This study is based on research for my dissertation. I am especially grateful to members of my committee, Yakov Amihud (co-chair), Anthony Saunders (co-chair), David Yermack, David Backus, and Gregory Udell, for useful comments and insights. I owe a special debt of gratitude to Professor Amihud for his guidance and support. I also appreciate the helpful comments of Mark Flannery, Loretta Mester, Mike Pagano, Jonathan Rose, G. William Schwert (the editor), Dan Weaver, and an anonymous referee as well as comments from seminars at Baruch College, the Federal Reserve Bank of Philadelphia, and New York University. Any errors are solely my responsibility.

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Stockholder gains from focusing versus diversifying bank mergers

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Abstract

This paper shows bank mergers that enhance value upon announcement can be distinguished from those that do not create value. I classify mergers of banking firms according to activity and geographic similarity (focus) or dissimilarity (diversification), and examine the abnormal returns to each group as a result of the merger announcement. Mergers that focus both activity and geography enhance stockholder value by 3.0% while the other types do not create value. Analysis reveals that abnormal returns upon merger announcement increase in relative size of target to bidder, but decrease in the pre-merger performance of targets. © 2001 Elsevier Science S.A. All rights reserved.

JEL classification: G14; G21; G34; L89

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1. Introduction

Bank consolidation has been a trend in the United States since the mid-1980s. Begun as a way for poorly performing banks to exit the industry, mergers continued even after the industry returned to profitable in 1992. Mishkin (1998) observes that regulatory and technological changes allow banks to expand geographically and become larger. He predicts that the trend will continue and that in twenty years the number of banks will be less than half the current number. Although the number and size of mergers within the banking industry have steadily increased,1 there is no clear evidence that banking mergers are economically valuable to shareholders upon announcement. Several studies find that, on average, the sum of the weighted gains to the partners arising from mergers is negligible.2 This setting raises the question of whether all bank mergers have an insignificant value effect, or whether it is possible to distinguish the types of mergers that lead to significant gains from those that do not add value.

This study examines the wealth effect of bank mergers by distinguishing between types of mergers. Specifically, mergers are classified according to their focus or diversification along the dimensions of activity and geography. The study determines the value effect, for bidders and for targets of mergers, and the combined value effect for these players, for each group according to the focusing versus diversifying classification. The results show that bank mergers that focus both geography and activity are value-increasing, whereas diversifying mergers do not create value.

Evidence on the detrimental value effect of diversifying mergers is provided by Mørck et al. (1990) for industrial firms. However, Mørck, Shleifer, and Vishny examine only returns to bidders. While the results for bidders could indeed reflect the economic inferiority of diversifying mergers, another possible interpretation of their results is that managers pursue their own interests (see Amihud and Lev, 1981) and thus overpay for mergers that provide them with the private benefit of diversification. The second interpretation implies a value transfer from bidder to target in diversifying mergers, but not necessarily economic value destruction in such mergers. It is therefore impossible to establish whether diversifying mergers are economically undesirable. A natural question that follows from Mørck, Shleifer, and Vishny’s study is: What is the effect of diversifying mergers on the total value of bidder and target? This question has not been comprehensively answered in the literature. Houston and

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1 Berger et al. (1999) provide a comprehensive analytic narrative of current research in the consolidation of the financial services industry.

Ryngaert (1994) provide a partial answer regarding geographic diversification. A major debate in the industrial organization of the banking industry, however, concerns activity diversification. This paper examines the effect of diversifying both geography and activity. Studying the value effects of activity-diversifying mergers allows us to make inferences on the desirability of various organizational structures in the banking industry, such as universal banking.

In addition to examining the total value that diversifying mergers create or destroy, this study differs from Mørck et al. (1990) in other respects. First, it examines diversification not only in terms of activity, as do Mørck, Shleifer, and Vishny, but also in terms of geography. Looking at geographic diversification in the United States is important, because regulation at the state level influences not only the market for corporate control but also activities in which banks may engage. Such regulation means that the findings of Mørck, Shleifer, and Vishny are not immediately applicable to banking. Regarding corporate control, Cornett et al. (1998) show interstate bank mergers, which were relatively highly regulated during the time of their study, tended to be non-value-maximizing for bidders upon announcement. On the other hand, intrastate bank mergers, which were subjected to few or no restrictions, did not destroy bidder value. Palia (1993) finds regulatory restrictions influence the merger premium paid by the bidder to the target. States with restricted branching make the targets more appealing, and therefore increase the premium, while states that allow multi-bank holding companies increase the number of bidders and also increase the premium. Location of a bank influences not only the market for corporate control, but also the characteristics of a bank’s assets. A bank’s loan portfolio is greatly influenced by the regulation in its area, given that some states allow their banks to engage in underwriting securities and insurance while other states ban such activities. Different regulatory environments therefore influence business decisions. With unregulated firms, business decisions are based on profit maximization. If these firms focus and then deviate from their original activities, the diversification could be harmful. With banks, we do not know if focusing is a matter of choice or of regulation. Perhaps states with fewer controls on bank activities produce diversified banks that perform better than restricted banks that are forced to focus their activities. Thus, the question in banking remains even after considering the work of Mørck, Shleifer, and Vishny.

Second, focusing on the banking industry provides a control for industry-specific factors that could affect returns. The usual control in event studies is the market return. There could be other factors particular to each industry that should be included in order to obtain uncontaminated results. Sweeney and

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3 The debate concerns the value of universal banking where commercial banks provide all financial services, including securities and insurance, to their clients. For an overview of universal banking, see Saunders and Walter (1996).
Warga (1986), for example, show that investors demand a premium for interest rate risk. By focusing on the banking industry, my study corrects for interest rate and other bank-related risks.

Third, if any inter-industry effects exist, studying intra-industry mergers minimizes this impact. The findings of Mørck et al. (1990) could be the result of a tendency for some industries to engage in a value-maximizing type of merger, while other industries engage in a non-value-maximizing type of merger. Indeed, Himmelberg et al. (1999) find that inter-industry effects influence firm performance to the point of creating spurious results in analyzing the link between ownership and performance. Since I focus on the banking industry, the results can be considered robust and immune to inter-industry differences.

Finally, activity diversification is subtler than a mere classification in different industries. Here, I examine the past movement of stock returns to determine whether partners engage in different types of risks and are therefore involved in different types of activities. Unlike previous studies, I examine stock returns using cluster analysis to determine activity focus. Thus, this study presents a new and subtler dimension of diversifying versus focusing mergers and the effects of these types of mergers on the total value created by the transaction.

Evidence presented here suggests that bank mergers that focus both geography and activity create value upon announcement, while those that diversify either geography or activities, or both, do not create value. Overall, mergers in the banking industry neither create nor destroy shareholder wealth, but mergers that focus both geography and activities earn a positive 3.0% return. Bidders in this group do not destroy value, while bidders in the other groups do destroy value. Targets that enter into focusing mergers do not earn significantly more or less than targets in the other groups. Thus, my findings not only substantiate those of Mørck et al. (1990) for the banking industry, but also enhance them by showing that the loss of diversifying bidders is not the result of a wealth-transfer from bidder to target.

The next section explores value-maximizing reasons for banks to engage in either diversifying or focusing mergers. I then describe the methodology of classifying mergers, followed by a discussion on market reactions to the various types of mergers. The final section summarizes the results.

2. Value-maximizing reasons for banks to merge

Miller and Modigliani (1961) show that the value to an acquirer of taking over an ongoing concern can be expressed as the present value of the target’s earnings and the discounted growth opportunities the target offers. As long as the expected rate of return on the growth opportunities is greater than the cost of capital, the merged entity creates value and the merger should be undertaken. However, when the expected rate of return on these growth opportunities is less
than the cost of capital, the merged entity destroys value and the merger should not take place.

Sources of the potential above-market rate of return can be seen more clearly by examining the value additivity principle (VAP). According to this principle, the market value of a firm is equal to the sum of the market values of the individual discounted cash flows of that firm (see Haley and Schall, 1979). Assuming a merger does not create new cash flows, VAP implies that the market value of a merged entity is merely the sum of the market values of the individual firms. The merger itself does not enhance the value of a firm. Rather, investors are indifferent to receiving income from a combined entity or from individual firms.

Mergers, however, could create new cash flows and thereby enhance the value of the partners. The cash flows come from saving direct and indirect costs as well as increasing revenues. The following sections examine diversification as well as focusing reasons for value-maximizing banking firms to engage in mergers.

