, 1998
SunTrust Corporation	Crestar Financial	July 20, 1998
Travelers Corporation	Citicorp	April 6, 1998
Fifth Third Bancorp	Old Kent Financial Corp.	November 20, 2000
Wells Fargo	First Security Corporation	April 10, 2000
BB&T Corporation	First Virginia Banks, Inc.	January 21, 2003
Bank of America	FleetBoston Financial	October 27, 2003
Regions Financial	Union Planters	January 30, 2004
SunTrust Corporation	National Commerce	May 9, 2004
<u>Recessionary Period</u>		
Citizens Bank	Republic Bancorp, Inc	June 27, 2006
Bank of New York	PNC Global Investing	October 30, 2006
Bank of America	LaSalle Bank Corporation	April 23, 2007
State Street Corporation	Investors Financial	February 5, 2007
Fifth Third Bancorp	First Charter Bank	August 16, 2007
J.P. Morgan Chase & Co.	Washington Mutual	September 25, 2008
J.P. Morgan Chase & Co.	Bear Stearns	March 24, 2008
Bank of America	Merrill Lynch	September 15, 2008

## Appendix A (Cont.)

BIDDING BANK	TARGET BANK	ANNOUNCEMENT DATE
Wells Fargo	Wachovia	October 3, 2008
PNC Financial Services	National City Corp.	October 24, 2008

## Appendix B

## ACTUAL RETURNS (%) TO BIDDER BANKS IN EXPANSIONARY AND RECESSIONARY PERIODS

	<u>Expansionary Banks</u>	<u>(-90,0)</u>	<u>(-15,0)</u>	<u>(0,0)</u>	<u>(0,15)</u>
PNC Financial Services	0.5	-5.57	-43.71	1.15	
Wells Fargo	4.84	-3.67	-61.21	9.02	
Regional Financial	-5.1	1.29	-39.05	1.27	
SunTrust Corporation	0	-5.1	-32.03	12.96	
Travelers Co.	11.12	0.76	-64.19	-5.63	
Fifth Third Bancorp	4.75	-10.7	-18.57	20.34	
Wells Fargo	6.15	-0.9	-83.08	11.59	
BB&T Corporation	5.52	0	-46.72	-0.13	
Bank of America Corp.	-0.89	1.79	-61.41	-6.9	
Regions Financial	2.84	2.06	-24.55	-1.3	
SunTrust Corporation	-3.26	0.77	-17.9	-10.35	
	mean = 2.65	mean = -1.75	mean = -43.12	mean = 0.55	

## Appendix B (Cont)

	(-90,0)	(-15,0)	(0,0)	(0,15)
<u>Recessionary Banks</u>				
Citizens Bank	-6.18	-8.77	-13.19	-2.53
Bank of New York	2.34	-2.07	-2.41	2.5
Bank of America	-3.56	2.51	-11.15	1.89
State Street Corporation	6.17	-6.23	-4.29	5.32
Fifth Third Bancorp	-11.14	-1.36	-6.97	-1.94
J.P. Morgan Chase & Co. (Sept)	-5.47	-3.88	-6.4	26.33
J.P. Morgan Chase & Co. (March)	4.75	23.95	-2.36	-4.06
Bank of America	-9.07	-16.99	-8.68	31.81
Wells Fargo	46.06	-6.59	-12.66	-7.24
PNC Financial Services	37.79	-8.69	-9.43	-21.11
	mean = 6.17	mean = -2.81	mean = -7.75	mean = 3.09

## Appendix C

## ABNORMAL RETURNS (%) FOR BIDDER BANKS IN EXPANSIONARY AND RECESSIONARY PERIODS

Expansionary Banks	(-90,0)	(-15,0)	(0,0)	(0,15)
PNC Financial Services	11.29	4.95	41.34	-2.75
Wells Fargo	-10.17	-3.62	58.7	-8.81
Regional Financial	13.24	4.17	40.36	1.44
SunTrust Corporation	5.39	7.3	31.59	2.92
Travelers Co.	2.43	1.81	64.8	6.34
Fifth Third Bancorp	-20.83	0.2	14.07	-18.99
Wells Fargo	-6.64	2.96	81.91	-5.68
BB&T Corporation	-3.9	1.04	47.83	1.1
Bank of America Corp.	3.55	-2.05	61.82	9.12
Regions Financial	-1.75	-1.23	25.22	0.54
SunTrust Corporation	1.12	-0.84	18.59	9.76
	mean = -0.39	mean = 1.20	mean = 40.59	mean = -0.49

## Appendix C (Cont)

	(-90,0)	(-15,0)	(0,0)	(0,15)
<u>Recessionary Banks</u>				
Citizens Bank	5.68	11.1	15	5.69
Bank of New York	6.8	0.33	-0.12	-3.42
Bank of America	7.85	1.03	13.05	1.18
State Street Corporation	0.08	6.59	3.15	-5.3
Fifth Third Bancorp	16.95	1.8	8.97	6.17
J.P. Morgan Chase & Co. (Sept)	9.44	4.4	7.49	-34.3
J.P. Morgan Chase & Co. (March)	-5.65	-21.63	3.67	5.13
Bank of America	4.44	15.95	5.93	-39.21
Wells Fargo	-44.96	6.36	13.07	7.31
PNC Financial Services	-58.04	6.35	8.28	25.48
	mean = -5.74	mean = 3.22	mean = 7.85	mean = -3.13
	T Test Results p-value = 0.53	T Test Results p-value = 0.59	T Test Results p-value = 0.00054	T Test Results P-value = 0.70

Appendix D TOBIN'S q FOR BIDDER BANKS IN EXPANSIONARY AND RECESSIONARY PERIODS

	(-90.0)	(-15.0)	(0.0)	(0.15)
<u>Expansionary Banks</u>				
PNC Financial Services	0.62	0.64	0.62	0.62
Wells Fargo	1.38	1.47	1.46	1.63
Regional Financial	2.49	2.08	2.11	2.14
SunTrust Corporation	1.91	2.23	2.12	1.85
Travelers Co.	0.95	1.10	1.10	1.04
Fifth Third Bancorp	3.55	3.42	3.05	3.67
Wells Fargo	1.93	2.14	2.06	2.25
BB&T Corporation	1.37	1.28	1.28	1.28
Bank of America Corp.	1.86	1.85	1.88	1.75
Regions Financial Services	1.69	1.69	1.72	1.70
SunTrust Corporation	1.63	1.57	1.58	1.42
	mean = 1.76	mean = 1.77	mean = 1.73	mean = 1.76

Appendix D (Cont)

	(-90,0)	(-15,0)	(0,0)	(0,15)
16 <u>Recessionary Banks</u>				
Citizens Bank	6.71	7.13	6.50	6.34
Bank of New York	2.40	2.14	2.10	2.15
Bank of America	1.54	1.43	1.47	1.50
State Street Corporation	2.81	3.12	2.92	3.08
Fifth Third Bancorp	2.18	1.94	1.92	1.88
J.P. Morgan Chase & Co. (Sept)	0.98	0.96	0.92	1.16
J.P. Morgan Chase & Co. (March)	1.16	0.97	1.20	1.15
Bank of America	0.78	0.88	0.73	0.97
Wells Fargo	1.61	1.52	1.42	1.31
PNC Financial Services	1.27	1.36	1.24	0.98
	mean = 1.63	mean = 1.59	mean = 1.55	mean = 1.58

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