The price of bank mergers in the 1990s

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Introduction and summary

The last decade has witnessed an unprecedented pace of bank mergers and acquisitions. Between 1990 and 1998, the number averaged about 510 per year compared with 345 per year over the 1980–89 period. As a result of this activity, the number of banks operating in the U.S. has declined about 30 percent since 1990. In this article, we examine the primary motivations for this massive wave of bank mergers during the 1990s by analyzing the market prices of these mergers. A better understanding of the factors that determine market prices for bank mergers will shed some light on the implications of continuing mergers and acquisitions in the banking industry. We recognize that rapidly changing supply and demand conditions are fundamental to understanding what drives bank merger markets. For example, bank mergers may be driven by a desire to reduce overall risk by diversifying into new geographic or product markets. Additionally, bank mergers may be motivated by a strategic decision to exploit economies of scale, or to cut overhead and eliminate duplication by closing branches, or to achieve synergies through economies of scope. Of course, bank mergers may also be an attempt by banks to simply increase their market power or to quickly grow into superregional or money center banks.

To some extent, each of these motivations, and resultant strategies, became more feasible in the 1990s with the relaxing of state and federal restrictions on banks' activities. For example, the Riegle–Neal Interstate Banking and Branching Efficiency Act of 1994 allowed banks to branch interstate by consolidating existing out-of-state bank subsidiaries or by acquiring banks or individual branches through mergers and acquisitions. Prior to the Riegle–Neal Act, federal and state laws prevented banks from expanding across state lines (with some exceptions).[1] The Riegle–Neal Act allowed bank holding companies to acquire banks in any state, effective September 29, 1995, and allowed mergers between banks located in different states beginning June 1, 1997.[2]

On November 12, 1999, President Clinton signed the Financial Services Modernization Act (Gramm–Leach–Bliley Act of 1999), allowing banks to merge with securities firms and insurance companies within financial holding companies. This will further expand the merger opportunities for banking organizations and may lead to a new wave of consolidation in banking and other sectors of the financial services industry.

Another potential regulatory effect on bank merger trends is the Federal Deposit Insurance Corporation Improvement Act (FDICIA) of 1991. FDICIA introduced mandatory procedures called prompt corrective actions (PCA), which require regulators to promptly close depository institutions when their capital falls below predetermined quantitative standards, thus eliminating the possibility of regulators providing special consideration to large banks because of the possible systemic impact of large bank failure. Therefore, the notion of "too-big-to-fail" should be less relevant since FDICIA. However, an increase of megamergers has been noticeable in the mid- to late-1990s.

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Some research suggests that too-big-to-fail may have been one of the reasons for the rise in megamergers in the 1990s (see Kane, 1998). This is an important policy issue because previous research raises the possibility that banking organizations seek to become larger to increase the probability that the FDIC will cover 100 percent of their deposits. While most of the mergers between large publicly traded banks in the early and mid-1980s were not due to attempts to exploit deposit insurance, the too-big-to-fail consideration may have been important in megamergers of the 1990s (Benston, Hunter, and Wall, 1995; Hunter and Wall, 1989; and Boyd and Graham, 1991).[3] In this article, we examine the distinguishing characteristics of these megamergers.

Obviously, merger prices play an important role in the rise in bank mergers in the last decade. We analyze two types of prices commonly employed by both regulators and analysts: the merger bid premiums offered for a target bank, defined as the ratio of the market price offered for the target to the book value of equity of the target bank, and the excess stock returns earned by shareholders of the target bank around the merger announcement date.

We examine whether prices offered to target banks have been increasing over time. Increased prices would tend to make bank owners more willing to sell. There are theoretical reasons why prices must either increase or decrease as restrictions on expansion are reduced (Adkisson and Fraser, 1990). First, prior to Riegle–Neal, the number of potential bidders for a given target bank was limited by laws governing intrastate and interstate acquisitions. The removal of these restrictions should increase the demand for target banks as the number of potential bidders increases, resulting in higher acquisition prices. Thus, higher prices should be observed in the post-Riegle–Neal environment.

Alternatively, acquisition prices could be lower when restrictions are removed. Restrictions on geographical expansion form a barrier to entry that provides a bank with a protected niche and permits it to earn excess profits. These excess profits become part of the price in merger negotiations. Decreasing the barriers to entry reduces the excess profits and thereby lowers merger prices. By ensuring that they earn only normal profits, lowering the barriers to entry may increase substitutability among target banks, enlarging—from the acquirer's perspective—the effective supply of alternatives. Under the barriers to entry hypothesis, lower prices should be observed in the post-Riegle–Neal environment.