A diversifying merger occurs when a bank merges with a firm engaged in different activities or located in markets different from its own. Theoretically, diversifying firms, which include firms created through diversifying mergers, could create value by forming an effective internal capital market, thereby lowering the cost of capital. Under the very strong assumption of management’s ability to determine outcome of projects perfectly, Stein (1997) shows that diversification can lead to lower cost of capital for a firm. Management always picks the winners and funnels resources to the projects that pay off more than other projects. Diversified firms would have uncorrelated projects from which to choose and thereby create value in more states of the world than focused firms with highly correlated projects. Houston et al. (1997) show that bank holding companies create internal capital markets in order to lower the cost of capital. Hubbard and Palia (1999) conduct empirical tests of the value of efficient internal capital markets. They find when external capital markets are relatively undeveloped, as they were in the United States during the 1960s compared with the information-laden decades that followed, internal capital markets serve to overcome inefficient external markets. The greater the information asymmetries between managers and the external market, the more valuable the internal market. All bidders, even those engaged in diversifying mergers, generally earned positive abnormal returns during the 1960s. As informational asymmetries dissipate, so too the value of diversifying mergers and therefore the rewards to the bidders of such mergers.

Like diversification, focusing can have either a geographic or an activity dimension. Focusing mergers occur when the two partners engage in similar activities or are located in the same market. Focusing mergers could create value in several ways, including the replacement of less efficient with more effective managers (see Jensen and Ruback, 1983), the increase of market power (see Berger and Humphrey, 1993), the reduction of overinvestment (see Amihud and Lev, 1981), or economies of scale (see Clark, 1988). Focusing mergers
consistently created positive abnormal returns for bidders, not only during the
1960s as Hubbard and Palia (1999) find, but also during the 1970s and 1980s.
Similarly, Mørek et al. (1990) examine mergers between firms in related indus-
tries firms, which they define as partnering firms that share a 4-digit Standard
Industrial Classification (SIC) code or whose correlation coefficients are above
the median for the sample. In their study, they discover that focusing mergers
create positive abnormal returns for bidders, while diversifying mergers destroy
value. The difference between diversifying and focusing mergers was more
pronounced in the 1980s than in the 1970s. This finding adds further validity to
the internal capital market argument described in the previous paragraph. As
information becomes more readily available, the value of efficient internal
capital markets falls.

In summary, if mergers can create efficient internal markets and such markets
are important, we should see no difference in returns to diversifying and focusing
mergers.

3. Classifying mergers

To determine whether mergers that focus enhance value more than mergers
that diversify, I classify mergers according to whether they focus or diversify
along geographic and activity areas. My sample consists of domestic U.S.
mergers announced between 1988 and 1995 between publicly traded firms where
at least one is a banking firm, as reported by the Securities Data Company. The
requirement that both bidder and target be traded firms limits the sample size.
An alternative to the event study method is used by Palia (1993), who examines
the ratio of price paid by the bidder divided by the target’s book value of equity.
The bid premium method allows the study of targets that are not traded. All
mergers in the sample were completed as of June 1996. I define a merger as one
firm obtaining more than 50%, or adding to a lower percentage in order to
reach more than 50%, of the voting shares of another firm. This purchase results
in the de-listing of the stock of the target firm. Stock market data on both firms
had to be available from the Center for Research in Security Prices (CRSP), and
the firms had to be in existence for at least one year before the merger
announcement in order to have enough information to classify their activities.
Of the 729 mergers listed by the Securities Data Company, I am able to use 280.
Of the mergers listed, 203 were excluded because they involved at least one
non-U.S. partner. These mergers are not covered in this study because
non-controlled effects, such as differences in corporate control markets and
disclosure requirements, could confound the results and lead to incorrect con-
clusions. Further reasons for exclusion include mergers that have at least one
partner not included in the CRSP database (111) and less than one year of
pre-announcement data available (135).
Table 1 provides descriptive statistics about the mergers used in this study. Panel A shows the median size of mergers by type. The median target-to-bidder ratio of mergers that focus activities and geography is much larger, at 18%, than ratios of other types of mergers, which measure less than 8%. I investigate potential implications of this difference in relative size in Section 4.5. Panel B shows the number of mergers by year and by type. Note that the number of mergers that diversify geography, whether they focus or diversify activity, greatly increased over the sample period from 7 in 1988 to 34 in 1995. Until the McFadden Act was superceded by the Riegle-Neal Interstate Banking and Branching Efficiency Act, U.S. regulations restricted banks from using relatively inexpensive branches to expand into new states. Although the Riegle-Neal Act did not go into effect until 1996, several states prepared for the change in regulation by relaxing restrictions in the early 1990s. Fig. 1, which shows the percent of merger by type, substantiates this trend. More mergers in this study diversify geography (57%) than focus geography (43%). Table 1 also shows that in 1990 the number of mergers falls compared with the previous year for all groups except mergers that diversify geography and focus activity. In 1990, the United States experienced a recession. Section 4.1, below, discusses the influence of the business cycle and the type of merger that creates the most stockholder value upon announcement.

3.1. Geographic focus versus diversification

I classify mergers where acquirers and targets are headquartered in the same state as in-market while those headquartered in different states are market-extending. I use this method of classification even when the acquirer already has operations, other than its headquarters, in the state where the target is headquartered. The fact that the acquirer is devoting more resources to an area outside its original state suggests that the acquirer is extending its market. In a separate test, I expand the definition of in-market to include mergers where the acquirer and the target are present in the same state but not necessarily headquartered.

3.2. Activity focus versus diversification

Determining whether a merger brings together two firms with similar activities is not as straightforward as determining geographic focus. When two firms with different 2-digit SIC codes merge, the merger is diversifying. In this study, however, most of the partners falls into the large 2-digit category used for banks,

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Table 1
Sample of bank mergers, 1988–1995

The sample consists of 280 domestic U.S. mergers announced between 1988 and 1995 between publicly traded firms for which at least one party in the merger is a banking firm. The sample is divided into four groups according to geographic and activity focus or diversification. Panel A shows median size of mergers by type. Dollar values are expressed in millions of US$, and are deflated by the 1995 GDP implicit price deflator. Panel B shows number of mergers by year and by type. The year indicates the year in which the merger is announced. The panel also shows the percent of the entire sample that each group represents. Sources for this table are Securities Data Company for the list of mergers and Center for Research in Security Prices for stock market valuations.

<table>
<thead>
<tr>
<th>Merger type</th>
<th>Number of mergers</th>
<th>Median stock market valuation</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Bidder</td>
<td>Target</td>
</tr>
<tr>
<td>All mergers</td>
<td>280</td>
<td>1,909.2</td>
<td>82.8</td>
<td></td>
</tr>
<tr>
<td>Geographic and activity diversification</td>
<td>100</td>
<td>2,492.6</td>
<td>87.3</td>
<td></td>
</tr>
<tr>
<td>Geographic and activity focus</td>
<td>53</td>
<td>928.4</td>
<td>72.6</td>
<td></td>
</tr>
<tr>
<td>Geographic focus and activity diversification</td>
<td>68</td>
<td>1,115.4</td>
<td>53.3</td>
<td></td>
</tr>
<tr>
<td>Geographic diversification and activity focus</td>
<td>59</td>
<td>3,206.4</td>
<td>134.2</td>
<td></td>
</tr>
</tbody>
</table>

Panel A: Median size of mergers, by type

<table>
<thead>
<tr>
<th>Merger type</th>
<th>Number of mergers</th>
<th>Median stock market valuation</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Bidder</td>
<td>Target</td>
</tr>
<tr>
<td>All mergers</td>
<td>12</td>
<td>1988</td>
<td>15</td>
<td>16</td>
</tr>
<tr>
<td>Geographic and activity diversification</td>
<td>5</td>
<td>1989</td>
<td>15</td>
<td>16</td>
</tr>
<tr>
<td>Geographic and activity focus</td>
<td>4</td>
<td>1990</td>
<td>13.3</td>
<td>14.3</td>
</tr>
<tr>
<td>Geographic focus and activity diversification</td>
<td>1</td>
<td>1991</td>
<td>13.3</td>
<td>14.3</td>
</tr>
<tr>
<td>Geographic diversification and activity focus</td>
<td>2</td>
<td>1992</td>
<td>13.3</td>
<td>14.3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1993</td>
<td>1994</td>
</tr>
<tr>
<td></td>
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</tr>
<tr>
<td>All mergers</td>
<td>12</td>
<td></td>
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<td>5</td>
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<tr>
<td>Geographic and activity focus</td>
<td>4</td>
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<td></td>
</tr>
<tr>
<td>Geographic focus and activity diversification</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Geographic diversification and activity focus</td>
<td>2</td>
<td></td>
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</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% of total</td>
<td>41.7</td>
<td>34.6</td>
<td>26.7</td>
<td>20.0</td>
</tr>
<tr>
<td>% of total</td>
<td>41.7</td>
<td>34.6</td>
<td>26.7</td>
<td>20.0</td>
</tr>
</tbody>
</table>

Panel B: Year merger announced
which is SIC 60. The 4-digit SIC codes represented in the sample include SIC 6021, for “National Commercial Banks”, SIC 6022, for “State Banks, Member of Federal Reserve”, and SIC 6023, for “State Banks, Insured”.