During the late 1970s and 1980s, individual states took steps, as permitted by the Douglas Amendment to the Bank Holding Company Act of 1956, to allow acquisition of banks in their states by bank holding companies headquartered in other states. The Bank Holding Company Act permitted multibank holding companies to acquire bank subsidiaries only to the extent allowed by the laws of the state in which the proposed target bank resided. Many states allowed acquisition by holding companies headquartered in only a limited number of states. Other states allowed entry from all states.

States in several regions developed formal compacts or treaties to allow entry from states in the region. The states in the Southeast formed the most cohesive unit, generally allowing entry from other states in the region and excluding entry from states outside the region (Savage, 1993). We use a Southeast indicator to test whether target banks in the Southeast received higher bid premiums than banks in other parts of the country.

In addition to examining how bank merger prices have changed over the 1990s and whether target banks in the Southeast receive higher bid premiums than other banks, we determine how prices are correlated with the financial characteristics of target banks and their market structure. As with any investment, the target bank's value to the acquiring bank should reflect its present discounted value of future net cash flows. At a minimum, the bid price should reflect the stand-alone value of the net assets of the target bank and the net cash flows from higher-valued deposit insurance as a result of the proposed merger.

Market structure, consisting of the number, size distribution, and market share of banks, influences the degree of competition and, thus, determines a bank's profitability. An often used measure of the degree of competition in banking markets is the Herfindahl-Hirschman Index (HHI), which is calculated by adding together the squares of the deposit shares of participants in a banking market and multiplying by 10,000. This index equals 10,000 for a monopoly market, and takes on lower values as more banks enter the market. For example, if there are five firms in a market and their deposit shares are 20 percent each, the HHI would be computed as follows: $[(.2)^2 + (.2)^2 + (.2)^2 + (.2)^2 + (.2)^2] \times 10{,}000 = 2{,}000$. Antitrust regulators use this measure to screen bank merger applications for potential anticompetitive effects.

In theory, target banks in markets with relatively high HHIs and, thus, operating in less competitive markets tend to receive high bid offers. A factor counterbalancing this tendency is the bank merger review process enforcing the U.S. Department of Justice's (DOJ) merger guidelines. This review

process could result in divestitures of banking offices as a condition of approval. Thus, the price an acquirer is willing to pay for a target bank should reflect the probable reaction of the antitrust authorities. If the merger review process works well, participating in a merger does not give banks greater market power. One way to analyze the effectiveness of the process is to determine the effects of market concentration on bid premiums. Bid premiums should be higher for targets in more concentrated markets.

We find a variety of interesting and important results. We find that higher performing targets, as measured by both return on equity and return on assets, receive higher bids. We also find that the lower the capital-to-deposit ratio, the larger the bid the acquiring bank is willing to offer. This may be because the target bank is funding its assets with relatively cheap funds. Additionally, we find that larger targets' loan-to-assets ratios are correlated with larger bid premiums, although this effect is not statistically significant. Bank size is positively related to bid premiums. Market concentration is not significantly correlated with bid premiums, reflecting the difficulties of applying our measure of concentration to banking organizations whose geographic scope and product mix may be broader than the local market area.

Prior to Riegle–Neal, prices paid for target banks in the Southeast regional compact tended to be higher than in other areas, perhaps reflecting the barrier to entry that provides the target in that region with a protected niche and permits it to earn excess profits. After Riegle–Neal, the Southeast effect was not significant. Overall, however, the price for target banks tends to be larger during the post-Riegle–Neal period, possibly because of the increase in the actual or potential number of bidders. Because Riegle–Neal provides increased interstate branching and banking opportunities, the demand for targets should increase as the universe of bidders increases, resulting in higher acquisition prices. Thus, we observe higher prices in the post-Riegle–Neal environment.

To get a better sense of how bank mergers are priced, we use daily stock return data to examine the stock market reaction to news of an announced merger. Results of this test are especially useful to interpret the wave of large bank mergers. If banks are using their increased freedom to merge in a way intended to increase the value of their deposit insurance, then megamergers should generate high bid premiums and, thus, greater than expected stock market returns than other types of mergers. However, bank managers may also pursue mergers to enhance their salary, perquisites, and personal prestige. As a result, high bid premiums for large banking organizations may be related to several different motivations, many of which will tend to lead to high merger prices.

A countervailing factor in large bank mergers, however, is the difficulty of merging two large banking organization or two organizations of equal size. According to organization theorists, melding cultures in a merger is more difficult and costly when the target is closer in size to the acquirer. If the short-run costs are a positive function of size and these costs outweigh the value of increased access to deposit insurance, then we would expect to see an inverse relationship between size and merger prices (Benston, Hunter, and Wall, 1995). Our stock return results suggest that the stock market views large bank mergers more favorably than small bank mergers. The unexpected stock returns for large bank targets are more than double those of small targets.

Our results suggest that changes in state and federal banking regulations have a significant impact on bank merger activity in general, and bank merger prices in particular. Furthermore, by restricting the types of merger transactions that can take place, state and federal interstate and intrastate banking laws may have had unintended consequences. Because restrictions on geographical expansion form a barrier to entry that provides a bank with a protected market and permits it to earn excess profits, we observe higher bid premiums in Southeast compact states relative to other parts of the country. Once these restrictions were removed with the passage of Riegle–Neal in 1994, bid premiums were no longer higher in the Southeast states than in other states. However, they rose overall relative to the pre-Riegle–Neal period. Thus, our results show how federal and state regulatory policies that restrict interstate branching and banking may produce very different (and distorted) merger prices relative to policies that are less restrictive and market driven.

Finally, our results provide empirical evidence that when target banks are large, but not megamergers of equals, there is a greater stock market reaction to the merger announcement than for other target banks. This is consistent with the notion that large banks are using their increased freedom to merge in a way intended to increase the value of their deposit insurance. A partial explanation for the recent wave of mergers, especially megamergers, may be the desire of merging institutions to obtain a size level sufficient to place them in the too-big-to-fail category. This is an important issue for policymakers, who are concerned about controlling bank risk-taking propensities and minimizing the loss exposure of the federal deposit insurance funds. Thus, size is important in merger decisions

because larger institutions may have increased access to deposit insurance. This greater access tends to be reflected in the stock market reactions to merger announcements.

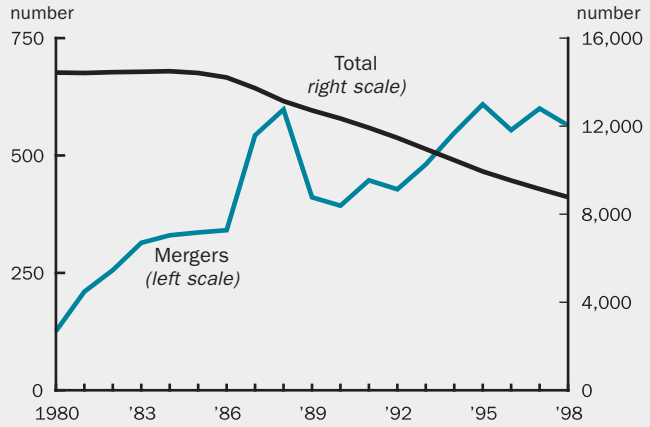
Regulatory background

Opportunity for nationwide branch banking

Figure 1 shows that the number of banking organizations in the U.S. has decreased by about 40 percent since 1980. This decline is related to the surge in the number of bank mergers—225 per year during the early 1980s compared with 580 per year during the late 1990s. The share of domestic deposits held by the nation's ten largest commercial banks nearly doubled from about 19 percent in 1980 to 37 percent in 1998 (DeYoung, 1999). Table 1 provides further evidence of the consolidation trend in banking, which has occurred contemporaneously with the reduction in restrictions on interstate banking and branching.

FIGURE 1

Growth in commercial banks and bank mergers



Source: Authors' calculations based on data from the Federal Deposit Insurance Corporation.