I use two measures of similarity to classify partners according to activity. The first is Ward’s method of cluster analysis. For a discussion of the various methods of cluster analysis, see Lehmann et al. (1998). This approach forms data into clusters around a centroid, or mean. In my study, each observation represents a vector of variables, and begins as an individual cluster. The centroid, then, is the vector of variables. The two observations that are closest in terms of squared Euclidean distance are joined together to form a cluster. The variables of the vectors are then averaged to form the centroid of the new cluster. The distance between the actual observations and this new centroid is the
within-group variation of the cluster. Ward’s method seeks to minimize the ratio of within-group variation to between-group variation, that is, the squared Euclidean distances between the centroids of the various clusters. The process could continue until one all-encompassing cluster is formed, but, to be useful, the process is stopped before that point is reached. One gauge for determining when to stop the process is to examine the amount of total variation, which is the sum of squared Euclidean distances from each observation to the central mean, that a formation of clusters explains. As the number of clusters increases, more of the total variation is explained. The all-encompassing cluster explains none of the variation, while the individual observations explain 100% of the total variation. The process can be stopped, for example, when the cluster formation explains 50% of the total variation.

Brown and Goetzmann (1997) use similarity of stock market returns to determine mutual fund styles. They examine linear models that assign factor loadings to variables that may describe funds, but find that these models do not allow for the dynamic strategies that mutual fund managers often pursue. Since stock returns reflect the exposure a fund has to industry sectors, they reflect the strategy of the fund manager. By classifying mutual funds according to changes in their past monthly returns directly, Brown and Goetzmann allow portfolio weights to change every month, thereby alleviating a major problem of linear models. The classification methodology explains the cross-sectional dispersion of fund returns by forming groups that minimize the within-group distances among the monthly returns. This approach allows the mutual funds to fall naturally into groups based upon various strategies. Brown and Goetzmann find that their classification methodology is a better predictor of future performance than classifications that use latent variable factor loadings, pre-specified factors, or the styles reported by fund managers.

Applying cluster analysis to stock market returns enables the classification of merging partners into groups. Similar to Brown and Goetzmann (1997), I form clusters of banking firms by observing the similarity of their stock market returns. Merger partners that fall into the same cluster are focusing their activities, while those that fall into different clusters are activity-diversifying. I use stock returns since they reflect the pricing of various types of risk to which a firm exposes itself, and therefore provide a measure of the similarity between two firms.

One could argue that two partners involved in the same activities may not appear in the same cluster if the external shocks are different. I examine this possibility with regards to one of the major risks that permeates banking, which is interest rate risk. Banks can incur losses when interest rates change unexpectedly. Further, banks can expose themselves to varying degrees of this kind of risk through the different types of activities they pursue. A bank that engages in mortgage lending exposes itself to more interest rate risk than a bank that has a large percentage of its assets in government securities. Sweeney and Warga...
(1986) find that investors demand a premium in advance from firms that take on more interest rate risk. Further, they find that this premium is proportional to the amount of risk to which the firm is exposed. Flannery and James (1984) reach a similar conclusion when they examine only banking firms. Since interest rates are uniform within the United States, the location of the bank within the United States is not important. The stock market reacts to banks depending upon the various exposures taken by banks to interest rate risk. The logical extension of Sweeney and Warga’s work suggests that the market will demand a premium for any type of risk, such as credit risk or foreign exchange risk, to which a bank exposes itself. Stock prices, therefore, reflect the types of risks a bank takes on through its various activities.

Another potential challenge to properly classifying a sample using historical stock returns is hedging. For example, suppose that two banks are involved in mortgage lending, but one hedges its interest rate risk. The market will demand a higher advance premium from the bank that does not hedge, since that bank has a higher exposure to interest rate risk. The stock market returns will not be as similar as two banks engaged in the same activities that do not hedge. The very act of hedging, which can include the use of swaps, options, futures, and forwards, is an activity. While the two banks overlap in one area, the proportion of the hedging bank’s portfolio involved in mortgage lending is smaller than that of the non-hedging bank. The activities of the banks are therefore not similar.

Taking these potential problems into consideration, I examine the stock market returns in order to classify the banks in my study. For each firm, I form a vector of monthly stock returns, running from December to December, for the calendar year preceding the announcement of the merger. Many of the firms were not in existence for longer than a year before the announcement, making longer periods of observation impossible. Examining years separately has the advantage of automatically removing any drift to the mean from the data. I control for geographic focus or diversity by first dividing the sample according to geographic similarity using the methodology explained in the previous section. This step creates 16 sets of data, or eight separate years divided into groups of either geographically focusing or geographically diversifying merging partners. I perform cluster analysis on each of the 16 groups individually, and stop when the clusters explain approximately 40–50% of the total variation. The number of clusters varies for each year, and ranges from three for geographically focusing mergers announced in 1988 to six for geographically diversifying mergers announced in 1995. In ten sets of data, I remove outliers and cluster the remaining observations.

Observation of the categories into which the merger partners fall suggests the method is able to distinguish between merger types. Table 2 shows the cluster formation for one of the 16 sets, the geographically diversifying merger partners in 1990. Note that savings and loan institutions fall into the same
Table 2
Cluster formation for geographically diversifying mergers, 1990

The following is an example of the groupings that are formed when cluster analysis is applied to the monthly stock market returns of merger partners in this study. I divide the sample of 560 merging partners according to the year the merger is announced. I then control for geographic focus or diversification, and perform cluster analysis on each group. Since I look at 8 years of merger announcements (1988–1995), I obtain 16 subsets of merging partners.

<table>
<thead>
<tr>
<th>Clusters</th>
<th>Merging partners</th>
</tr>
</thead>
</table>
| Cluster 1 | Brookfield Bancshares, IL  
            | Sellersville S&L, PA  
            | First Home Federal S&L, FL |
| Cluster 2 | Comerica Inc., Detroit, MI  
            | Norwest Corp, MN  
            | Huntington Bancshares, Inc., OH  
            | US Bancorp, OR  
            | Wyoming National Bancorp, WY  
            | First Financial Bancorp, OH  
            | National City Corp, OH  
            | Fayette Federal Savings Bank, IN  
            | Banks of Iowa, Inc., IO  
            | National Penn Bancshares, Inc., PA  
            | Bucheye Financial Corp, OH  
            | Firstar Corp., WI  
            | Valley National Bancorp, NJ  
            | Mayflower Financial Corp., CA |
| Cluster 3 | In Bancshares, CA  
            | HeartFed Financial Corp., CA |
| Cluster 4 | Citicorp, NY  
            | BankAmerica Corp., CA  
            | United Banks of Colorado, CO |
| Outlier  | Benjamin Franklin Federal S&L, OR |

Cluster (Cluster 1), regional banks fall into another (Cluster 2), and the two money-center banks (BankAmerica and Citibank) fall into Cluster 4. Other checks of how well this method identifies classifications show that four of the five mergers initiated by the Minneapolis-based First Bank System, a bank holding company known for its focusing strategy, are activity-focusing. Norwest, a bank holding company also based in Minneapolis and known for its diversifying strategy, initiated seven activity-diversifying mergers out of a total of eight mergers in this study. Finally, NationsBank, a North Carolina bank holding company, was involved in three activity-focusing and three activity-diversifying
mergers. NationsBank, which is now called Bank of America Corp. as a result of a merger, is not known for any particular merger strategy.

To check the robustness of the first measure, I use a second method to measure activity relatedness of partner activities, which is the correlation coefficient of the stock returns of the partners. Following Mörck et al. (1990), I examine the correlation coefficients of daily stock returns of the partners in the year prior to the merger announcement. Specifically, I look at the period 300 to 51 days before the merger announcement when such data are available. In three cases, I have slightly fewer observations, while I have at least 200 observations in all cases. As with the first measure, I control for geography by dividing the mergers into two groups, geographically focusing and geographically diversifying, and analyze the groups separately. I consider mergers with correlation coefficients above the median of the group to be focusing and those below to be diversifying. Since this measure separates the data into only two activity groups, which classify above and below the median, it does not provide the richness of cluster analysis that divides the data along several lines of activities. Also, the methodology creates two groups of equal size when there may actually be more mergers that are focusing or more that are diversifying. Using correlation coefficients, however, reduces the influence of any outliers on the classification scheme and also serves to verify the general results of cluster analysis.

4. Market reactions to various types of mergers

To determine whether the market distinguishes between announcements of diversifying or focusing mergers, I establish whether merger partners experience abnormal returns upon the announcement of the merger. I use the standard event study methodology (see Brown and Warner, 1985) with the market model

\[ AR_{it} = R_{it} - (x + \beta R_{Mt}), \]

in which \( AR_{it} \) is the abnormal return for stock \( i \) at time \( t \), \( R_{it} \) is the return on stock \( i \) at time \( t \), and \( R_{Mt} \) represents the return on the market at time \( t \).