As mentioned earlier, under Riegle–Neal, banks have been permitted to engage in nationwide branch banking since June 1, 1997. This liberalization made

TABLE 1

Size distribution of commercial banks

Asset size *($ millions)*	Number of banks	Percent of banks	Cumulative percent	Total assets	
				Percent	Cumulative
A. December 31, 1980					
Less than 25	7,233	49	49	5	4
25–50	3,566	24	73	6	11
50–100	2,048	14	87	7	18
100–500	1,496	10	97	15	33
500–1,000	195	1	98	7	40
1,000–5,000	192	1	99	19	59
5,000–10,000	21	–	99	7	66
10,000 or more	18	–	100	34	100
Total	**14,769**	**100**			
B. December 31, 1998[a]					
Less than 25	3,156	36	36	3	3
25–50	2,261	26	62	5	8
50–100	1,700	19	81	7	15
100–500	1,279	15	96	14	29
500–1,000	149	2	98	6	35
1,000–5,000	114	1	99	15	50
5,000–10,000	20	–	99	8	58
10,000 or more	25	–	100	42	100
Total	**8,704**	**100**			

[a]Adjusted for inflation using the Consumer Price Index (all items, 1982–84 = 100).
Note: Numbers are rounded to the nearest whole number.
Source: Authors' calculations based on data from *Quarterly Reports of Condition and Income.*

possible the merger of large banking organizations to create true nationwide banking in the U.S.

However, Riegle–Neal was only the final piece of legislation in a long line of banking deregulation at the state level. Historically, restrictions on banks' ability to expand geographically have been among the primary determinants of the structure of commercial banking in the U.S (Frieder, 1988; and Cornett and De, 1991a). Concerns about undue concentration of banking resources and that banks might exercise their market power by setting high prices and restricting service led to the imposition of restrictions at both the state and national levels. The McFadden Act of 1927 restricted nationally chartered banks' branching ability to the same extent allowed to state-chartered banks. The Bank Holding Company Act of 1956 prevented multibank holding companies (MBHCs) from acquiring existing banks or chartering new banks in states other than their home state. The Douglas Amendment of the 1956 act allowed MBHCs to acquire banks only to the extent permitted by the laws of the state of the target bank. Even the Riegle–Neal Act limits the market share that a banking organization can hold nationwide or in any given state. The act established a 10 percent nationwide deposit concentration limit on organizations making interstate acquisitions and a uniform 30 percent statewide limit (unless a state chooses a different limit).

The first state statutes permitting entry to out-of-state MBHCs in accordance with the Douglas Amendment were enacted in 1975 and 1982 by Maine and Alaska, respectively. By the late 1980s, 41 states and the District of Columbia had passed similar laws (Amel, 1986; Frieder, 1988; and Cornett and De, 1991a). Moreover, several states formed reciprocal regional banking pacts to allow banks in pact states to acquire targets in other pact states. For example, prior to the Riegle–Neal Act, Wisconsin's regional reciprocal law allowed entry by acquisition for banking organizations from Illinois, Iowa, Indiana, Kentucky, Michigan, Minnesota, Missouri, and Ohio as long as those states allowed acquisitions by Wisconsin banks in their markets (Saunders, 1997).

Antitrust statutes and authorities

The federal statutes that govern bank mergers are the Bank Holding Company Act, the Bank Merger Act of 1960, and section 7 of the Clayton Act of 1914. The DOJ has general enforcement authority over all merger and acquisition activities and has established basic guidelines to cover the evaluation of competitive issues (Jackson, 1992; and Kwast, Starr-McCluer, and Wolken, 1997). Box 1 provides a discussion of the antitrust legal standards.

Under the Bank Merger Act the three federal regulatory agencies—the Board of Governors of the Federal Reserve System, the office of the Comptroller of the Currency (OCC), and the Federal Deposit Insurance Corporation (FDIC)—are required to take into account the competitive effects of a proposed merger. The agency to which a merger application should be submitted depends on the "resultant banking organization." If the resultant banking organization is a nonmember federally insured bank, the application needs to be made to the FDIC. If the resultant banking organization is a state member bank, the application needs to be made to the appropriate Federal Reserve Bank, and if it is a national bank, the merger application should be made to the OCC. In addition to the powers provided in the Bank Merger Act, the Federal Reserve System derives its legal authority over bank mergers from the Bank Holding Company Act, which prohibits a bank holding company from acquiring a bank unless the bank holding company has received prior approval from the Federal Reserve System. The DOJ may prevent consummation of the merger within 30 days of the approval from the relevant federal agency. After this 30-day period, the merger is immune from the DOJ and other private party litigation.

Antitrust guidelines

The regulators have adopted the DOJ's numerical criteria for assessing the impact of a merger or acquisition on competition. These criteria, first issued in 1968, were updated in June 1982 based on the HHI. In evaluating a merger application, antitrust authorities consider both the level of post-merger HHI and the change in the HHI resulting from the proposed transaction (see table 2).[4] If the post-merger market HHI is lower than 1,800 points, or the increase in the index from the pre-merger situation is less than 200 points (or 50 points in industries other than banking),[5] the merger is presumed to have no anticompetitive effects and is generally approved by regulators. The Federal Reserve uses the acquiring firm's market share as an additional merger screen. A merger is likely to raise concerns if the acquirer's pro forma market share exceeds 35 percent.