I estimate the intercept and slope coefficients, alpha and beta, using daily returns collected 300 to 51 days before the merger announcement, when such data were available. In cases where the firm had not been in existence for a full 300 trading days before the announcement so as to yield 250 observations in the estimation period, I include it as long as there was at least one year of data, yielding approximately 200 observations in the estimation period. The market return is the value-weighted index of returns including dividends for the combined New York Stock Exchange, American Stock Exchange, and NASDAQ taken from CRSP data. Cumulative abnormal returns (CAR) are compiled from ten days before the merger announcement to one day following the
announcement. Extending the window forward in time to ten days after the announcement does not significantly alter the results. Furthermore, the event window is not important if all groups are affected equally. That is, if there is no correlation between pre-event leakage and type of merger, widening or narrowing the window will change the level of CAR, but not the relationship among the groups. When I extend the event window to \( (t = -50, 10) \), the group of mergers that focus both geography and activity is the only one to earn positive returns. The major difference between the shorter window and the longer one is that the figures are statistically significant in the former, but not in the latter. This result often occurs when event windows are widened as a result of the increased volatility of returns over time.

To determine the extent to which a particular type of merger creates or destroys value, I examine the average cumulative abnormal returns of the specific group. In order to test whether a merger is value-enhancing or destroying, I examine the abnormal returns to both bidder and target. The gains in value can be shared between the partners, but usually not evenly. Although targets usually gain 20% to 30% upon announcement (see Jensen and Ruback, 1983), targets typically are about 10% of the size of bidders. Even if bidders lose only 1% of value, the loss more than offsets the gain to targets. Previous studies that look at the combined return to bidder and target examine the weighted average of the returns to the bidder and the target (see Bradley et al., 1988; Cybo-Ottone and Murgia, 1996). The weight used is fixed, and based on the relative asset or market values of the merger partners, and is determined sometime prior to the event window. The problem with this approach is that the base changes such that percentage increases and percentage decreases are not symmetric. The following example illustrates this point. Assume that the market value of the bidder is the same as the target on the date the weight is fixed. This assumption results in a weight of 50% for both partners. Assume further that the market value of each partner is set at 100 so that the portfolio is worth 200. If the market value of the bidder increases by 20 to 120, or a 20% increase, and the market value of the bidder falls by 20 to 80, a similar 20% decrease, the weighted average return to the bidder and target is the same as the return to the hypothetical portfolio, or zero. The portfolio is still worth 200. If, then, the value of the bidder decreases by 20 back to 100, or a fall of 16%, and the value of the target increases 20 to 100, indicating a rise of 25%, the weighted average of the return is \( 0.5 \times -16\% + 0.5 \times 25\% \), or 4.5%. In fact, the portfolio is still worth 200, and has created no value.

The results for a few individual mergers differ substantially for the two methods of calculation. In one case, a bidder that represented 87% of the merger lost 1.4%, and its target gained 17.4% yielding a weighted average loss of 1.4% of value. Had the partners been joined during the period, they would have created 7.3% value. The results for most mergers, and therefore the overall results of this study, are basically the same regardless of method. For example,
mergers that focus both geography and activity create 2.9% value for weighted 
partners and 3.0% value for the hypothetical partners. Overall, the weighted 
partners lost 0.11%, but the hypothetical portfolios created 0.04%. Neither 
value is statistically different from zero.

In order to obtain the combined value, I construct a hypothetical portfolio of 
the two merging partners, and determine the daily changes in the sum of their 
market values, using

\[ R^P_t = \ln\left\{ \left[ \frac{(MV^B_t + MV^T_t)}{(MV^B_{t-1} + MV^T_{t-1})} - 1 \right] + 1 \right\}. \]  (2)

In Eq. (2), \( R^P_t \) is the return on the portfolio at time \( t \), \( MV \) represents the market 
value of the partner, with B designating bidder and T designating target, at time 
\( t \) or \( t - 1 \). This methodology takes into consideration the relative size of the 
partners. A relatively large bidder that loses value offsets the gains of a small 
target so that the return on the hypothetical portfolio is zero or negative. The 
value creation of a relatively large target, however, could offset the losses of 
a relatively small bidder so that the combined partners create value. I also look 
at returns to bidders and targets separately in order to determine how the 
returns are divided. Since correlation is not a problem for individual firms, 
I compare stock prices, including dividends, at time \( t \) and \( t - 1 \) to obtain these 
returns.

To test for significance, I use the Z-statistic described by Dodd and Warner 
(1983). Z-statistics control for the number of observations in the estimation 
period as well as market fluctuations during the event window. This test statistic 
has a normal shape, with values ranging from zero to one. The null hypothesis 
being tested is the possibility of no abnormal returns resulting from the merger 
announcements. As noted by Dodd and Warner (1983), the average CAR and 
Z-statistic may have opposite signs. This result can occur if most CARs are 
positive and the sample includes a few extreme negative outliers with very large 
standard deviations. In such cases, both average CAR and the Z-statistic are 
typically close to zero.

I also examine whether the differences between various types of mergers are 
statistically significant. The \( t \)-statistic measures the statistical significance of the 
difference between the means of the two groups. It divides the difference in 
means by a control for the variance of the CARs and the size of the groups being 
examined as follows:

\[ t = \frac{\bar{x}_1 - \bar{x}_2}{\sqrt{v_1/n_1 + v_2/n_2}}. \]  (3)

In Eq. (3), \( \bar{x}_i \) is the mean of sample \( i \), \( v_i \) is the variance of sample \( i \), and \( n_i \) is the 
size of sample \( i \). The \( t \)-statistic is distributed as a Student-t under the null 
hypothesis of no difference in abnormal returns to the two groups.
Non-parametric tests indicate whether outliers drive the results. The Wilcoxon signed rank test indicates whether the median is statistically different from zero. The p-value associated with this test is always positive even though the median CAR can be negative. Also, I perform the binomial test to indicate whether the percentage of positive abnormal returns is statistically significant. The Z-statistic associated with this test will be negative when the percentage of positive results is less than 50%.

4.1. Diversifying versus focusing mergers

I first look at whether the market distinguishes between mergers that focus geography and those that diversify geography. I also test whether abnormal returns are different for merging partners that focus their activities as opposed to those that diversify activities. The market does not distinguish geographically focusing mergers from geographically diversifying ones, but it does favor activity-focusing mergers over those that diversify into other products. Column 2 of Table 3 shows that geographically focusing and geographically diversifying mergers neither create nor destroy value for the combined partners. The non-parametric tests suggest that the abnormal returns are not driven by outliers. Column 2 of Table 4 shows that activity-focusing mergers enhance value by 1.5%, and activity-diversifying mergers destroy value by 0.9%. The individual amounts, as well as the difference, are statistically significant at least at the 5% level. The non-parametric tests in this case, however, are not statistically significant, and suggest the results may be driven by outliers. An additional test not reported in the tables indicates whether two groups come from the same distribution. The non-parametric Wilcoxon two-sample test produces a p-value of 0.0, which suggests the difference between the two activity groups, focus and diversification, is statistically significant at the 1% level. Focusing activity, therefore, tends to enhance value, while focusing geography does not destroy value.

Note that, in a recession, geographic diversification becomes more important because it spreads risks. For example, a bank located in both Texas and Pennsylvania would be better off than a bank located only in Texas when oil prices fall. A recession occurred during the course of the period studied here. Real gross domestic product in the United States declined in the second half of 1990 and the first quarter of 1991. The National Bureau of Economic Research distinguished this recession as an 8-month contraction, from a peak in July 1990 to a trough in March 1991. Fig. 2 shows the average CAR by year and by merger type for U.S. mergers. Note that investors bid down the price of mergers that focus both geography and activity in 1990. After the recession, the market again appreciated mergers that focused geographically. To test this reaction more specifically, I regress combined CAR against three dummy variables. One for geographic focus, one for activity focus, and one for geographically focusing
Table 3
Cumulative abnormal returns (CARs) to mergers according to the focus or diversification with respect to geography

The sample consists of 280 domestic U.S. mergers announced between 1988 and 1995 between publicly traded firms for which at least one is a banking firm. The sample is divided into groups according to geographic diversification. A geographically focusing merger is one in which both partners are headquartered in the same U.S. state, and diversifying mergers are those for which the partners are headquartered in different states. Returns for the combined partners are determined by comparing total market value of the two at time \( t \) with total market value at \( t - 1 \): 
\[
R_t^w = \ln\left(\frac{MV_t^B + MV_t^T}{MV_{t-1}^B + MV_{t-1}^T}\right).
\]
Returns for bidders and targets compare prices in period \( t \) with those in period \( t - 1 \). Abnormal returns are calculated using standard event study methodology (see Brown and Warner, 1985) with the market model. CARs (\( t = -10, 1 \)) are averaged for each group. Tests of statistical significance, either \( Z \)-statistics or \( p \)-values, are in parentheses. \( P \)-values are used only to indicate whether the median is statistically different from zero, and are based on the Wilcoxon signed rank test.

<table>
<thead>
<tr>
<th>Merger type</th>
<th>Combined partners</th>
<th>Bidders</th>
<th>Targets</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number of mergers</td>
<td>Average CAR</td>
<td>Median CAR</td>
</tr>
<tr>
<td></td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
</tr>
<tr>
<td><strong>Panel A: Cumulative abnormal returns</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Geographic focus</td>
<td>121</td>
<td>0.62</td>
<td>0.35</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.96)</td>
<td>(0.47)</td>
</tr>
<tr>
<td>Geographic diversification</td>
<td>159</td>
<td>-0.40</td>
<td>-0.34</td>
</tr>
<tr>
<td></td>
<td></td>
<td>( -0.77)</td>
<td>(0.27)</td>
</tr>
<tr>
<td>Total</td>
<td>280</td>
<td>0.04%</td>
<td>0.13%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.05)</td>
<td>(0.77)</td>
</tr>
<tr>
<td><strong>Panel B: Differences between groups</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Geographic focus versus</td>
<td>1.02</td>
<td>0.69</td>
<td>8.5</td>
</tr>
<tr>
<td>geographic diversification</td>
<td></td>
<td>1.46</td>
<td>0.60</td>
</tr>
</tbody>
</table>

* Significant at 1% level
Table 4
Cumulative abnormal returns (CARs) to mergers according to the focus or diversification with respect to activities

The sample consists of 280 domestic U.S. mergers announced between 1988 and 1995 between publicly traded firms for which at least one is a banking firm. An activity-focusing merger is one in which both partners fall into the same cluster, and diversifying mergers are those where the partners are in different clusters. Returns for the combined partners are determined by comparing total market value at $t - 1$: $R_p^t = \ln\left(\frac{MV_p^t + MV_T^t}{MV_p^{t-1} + MV_T^{t-1}}\right)$. Returns for bidders and targets compare prices in period $t$ with those in period $t - 1$. Abnormal returns are calculated using standard event study methodology (see Brown and Warner, 1985) with the market model. CARs ($t = -10, 1$) are averaged for each group. Tests of statistical significance, either Z-statistics or $p$-values, are in parentheses. $P$-values are used only to indicate whether the median is statistically different from zero, and are based on the Wilcoxon signed rank test.

<table>
<thead>
<tr>
<th>Merger type</th>
<th>Combined partners</th>
<th>Bidders</th>
<th>Targets</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number of mergers</td>
<td>Average CAR</td>
<td>Median CAR</td>
</tr>
<tr>
<td></td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
</tr>
<tr>
<td>Activity focus</td>
<td>112</td>
<td>1.47</td>
<td>0.45</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(2.67)$^a$</td>
<td>(0.22)</td>
</tr>
<tr>
<td>Activity diversification</td>
<td>168</td>
<td>-0.91</td>
<td>-0.89</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(-2.12)$^b$</td>
<td>(0.14)</td>
</tr>
<tr>
<td>Total</td>
<td>280</td>
<td>0.04%</td>
<td>-0.13%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.05)</td>
<td>(0.77)</td>
</tr>
</tbody>
</table>

Panel B: Differences between groups
Activity focus versus activity diversification $t$-statistics

<table>
<thead>
<tr>
<th></th>
<th>Combined partners</th>
<th>Bidders</th>
<th>Targets</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number of mergers</td>
<td>Average CAR</td>
<td>Median CAR</td>
</tr>
<tr>
<td></td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
</tr>
<tr>
<td>Activity focus</td>
<td>112</td>
<td>1.47</td>
<td>0.45</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(2.67)$^a$</td>
<td>(0.22)</td>
</tr>
<tr>
<td>Activity diversification</td>
<td>168</td>
<td>-0.91</td>
<td>-0.89</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(-2.12)$^b$</td>
<td>(0.14)</td>
</tr>
<tr>
<td>Total</td>
<td>280</td>
<td>0.04%</td>
<td>-0.13%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.05)</td>
<td>(0.77)</td>
</tr>
</tbody>
</table>

$^a$Significant at 1% level
$^b$Significant at 5% level
$^c$Significant at 10% level
Fig. 2. Average combined CARs for US mergers by year and by type. The sample consists of 280 domestic U.S. mergers announced from 1988 to 1995 between publicly traded firms for which at least one is a banking firm. The chart shows the average by year for all the mergers in the sample as well as four subgroups: GFAF mergers are those that focus both geography and activity, GDAD mergers diversify both geography and activity, GFAD mergers focus geography but diversify activity, and GDAF diversify geography but focus activity. Returns to the combined merger partners are determined by comparing total market value of the two at time $t$ with total market value at $t-1$: $R^p_t = \ln \left( \frac{M_{<Bt} + M_{<Tt}}{M_{<Bt-1} + M_{<Tt-1}} \right)$. Abnormal returns are calculated using standard event study methodology (see Brown and Warner, 1985) with the market model for the time period 10 days before to one day after the merger announcement.

The results shown in Eq. (4) suggest that the market significantly values both geographic and activity focus. Returns to mergers that focus geography in 1990, however, are indistinguishable from zero.
4.2. Combination mergers

Although the market seems to favor activity-focusing mergers, it may react differently when a merger focuses both activity and geography. In order to test this hypothesis, I divide mergers into four mutually exclusive and exhaustive categories. The first includes mergers that focus both geography and activity. The second includes mergers that diversify geography and activity. The third group includes mergers that focus geography and diversify activity, and the fourth group includes mergers that diversify geography and focus activity. Table 5 shows the CARs for these four groups. In Table 5, column 2 shows average CARs for the combined bidder and target, while columns 5 and 8 show average CARs for bidders and targets separately. Looking at the sub-groups of mergers reveals differences. While three of the four groups do not create value, mergers that focus both geography and activities earn a positive 3.0% for the combined partners. Bidders in this group do not destroy value, and targets that enter into focusing mergers earn 18.7%. Results of non-parametric tests suggest that the abnormal returns are not driven by outliers. Panel B of Table 5 reveals that combined partners of mergers that focus both geography and activity earn at least 2.9% more than partners in any other type of merger, an amount that is statistically different from the other groups. The differences in earnings for the remaining groups are statistically indistinguishable from each other. In addition, I test for robustness by dividing the sample into two groups, mergers announced between 1988 and 1992, and those announced from 1993 to 1995. I find no statistically significant differences between the two groups.

When I expand the definition of in-market merger to include mergers where the partners each have operations, but not necessarily headquarters, in overlapping states, mergers that focus both geography and activity still earn significantly more than the other groups. Although the point estimate of 2.1% is statistically significant at the 1% level (Z-statistic = 3.2), it is smaller than the result derived using the more restrictive definition. The market appears to consider the home market as the place where the bank first establishes itself. Table 6 shows the results using categories determined by correlation coefficients. Column 2 shows that mergers that focus both geography and activity earn 1.1%, an amount that is statistically significant (Z-statistic = 2.0), while the other types of mergers neither create nor destroy value. For geographically diversifying mergers, correlations range from −13.0% to 53.7%, with 5.5% being the median. For geographically focusing mergers, correlations range from −19.5% to 66.2%, with a median of 3.8%. I use states as the geographic delineations to make my results comparable to other studies, such as Cornett and Tehranian (1992), that look at geographic focus and diversification in those terms. The remainder of the paper focuses on classifications derived from cluster analysis using the more restrictive definition of in-market merger.
4.3. **Value to bidders of mergers**

Only bidders involved in mergers that focus both geography and activity do not destroy value as a result of a merger announcement. Columns 5–7 in Table 5 show that while the other types of mergers destroy value for bidders, mergers that focus both geography and activity neither create nor destroy value. Panel B of Table 5, column 5 shows that the market appears to distinguish among different types of bidders such that bidders of mergers that focus both geography and activity earn at least 2.0% more than bidders in the other types of mergers.

4.4. **Value to targets of mergers**

Targets everywhere and always tend to experience an increase in value. This observation makes sense, since the shareholders of a company would not agree to a takeover unless they experience a benefit. This result also agrees with the findings of Jensen and Ruback (1983) regarding mergers in all industries. Data for targets in Table 5, column 8 show that the average return is 16.6%. Targets of geographically and activity-focusing mergers tend to earn the highest abnormal returns (18.7%), but, as shown in panel B of Table 5, the returns are not statistically different from the other groups. Targets of mergers in other industries tend to earn even higher abnormal returns, as high as 25–30%. The number of bidders in the United States is restricted as a result of activity constraints arising from the Glass-Steagall Act and geographic constraints posed by the McFadden Act, as well as the paucity of hostile takeovers in the banking industry. These constraints could help to explain the relatively low returns to targets in bank mergers.

4.5. **Influence of other factors**

Besides the type of merger, several factors may influence the market’s reaction to the announcement of a bank merger. To establish that the differences between the groups of mergers are not the result of other influences, I control for variables that previous literature shows can be important to the announcement outcome. These factors are: pre-merger performance of the target, relative size of target vis-à-vis the bidder, too-big-to-fail guarantees from the government, as well as government assistance to failing banks, payment and accounting methods, attitude of takeover, and number of bidders.