When a merger application violates the guidelines, regulators consider *mitigating factors* that would offset the anticompetitive effects of the proposed transaction. These factors include competitive viability of the target, presence of active competition from thrifts and other financial institutions in the market, competition from out-of-market financial institutions, and market attractiveness. These factors are weighted against the increase in concentration. If the increase in concentration is too large to be justified by mitigating

BOX 1

Antitrust legal standards

The major antitrust concern of each of the federal bank regulatory authorities is the competitive effect of mergers and acquisitions. An examination of this issue requires a clear and concise definition of the product and geographical markets in which competition takes place and a standard to measure the competitive effects of each merger (see Jackson, 1992). This framework was not specifically stated in the federal statutes that govern mergers. Instead, it has evolved from three Supreme Court decisions in the 1960s and 1970s: United States vs. Philadelphia National Bank (1963), United States vs. Phillipsburg National Bank and Trust (1970), and United States vs. Connecticut National Bank (1974).[1]

In the Philadelphia National Bank case, the Supreme Court:

- provided the principles by which product and geographic markets should be defined to assess the probable competitive effects of a bank merger or acquisition, and
- noted that commercial banks are unique among financial institutions (including thrifts) in that they alone are permitted by law to accept demand deposits and operate with the benefit of federal deposit insurance.

The court ruled that the relevant product market was the "cluster of commercial banking services differentiating commercial banking as a unique line of business." Thus, only competing commercial banks were included in the framework for the purposes of analyzing a proposed bank merger under the Clayton Act. The exact definition of cluster was not specifically stated in the court's decision. However, antitrust regulators have used total deposits as a proxy for the ability of commercial banking organizations to provide the cluster of banking services to both businesses and households in a given local banking market (Rhoades, 1987).

In the Philadelphia National Bank case, the court noted that the appropriate geographical market for competitive analysis does not depend on where the parties to a merger do business or compete. Instead, it depends on the geographical structure of the supplier–customer relationships and where a purchaser of products and services can practicably turn for alternative banking services. The court found that convenience of location is essential to effective competition, suggesting that geographical markets for commercial banking are generally considered to be local, for example, within counties or metropolitan statistical areas (Holder, 1993).

In the Phillipsburg National Bank and Trust case (1970), the Supreme Court held that:

- for the purposes of analyzing a proposed merger under the Clayton Act, regulators should consider both the level of concentration and the change in concentration of firms in the appropriate geographical market, and
- a merger application may be accepted if it can be shown that the transaction provides substantial public benefits even though it may violate antitrust guidelines.

The structure–conduct–performance paradigm suggests that market concentration beyond a certain point will likely lead to collusive or monopolistic behavior by banks, a direct violation of the Clayton Act. Banking regulators have thus focused on the anticompetitive issues of bank mergers and acquisitions in terms of the resultant effects on market concentration (Rhoades, 1987).

In the Connecticut National Bank case, the Supreme Court:

- revisited the geographical market definition and ruled that the relevant banking market is not a state but rather a segmented group of bank office areas where a bank would seek business and, as a practical matter, most of its customers would do their banking, and
- concluded that thrift institutions should not be factored into antitrust analysis, but acknowledged that they may be included "when and if saving banks become significant participants in the marketing of bank services to commercial enterprises."

These three court decisions provide the fundamental concepts for analyzing competitive effects of bank mergers and acquisitions. In particular, they hold that 1) the "cluster" of bank products is the relevant product line for competitive analysis; 2) this cluster is typically viewed as being consumed in geographically local banking markets; and 3) market structure is a key determinant of the degree of competition (Kwast, Starr-McCluer, and Wolken, 1997; and Jackson, 1992).

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[1]United States vs. Connecticut National Bank, 418 U.S. 656 (1974); United States vs. Phillipsburg National Bank and Trust Company, 399 U.S. 350 (1970), and United States vs. Philadelphia National Bank, 374 U.S. 321 (1963).

TABLE 2

1982 Department of Justice horizontal merger guidelines

Post-merger market concentration	Level of HHI	Post-merger change in HHI and likelihood of challenge
Highly concentrated	Greater than 1,800	Greater than 100—Challenge likely
		50 to 100—Depends on other factors[a]
		Less than 50—Challenge unlikely
Moderately concentrated	1,000 to 1,800	Greater than 100—Challenge likely; other factors considered[a]
		Less than or equal to 100—Challenge unlikely
Unconcentrated	Less than 1,000	Any increase—Challenge unlikely

[a]Lead firm provision—A merger is likely to be challenged if the merger is between the lead firm and a firm with a market share of 1 percent or more provided that the lead firm has a market share of 35 percent or more and is approximately twice the size of the second largest firm in the market. These so-called other factors are often related to ease and profitability of collusion. In banking, they are often referred to as mitigating factors and include competitive viability of the target, presence of active competition from thrifts and other financial institutions in the market, competition from out-of-market financial institutions, and market attractiveness.

Note: When released on June 14, 1982, the guidelines in this table applied to all U.S. industries. In 1985, the U.S. Department of Justice modified the 1,800/50 rule for bank mergers to 1,800/200 to recognize the impact of competition from limited purpose lenders and other nondepository financial institutions.

Source: U.S. Department of Justice, 1982, press release, June 14.

factors, divestiture of some branches and offices may bring the concentration indicator close to or below the DOJ guidelines. Consequently, very few bank mergers are denied due to antitrust concerns. However, the official statistics do not include applications that are voluntarily withdrawn when consultation with regulatory agencies indicates they would be found to be anticompetitive.

Effects of geographical deregulation on bank acquisition prices

The literature suggests two competing hypotheses to explain how geographic deregulation might affect the prices paid for bank acquisitions (Adkisson and Fraser, 1990). Under the *excess demand* theory, prices of acquisitions should increase as restrictions on expansion are reduced. Prior to Riegle–Neal, the number of potential bidders for a target bank was limited by state law governing intrastate and interstate acquisitions.

As noted above, during the late 1970 and 1980s, some states formed regional banking pacts to allow banks to merge with or acquire targets in pact states (see details in table 3). Other states allowed nationwide entry with reciprocal arrangements. As these restrictions are removed, the demand for targets should increase as the universe of bidders increases, resulting in higher acquisition prices. Thus, all else being equal, higher prices should be observed as states liberalize their interstate banking laws and in the post-Riegle–Neal environment.

Conversely, the barrier to entry theory predicts that merger prices will be lower when bank acquisition laws are more liberal. Geographical expansion restrictions form a barrier to entry that provides the target with a protected niche and permits it to earn excess profits. Decreasing the barriers to entry reduces the excess profits and thereby lowers merger prices. By ensuring that they earn only normal profits, lowering the barriers to entry may increase substitutability among target banks, enlarging (from the acquirer's perspective) the effective supply of alternatives. Thus, lower prices should be observed in regional compact states and in the post-Riegle–Neal environment.

There are at least two approaches to calculating the price offered by acquirers for targets. One approach measures the size of the merger premium (or bid premium). More attractive targets receive higher bid premiums. The second approach uses stock return data and is usually called the event study approach. Under this approach, excess returns (or abnormal returns) are computed around the merger announcement date (see box 2).

Literature review and our contribution

Previous studies on mergers and acquisitions of nonfinancial firms have produced mixed results about the determinants of merger premiums. It is even more complicated to identify the determinants of these premiums in the banking industry due to the high level of governmental regulations and monitoring. In addition