Palepu (1986) finds that firms are more likely to be acquired if they have low stock performance. To control for under-performing targets that may create more value for the merger partners, I regress the cumulative abnormal returns (CAR) of the combined merger partners on the target’s pre-merger performance. I measure such performance as the return of bank \( i \) for the period 300 to 51 days
Table 5
Cumulative abnormal returns (CARs) to mergers according to the focus or diversification of their geography and activity using cluster analysis to determine activity focus

The sample consists of 280 domestic U.S. mergers announced between 1988 and 1995 between publicly traded firms where at least one is a banking firm. A geographically focusing merger is one in which both partners are headquartered in the same U.S. state, and diversifying partners are in different states. An activity-focusing merger is one in which both partners fall into the same cluster and diversifying partners are in different clusters. Returns for the combined partners are determined by comparing total market value of the two at time $t$ with total market value at $t-1$: $R^p_t = \ln[(MV^B_t + MV^T_t)/(MV^{B-1}_t + MV^{T-1}_t)]$. Returns for bidders and targets compare prices in period $t$ with those in period $t-1$. Abnormal returns are calculated using standard event study methodology (see Brown and Warner, 1985) with the market model. CARs ($t = -10, 1$) are averaged for each group. Tests of statistical significance, either Z-statistics or $p$-values, are in parentheses. $P$-values are used only to indicate whether the median is statistically different from zero, and are based on the Wilcoxon signed rank test.

<table>
<thead>
<tr>
<th>Merger type</th>
<th>Number of mergers</th>
<th>Average CAR (1)</th>
<th>Median CAR (2)</th>
<th>% Positive (3)</th>
<th>Average CAR (5)</th>
<th>Median CAR (6)</th>
<th>% Positive (7)</th>
<th>Average CAR (8)</th>
<th>Median CAR (9)</th>
<th>% Positive (10)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Panel A: Cumulative abnormal returns</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Geographic and activity focus</td>
<td>53</td>
<td>3.00</td>
<td>1.19</td>
<td>64.2</td>
<td>0.14</td>
<td>-0.69</td>
<td>43.4</td>
<td>18.66</td>
<td>15.16</td>
<td>94.3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(3.90)*</td>
<td>(0.19)*</td>
<td>(2.06)*</td>
<td>(-0.30)*</td>
<td>(0.41)*</td>
<td>(-0.96)*</td>
<td>(23.96)*</td>
<td>(0.00)*</td>
<td>(6.46)*</td>
</tr>
<tr>
<td>Geographic and activity diversification</td>
<td>100</td>
<td>-0.69</td>
<td>-0.74</td>
<td>43.0</td>
<td>-1.80</td>
<td>-1.81</td>
<td>33.0</td>
<td>14.53</td>
<td>18.49</td>
<td>88.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(-0.96)*</td>
<td>(0.05)*</td>
<td>(-1.40)*</td>
<td>(-3.52)*</td>
<td>(0.00)*</td>
<td>(-3.40)*</td>
<td>(16.76)*</td>
<td>(0.00)*</td>
<td>(7.60)*</td>
</tr>
<tr>
<td>Geographic focus and activity diversification</td>
<td>68</td>
<td>-1.23</td>
<td>-1.48</td>
<td>45.6</td>
<td>-2.70</td>
<td>-2.21</td>
<td>27.9</td>
<td>18.02</td>
<td>14.79</td>
<td>85.3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(-2.17)*</td>
<td>(0.55)</td>
<td>(-0.73)</td>
<td>(-3.88)*</td>
<td>(0.01)</td>
<td>(-3.64)*</td>
<td>(16.33)</td>
<td>(0.00)*</td>
<td>(5.82)*</td>
</tr>
<tr>
<td>Geographic diversification and activity focus</td>
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<td>0.04</td>
<td>-0.13</td>
<td>48.9</td>
<td>-1.68</td>
<td>-1.70</td>
<td>33.6</td>
<td>16.61</td>
<td>16.74</td>
<td>88.6</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.05)</td>
<td>(1.00)</td>
<td>(-0.36)</td>
<td>(-5.60)*</td>
<td>(0.00)</td>
<td>(-5.50)*</td>
<td>(35.77)</td>
<td>(0.00)*</td>
<td>(12.91)*</td>
</tr>
<tr>
<td>Total</td>
<td>280</td>
<td>0.04%</td>
<td>-0.13%</td>
<td>48.9%</td>
<td>-1.68%</td>
<td>-1.70%</td>
<td>33.6%</td>
<td>16.61%</td>
<td>16.74%</td>
<td>88.6%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.05)</td>
<td>(0.77)</td>
<td>(-0.36)</td>
<td>(-5.60)*</td>
<td>(0.00)</td>
<td>(-5.50)*</td>
<td>(35.77)</td>
<td>(0.00)*</td>
<td>(12.91)*</td>
</tr>
</tbody>
</table>
### Panel B: Differences between groups

<table>
<thead>
<tr>
<th></th>
<th>Geographic/activity focus vs. geographic/activity diversification</th>
<th>Geographic/activity focus vs. geographic focus/activity diversification</th>
<th>Geographic/activity diversification vs. geographic focus/activity diversification</th>
<th>Geographic/activity diversification vs. geographic diversification/activity focus</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>$t$-statistics</td>
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<td>$t$-statistics</td>
<td>$t$-statistics</td>
<td>$t$-statistics</td>
</tr>
<tr>
<td>Geographic/activity focus vs. geographic/activity diversification</td>
<td>$3.69$ $1.93$ $21.15$ $1.95$ $1.13$ $10.4$ $4.13$ $-3.32$ $6.3$</td>
<td>$3.27^a$ $1.74^c$ $1.26$</td>
<td>$4.23$ $2.67$ $18.6$ $2.85$ $1.53$ $15.5$ $0.63$ $0.37$ $9.1$</td>
<td>$3.47^a$ $2.46^b$ $0.22$</td>
<td>$2.90$ $1.40$ $15.0$ $2.08$ $0.52$ $11.2$ $1.99$ $-1.88$ $6.2$</td>
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<td>$t$-statistics</td>
<td>$t$-statistics</td>
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<tr>
<td>Geographic/activity focus vs. geographic focus/activity diversification</td>
<td>$2.90$ $1.40$ $15.0$ $2.08$ $0.52$ $11.2$ $1.99$ $-1.88$ $6.2$</td>
<td>$3.47^a$ $2.46^b$ $0.22$</td>
<td>$2.48^b$ $1.72^c$ $0.77$</td>
<td>$0.54$ $0.74$ $-2.6$ $0.90$ $0.39$ $5.1$ $-3.49$ $3.70$ $2.7$</td>
<td></td>
</tr>
<tr>
<td>Geographic/activity diversification vs. geographic focus/activity diversification</td>
<td>$0.68$ $1.29$ $-0.99$</td>
<td>$0.54$ $0.74$ $-2.6$ $0.90$ $0.39$ $5.1$ $-3.49$ $3.70$ $2.7$</td>
<td>$2.60$ $0.90$ $-0.37$</td>
<td>$-0.79$ $-0.52$ $-6.2$ $0.13$ $-0.61$ $0.8$ $-2.14$ $1.44$ $-0.10$</td>
<td>$-1.12$ $0.17$ $-0.65$</td>
</tr>
<tr>
<td>Geographic/activity diversification vs. geographic diversification/activity focus</td>
<td>$-1.12$ $0.17$ $-0.65$</td>
<td>$-1.12$ $0.17$ $-0.65$</td>
<td>$-1.33$ $-1.26$ $-3.6$ $-0.77$ $-1.00$ $-4.3$ $1.35$ $-2.25$ $-2.8$</td>
<td>$-1.58$ $-0.93$ $0.47$</td>
<td>$-1.33$ $-1.26$ $-3.6$ $-0.77$ $-1.00$ $-4.3$ $1.35$ $-2.25$ $-2.8$</td>
</tr>
</tbody>
</table>

*Significant at 1% level

*Significant at 5% level

*Significant at 10% level
Table 6
Cumulative abnormal returns (CARs) to mergers according to the focus or diversification of their geography and activity using correlation to determine activity focus

The sample consists of 280 domestic U.S. mergers announced between 1988 and 1995 between publicly traded firms for which at least one is a banking firm. A geographically focusing merger is one in which both partners are headquartered in the same U.S. state, and diversifying mergers are those where the partners are in different states. An activity-focusing merger is one where the correlation coefficient of the partners’ stock returns is above the median. Returns for the combined partners are determined by comparing total market value of the two at time $t$ with total market value at $t - 1$: $R_t^p = \ln\left(\frac{MV_t^p + MV_t^T}{MV_{t-1}^p + MV_{t-1}^T}\right)$. Returns for bidders and targets compare prices in period $t$ with those in period $t - 1$. Abnormal returns are calculated using standard event study methodology (see Brown and Warner, 1985) with the market model. CARs ($t = -10, 1$) are averaged for each group. Tests of statistical significance, either Z-statistics or p-values, are in parentheses. P-values are used only to indicate whether the median is statistically different from zero, and are based on the Wilcoxon signed rank test.