TABLE 3

Interstate banking laws prior to Riegle–Neal Act

State	Area covered and reciprocity
Alabama	Reciprocal, 13 states (AR, FL, GA, KY, LA, MD, MS, NC, SC, TN, TX, VA, WV)
Alaska	National, no reciprocity
Arizona	National, no reciprocity
Arkansas	Reciprocal, 16 states (AL, FL, GA, KY, LA, MD, MO, MS, NC, NE, OK, SC, TN, TX, VA, WV) and DC
California	National, reciprocal
Colorado	National, no reciprocity
Connecticut	National, reciprocal
Delaware	National, reciprocal
District of Columbia	Reciprocal, 11 states (AL, FL, GA, LA, MD, MS, NC, SC, TN, VA, WV)
Florida	Reciprocal, 11 states (AL, AR, GA, LA, MD, MS, NC, SC, TN, VA, WV) and DC
Georgia	Reciprocal, 11 states (AL, FL, KY, LA, MD, MS, NC, SC, TN, VA, WV) and DC
Idaho	National, no reciprocity
Illinois	National, reciprocal
Indiana	National, reciprocal
Iowa	Reciprocal, 6 states (IL, MN, MO, NE, SD, WI)
Kansas	Reciprocal, 6 states (AR, CO, IA, MO, NE, OK)
Kentucky	National, reciprocal
Louisiana	National, reciprocal
Maine	National, no reciprocity
Maryland	Reciprocal, 14 states (AL, AR, DE, FL, GA, KY, LA, MS, NC, PA, SC, TN, VA, WV) and DC
Massachusetts	National, reciprocal
Michigan	National, reciprocal
Minnesota	Reciprocal, 16 states (CO, IA, ID, IL, IN, KS, MI, MO, MT, ND, NE, OH, SD, WA, WI, WY)
Mississippi	Reciprocal, 13 states (AL, AR, FL, GA, KY, LA, MO, NC, SC, TN, TX, VA, WV)
Missouri	Reciprocal, 8 states (AR, IA, IL, KS, KY, NE, OK, TN)
Montana	Reciprocal, 7 states (CO, ID, MN, ND, SD, WI, WY)
Nebraska	National, reciprocal
Nevada	National, no reciprocity
New Hampshire	National, no reciprocity
New Jersey	National, reciprocal
New Mexico	National, no reciprocity
New York	National, reciprocal
North Carolina	Reciprocal, 13 states (AL, AR, FL, GA, KY, LA, MD, MS, SC, TN, TX, VA, WV) and DC
North Dakota	National, reciprocal
Ohio	National, reciprocal
Oklahoma	National, no reciprocity for initial entry; after initial entry, bank holding company must be from state offering reciprocity or wait 4 years to expand
Oregon	National, no reciprocity
Pennsylvania	National, reciprocal
South Carolina	Reciprocal, 12 states (AL, AR, FL, GA, KY, LA, MD, MS, NC, TN, VA, WV) and DC
Rhode Island	National, reciprocal
South Dakota	National, reciprocal
Tennessee	National, reciprocal
Texas	National, no reciprocity
Utah	National, no reciprocity
Vermont	National, reciprocal
Virginia	Reciprocal, 12 states (AL, AR, FL, GA, KY, LA, MD, MS, NC, SC, TN, WV) and DC
Washington	National, reciprocal
West Virginia	National, reciprocal
Wisconsin	Reciprocal, 8 states (IA, IL, IN, KY, MI, MN, MO, OH)
Wyoming	National, no reciprocity

Note: Hawaii did not enact interstate bank holding company legislation.
Source: Savage (1993).

BOX 2

Estimating the stock price impact of mergers

We estimate the stock price impact of each of these merger announcements by employing a multivariate regression model (MVRM), similar to those used in Schipper and Thompson (1983), Binder (1988), and Cornett and Tehranian (1989). In the MVRM, abnormal returns are obtained by adding a (0,1) binary variable to the right-hand side of the traditional market model to capture the impact of the announcement or "event" date. The model takes the following form:

$$R_{j,t} = \alpha_j + \beta_{j,1}R_{M,t-2} + \beta_{j,2}R_{M,t-1} + \beta_{j,3}R_{M,t} + \beta_{j,4}R_{M,t+1} + \beta_{j,5}R_{M,t-2} + \sum_{s=0}^{+1}\gamma_{j,s}D_s + \varepsilon_{j,t},$$

where $R_{j,t}$ is the return on firm j on day t; $R_{M,t}$ is the return on the market portfolio; α_j is an intercept coefficient for bank j; $\beta_{j,1...j,5}$ are risk coefficients for the jth bank; γ_j is the effect of the merger announcement event on the jth firm; D_s is an event binary variable which equals 1 on day s (s = 0 to +1) in the event window, and 0 otherwise; and $\varepsilon_{j,t}$ is a random error term which is assumed to be identically distributed normally, independent of the return on the market and the binary variables. We specify the market return at several leads and lags as an explanatory variable to correct for the possibility of nonsynchronous trading, especially of some of the smaller banks (Scholes and Williams, 1977).

With this specification, the estimated parameters γ_j measure the daily abnormal returns associated with a merger announcement. We are testing for daily intercept shifts in the interval day 0 to day +1. Since this interval is "dummied out," the observations in the day 0 to day +1 interval do not influence the estimate of the intercept. Only those observations without dummies determine the value of the intercept.