<table>
<thead>
<tr>
<th>Merger type</th>
<th>Combined partners</th>
<th>Bidders</th>
<th>Targets</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number of mergers</td>
<td>Average CAR (1)</td>
<td>Median CAR (2)</td>
</tr>
<tr>
<td>Geographic and activity focus</td>
<td>61</td>
<td>1.10 (1.95)</td>
<td>0.15 (0.80)</td>
</tr>
<tr>
<td>Geographic and activity diversification</td>
<td>80</td>
<td>-0.54 (0.62)</td>
<td>-0.28 (0.43)</td>
</tr>
<tr>
<td>Geographic focus and activity diversification</td>
<td>60</td>
<td>0.14 (0.61)</td>
<td>0.38 (0.52)</td>
</tr>
<tr>
<td>Geographical diversification and activity focus</td>
<td>79</td>
<td>-0.25 (0.47)</td>
<td>-0.25 (0.50)</td>
</tr>
<tr>
<td>Total</td>
<td>280</td>
<td>0.04% (0.05)</td>
<td>-0.13% (0.77)</td>
</tr>
</tbody>
</table>
Panel B: Differences between groups

<p>| | | | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Geographic/activity focus vs.</td>
<td>1.64</td>
<td>0.43</td>
<td>7.5</td>
<td>0.27</td>
<td>1.16</td>
<td>0.6</td>
<td>2.90</td>
</tr>
<tr>
<td>geographic/activity diversifications</td>
<td>0.43</td>
<td>1.16</td>
<td>0.27</td>
<td>0.81</td>
<td></td>
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</tr>
<tr>
<td>t-statistics</td>
<td>1.60</td>
<td>0.27</td>
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</tr>
<tr>
<td>Geographic/activity focus vs.</td>
<td>0.95</td>
<td>-0.23</td>
<td>-2.5</td>
<td>0.69</td>
<td>-0.91</td>
<td>-0.6</td>
<td>-1.41</td>
</tr>
<tr>
<td>geographic focus/activity diversification</td>
<td>0.23</td>
<td>0.69</td>
<td>0.62</td>
<td>-0.47</td>
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<tr>
<td>t-statistics</td>
<td>0.78</td>
<td>0.62</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Geographic/activity focus vs.</td>
<td>1.34</td>
<td>0.40</td>
<td>6.9</td>
<td>1.20</td>
<td>0.87</td>
<td>2.8</td>
<td>1.64</td>
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<tr>
<td>geographic diversification/activity focus</td>
<td>0.40</td>
<td>1.20</td>
<td>1.15</td>
<td>0.62</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>t-statistics</td>
<td>1.26</td>
<td>1.15</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Geographic/activity diversification vs.</td>
<td>-0.69</td>
<td>-0.66</td>
<td>-10.0</td>
<td>0.42</td>
<td>0.83</td>
<td>-1.2</td>
<td>-4.32</td>
</tr>
<tr>
<td>geographic focus/activity diversification</td>
<td>-0.66</td>
<td>0.42</td>
<td>0.52</td>
<td>-1.09</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>t-statistics</td>
<td>-0.75</td>
<td>0.52</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Geographic/activity diversification vs.</td>
<td>-0.30</td>
<td>-0.03</td>
<td>-0.60</td>
<td>0.94</td>
<td>1.16</td>
<td>2.2</td>
<td>-1.26</td>
</tr>
<tr>
<td>geographic diversification/activity focus</td>
<td>-0.03</td>
<td>0.94</td>
<td>1.16</td>
<td>2.2</td>
<td>-1.26</td>
<td>2.53</td>
<td>6.5</td>
</tr>
<tr>
<td>t-statistics</td>
<td>-0.42</td>
<td>1.28</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Geographic focus/activity diversification vs.</td>
<td>0.39</td>
<td>0.63</td>
<td>9.4</td>
<td>0.52</td>
<td>0.33</td>
<td>3.4</td>
<td>3.05</td>
</tr>
<tr>
<td>geographic diversification/activity focus</td>
<td>0.63</td>
<td>0.52</td>
<td>0.33</td>
<td>3.4</td>
<td>3.05</td>
<td>0.94</td>
<td>3.5</td>
</tr>
<tr>
<td>t-statistics</td>
<td>0.41</td>
<td>0.59</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Significant at 1% level
* Significant at 5% level
* Significant at 10% level

before the merger announcement minus the return on the bank index for the same period.

In addition, I include the relative size of the merger partners. Recall that Table 1 shows target-to-bidder ratio of mergers that focus both activity and geography tend to be larger than ratios of the other types of mergers. These are the mergers that create the most value. Moreover, James and Weir (1987) find a positive relationship between an acquirer’s returns and the relative size of the target to bidder. My results could be driven by relative size rather than diversification or focus. I therefore include the log of the relative size of target-to-bidder measured by market equity values ten days before the merger announcement.

Another issue concerning size is that some banks are “too-big-to-fail” (TBTF). Governments decide that certain banks are so vital to the smooth operation of an economy that the banks are not permitted to fail. In the United States, this policy became explicit in 1984 when the U.S. Comptroller of the Currency, the authority responsible for regulating national banks, testified to Congress that 11 banks were so important, partly based on their sizes, that they would not be permitted to fail. O’Hara and Shaw (1990) detail the benefits of being too big to fail. Without assurances, uninsured depositors and other liability holders demand a risk premium. When a bank is not permitted to fail, the risk premium is no longer necessary. Furthermore, banks covered under the policy have an incentive to increase their riskiness so as to enjoy higher expected returns. Mergers, therefore, may push banks into this desirable category. The larger the resulting institution, the more attractive the investment and the higher should be the abnormal return upon the merger announcement. This effect, however, could be reduced if the institutions involved in mergers already enjoy the TBTF status. I control for TBTF by including the log of the assets, adjusted to 1995 U.S. dollars, of the resulting merged entity.

Subsidies could also be in the form of government assistance to failed or failing banks. Abnormal returns could be the transfer of wealth from taxpayers to merging entities. I therefore include a dummy variable to indicate when the U.S. Federal Deposit Insurance Corporation assists a merger.

Another factor that could be important to market reaction is the method of payment. Amihud et al. (1990) discuss two hypotheses concerning the choice of financing. First, since cash acquisitions create an immediate liability for the target stockholders, while payments made in stock are taxable only when they are redeemed, the tax effects hypothesis suggests target stockholders would prefer stock. Second, the information asymmetries hypothesis posits that bidders want to use stock to purchase a target when the bidders know their stock is overvalued. Investors recognize this situation, and drive down the price of the bidder’s stock upon announcement. Another aspect of this hypothesis reaches a different conclusion. Stockholders of targets who know their stock is undervalued prefer payment in stock rather than cash so they may enjoy the benefits
Table 7
Regression with control variables

This table analyzes the influence of the pre-merger performance of the target, relative target-to-bidder size, government assistance, accounting and payment methods, hostile takeovers, and number of bidders. The sample consists of 280 domestic U.S. mergers announced between 1988 and 1995 between publicly traded firms for which at least one is a banking firm. The sample is divided into four groups according to geographic and activity focus or diversification. Returns to the combined merger partners are determined by comparing total market value of the two at time \( t \) with total market value at \( t - 1 \):

\[
R_p^t = \ln\left(\frac{M_{<B}^t + M_{<T}^t}{M_{<B}^{t-1} + M_{<T}^{t-1}}\right)
\]

Abnormal returns are calculated using standard event study methodology (see Brown and Warner, 1985) with the market model. The dependent variable is the vector of cumulative abnormal returns for the combined bidder and target 10 days before to one day after the merger announcement. CAR is regressed against a vector composed of the pre-merger performance of the target, the logs of the target-to-bidder market ratios, and the combined partners’ assets, as well as dummy variables to indicate government assistance, payment in cash or stock, the pooling method of accounting, a hostile merger, and more than one bidder. Additionally, vectors of dummy variables control for the types of mergers in this study: a vector of dummy variables that indicate whether a merger (1) diversifies both geography and activity; (2) focuses geography and diversify activity; or (3) diversifies geography and focuses activity. The constant represents the portion of returns that is not explained by the other variables, and can include the return to mergers that focus both geography and activity. I use White’s method (1980) to correct for heteroskedasticity. \( T \)-statistics are the coefficients of this regression divided by their respective standard errors, and appear in parentheses.

<table>
<thead>
<tr>
<th>Independent variable</th>
<th>Estimate (t-value)</th>
<th>Estimate (t-value)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant (including mergers that focus geography and activity)</td>
<td>- 6.41% (2.29)(^b)</td>
<td>5.75% (3.37)(^a)</td>
</tr>
<tr>
<td>Mergers that diversify geography and activity</td>
<td>- 3.16 (2.31)(^b)</td>
<td>- 3.90 (2.77)(^a)</td>
</tr>
<tr>
<td>Mergers that focus geography and diversify activity</td>
<td>- 4.56 (2.85)(^a)</td>
<td>- 5.09 (3.11)(^a)</td>
</tr>
<tr>
<td>Mergers that diversify geography and focus activity</td>
<td>- 2.40 (1.64)(^a)</td>
<td>- 2.75 (1.91)(^a)</td>
</tr>
<tr>
<td>Pre-merger performance of target</td>
<td>- 4.57 (2.39)(^b)</td>
<td>- 2.09 (2.39)(^b)</td>
</tr>
<tr>
<td>Ln (market equity of target/market equity of bidder)</td>
<td>0.98 (2.34)(^b)</td>
<td>0.83 (2.41)(^b)</td>
</tr>
<tr>
<td>Combined assets of partners</td>
<td>0.01 (0.46)</td>
<td></td>
</tr>
<tr>
<td>Government assistance (dummy)</td>
<td>1.88 (1.20)</td>
<td></td>
</tr>
<tr>
<td>Payment in cash (dummy)</td>
<td>1.11 (0.65)</td>
<td></td>
</tr>
<tr>
<td>Payment in stock (dummy)</td>
<td>- 0.05 (0.03)</td>
<td></td>
</tr>
<tr>
<td>Pooling accounting method (dummy)</td>
<td>- 1.03 (1.02)</td>
<td></td>
</tr>
<tr>
<td>Hostile takeover (dummy)</td>
<td>8.79 (1.06)</td>
<td></td>
</tr>
<tr>
<td>More than one bidder (dummy)</td>
<td>- 0.63 (0.49)</td>
<td></td>
</tr>
<tr>
<td>Adjusted ( R^2 )</td>
<td>18.4%(^a)</td>
<td>14.9%(^a)</td>
</tr>
<tr>
<td>( F )-statistic</td>
<td>3.98(^a)</td>
<td>6.83(^a)</td>
</tr>
<tr>
<td>Number of observations</td>
<td>159</td>
<td>167</td>
</tr>
</tbody>
</table>

\(^a\) Significant at 1% level
\(^b\) Significant at 5% level
\(^c\) Significant at 10% level
of corrected valuation. While theory offers several conflicting interpretations of the choice of financing, empirical evidence by Amihud et al. (1990) and Travlos (1987), among others, shows that bidders paying for their acquisitions in cash earn significantly more than bidders who use stock. I include a dummy variable to indicate when the bidder pays for the merger in cash and a dummy variable to indicate when stock is used. This strategy does not result in overspecification since 22 bidders use a hybrid type of financing, namely both cash and stock to pay for their targets.

Implications of the accounting method used to combine the bidder and target could also be important to market reaction. The purchase method is similar to the purchase of any capital good. The assets and liabilities of the target are restated at current market value and recorded as of the effective date of the merger. Any difference between the purchase price and the current market value is recorded as goodwill to be expensed after the merger is completed. The pooling method simply superimposes the target’s balance sheet upon the acquirer’s balance sheet at book value, starting from the beginning of the merger year. No marking-to-market valuation occurs, and no goodwill appears as a result of the merger. While pooling means fewer expenses arise to depress future earnings, and it is usually the preferred accounting method, several restrictions apply. Acquirers must obtain or increase current holdings to at least 90% of the target. Payment must be made in stock, and acquirers may not buy back shares for at least two years after the merger is effective. Adhering to these requirements could hamper corporate strategy. If the acquirer expects the target to create excess cash flow, the acquirer may want the flexibility to buy back shares. To control for any influence of the accounting method, I include a dummy variable for mergers that use the pooling method.

Hostile takeovers could create more value than non-hostile mergers. Mikkelsen and Ruback (1985) investigate whether the reason for a merger influences returns to targets. They examine Schedule 13D forms, which investors obtaining more than 5% of a firm must file with the Securities and Exchange Commission. When the filer intends to change the control of the firm, returns are higher than when the intent is, for example, solely for investment. If the additional value that a target receives is more than a transfer of wealth from the bidder to the target, a hostile takeover should create more value than a friendly merger. I control for this possibility by including a dummy variable to indicate when a merger is hostile.

Bradley et al. (1988) show that multi-bidder contests tend to increase returns to targets and decrease returns to bidders. These differences in returns compared to single-bidder contests occur only when a subsequent bid is made and not upon the initial announcement of the merger. They also find that total synergistic gains are higher in multiple-bidder acquisitions, such that the target gains more than the bidder loses. To control for any influence of multiple bidders, I include a dummy variable to indicate more than one bidder for a target.
The regression that examines the various hypotheses discussed above is:

Cumulative abnormal return = $\alpha$

+ $\beta_1 \times$ dummy to indicate mergers that diversify geography and activity
+ $\beta_2 \times$ dummy to indicate mergers that focus geography but diversify activities
+ $\beta_3 \times$ dummy to indicate mergers that diversify geography but focus activity
+ $\beta_4 \times$ pre-merger performance of the target
+ $\beta_5 \times \ln\left(\frac{\text{market value of target}}{\text{market value of bidder}}\right)$
+ $\beta_6 \times \ln(\text{assets of bidder plus assets of target})$
+ $\beta_7 \times$ dummy to indicate mergers that receive governmental assistance
+ $\beta_8 \times$ dummy to indicate merger paid for with cash
+ $\beta_9 \times$ dummy to indicate merger paid for with stock
+ $\beta_{10} \times$ dummy to indicate merger that uses pooling accounting method
+ $\beta_{11} \times$ dummy to indicate a hostile takeover
+ $\beta_{12} \times$ dummy to indicate more than one bidder. (5)

The intercept represents the portion of returns that is not explained by the other variables. This amount includes, but is not limited to, the return to mergers that focus both geography and activity, as well as payment in cash and stock, and mergers that use the purchase method of accounting. $\beta_1$, $\beta_2$, and $\beta_3$ represent the additional market reaction due to the merger being of a different type than those that focus both geography and activity, among other things.

I run a weighted ordinary least squares (OLS) regression using White’s method (1980) to control for heteroskedasticity. The first column in Table 7 shows that pre-merger performance of the target and the target-to-bidder ratios are statistically significant. I remove the insignificant variables from this analysis and run the regression again. The results of the second regression are shown in the second column of Table 7. The coefficients on the types of mergers that do not focus geography and activity are negative and statistically significant. This result is consistent with the results shown in Table 5, which shows that the value created by mergers that focus both geography and activity is significantly greater than the value created by the other types.

In addition, part of the value enhancement is associated with relative size and pre-merger performance of the target. The positive coefficient on the relative market value of target-to-bidder suggests that the larger the target is relative to
the bidder, the greater the CAR. This result substantiates the findings of James and Weir (1987). The significantly negative coefficient on the pre-merger performance of the target variable reveals that the poorer the target performs, vis-à-vis the bank index, the greater the value increase upon announcement of a merger. This finding suggests either the market expects the merger to enhance the performance of the target, or that the FDIC may be providing subsidies, as discussed earlier in this section. The first hypothesis is related to the findings of Mørck et al. (1990), who find a negative relationship between the preannouncement performance of targets and returns to bidding firms upon the announcement of an acquisition when they examine non-bank firms. Since the coefficient on the variable that measures FDIC assistance directly is insignificant, the second hypothesis is not substantiated.

5. Conclusion

From this study, the focus hypothesis appears to apply to bank mergers. By examining mergers that involve a banking firm in the context of the focus versus diversification debate, I find that the market does distinguish among various types of mergers. I divide mergers into four groups depending upon activity and geographic focus and diversification. Mergers between partners that focus their geography and activity enhance value more than any other type. These results hold for various time periods.

Focus and diversification, however, are not the sole influences on returns to combined merger partners. Analysis reveals that CARs increase in relative target to bidder size and decrease in the pre-merger performance of targets. Further dimensions, such as the type of corporate governance (see Brickley and James, 1987; Hubbard and Palia, 1997) or agency costs (see Cornett et al., 1998) could also influence the return on bank mergers. Further analysis into these areas could be a useful extension of this study.

The results must be understood with caution. Although stock prices reveal the market’s expectation of future cash flows, actual performance may differ from market expectations. This observation is especially true for bank mergers. Although the prior conditions to predict successful mergers may exist, their presence may be difficult to discern. Berger and Humphrey (1992) find no apparent correlation between mergers that reduce costs and those that could be predicted to do so in advance. Berger et al. (1998) offer a potential explanation when they discuss the effects of bank mergers. Only the static effect of combining balance sheets is easily observable. The other, dynamic effects, such as restructuring and changes in lending practices, greatly influence the performance of a merged bank, yet are extremely difficult to predict at the time of the merger announcement. Flannery (1999) posits that the market is entering new territory with today’s mergers. The mega-mergers between diverse financial firms into
different geographic areas are unlike those in the past, and stockholders need
updated insights to access the benefits of these new types of mergers.

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