We estimate the target bank's cumulative abnormal stock market returns over the two trading day period that includes the announcement date and the day after. The two-day cumulative abnormal returns (CAR) around the merger announcement date (t = 0 and +1) are then calculated by adding $\gamma_{j,0}$ and $\gamma_{j,1}$. The standardized cumulative abnormal returns are computed using a procedure reported in Bradley, Desai, and Kim (1988), and Stultz, Walking, and Song (1990). First, the standardized abnormal return to the jth security on day t ($SAR_{j,t}$) is computed using the following equation:

$$SAR_{j,t} = AR_{j,t} \Big/ \left[\sigma_j \left(1 + \frac{1}{T_j} + \frac{(R_{m,t} - \overline{R_m})^2}{\sum_{\tau=1}^{T_j}(R_{m,\tau} - \overline{R_m})^2}\right)^{1/2}\right],$$

where $AR_{j,t}$ is the abnormal return to the jth security on day t, S_j is the standard deviation of the residuals in the market model estimation period, T_j is the number of days in the estimation period, $R_{m,t}$ is the return on the market portfolio on day t, and $\overline{R_m}$ is the mean return on the market portfolio over the estimation period.

The $SAR_{j,t}$ is then used to obtain the standardized cumulative abnormal returns over the two event days:

$$SAR_{j,t} = \left[\sum_{t=1}^{2} SAR_{j,t}\right] / \sqrt{2}.$$

to characteristics of the deal, the target, and the acquiring banks, regulatory environments in both acquiring and target bank states tend to affect the bid premiums (see Palia, 1993). The analysis of bank merger premiums is further complicated by regulatory uncertainty (see Desai and Stover, 1985). All bank mergers require time-consuming regulatory approval, making hostile takeovers extremely difficult to execute.

Previous bank studies (Beatty, Santomero, and Smirlock, 1987; Cheng, Gup, and Wall, 1989; Fraser and Kolari, 1988; Rogowski and Simonson, 1989; and Rose, 1991), find that asset size, profitability, management, leverage, means of payment, and whether the mergers are interstate or intrastate are significant in determining the bid premiums or explaining the stock market's reaction to bank merger announcements.

The literature suggests that size is important in determining the bid premiums offered to the target, but less important in determining the abnormal returns. For example, Desai and Stover (1985) find that the relative size of target and acquiring banks has no significant impact on the abnormal returns around the announcement date. However, Shawky, Kilb, and Staas (1996) find that smaller targets tend to be offered a larger bid premium, and Palia (1993) finds that the

relative size of targets and acquiring banks is important in explaining the variation in the bid premiums.

With regard to profitability and capital, Shawky, Kilb, and Staas (1996) find that higher bid premiums tend to be offered to target banks with larger returns on equity and those with higher leverage. The latter result suggests that higher leverage may be associated with more efficient use of capital.

Whether the merger deals are stock exchange offers or cash offers may also affect the abnormal returns and the bid premiums—because of the differential tax implications associated with these offers. The market may view a cash offer positively for the acquirer, because it allows the acquiring bank to increase the depreciation tax shield as the depreciation basis of the acquired assets rises to the market value. However, the market may view it negatively for the target, because it imposes a greater immediate tax burden on target shareholders. However, the market may view a cash offer negatively for the acquirer and positively for the target if the acquirer's share price is relatively overvalued. Shawky, Kilb, and Staas (1996) find that the bid premiums offered to target banks are larger for stock deals (rather than cash payment), supporting the acquirer's overvalued stock hypothesis. However, Cornett and De (1991b) find that mergers financed with only stock or only cash produce higher abnormal returns to target shareholders than those financed with combinations of stock and cash. Interestingly, previous studies on nonbank mergers find medium of payment to be unimportant (Eckbo and Langohr, 1989; and Travlos, 1987).

Rhoades (1987) suggests that geographical expansion may be a primary motivation for bank mergers. Palia (1993) and Shawky, Kilb, and Staas (1996) find that the bid premiums offered to target banks are larger for out-of-state mergers than intrastate mergers. Using interstate bank mergers, Cornett and De (1991a) find significant positive announcement period abnormal returns for both target and acquiring banks. Again, this contrasts with findings for nonbank mergers, suggesting that bank mergers are different and, thus, the results for nonbank mergers cannot be generalized to the banking sector.

Examining the postmerger performance of large bank mergers between 1982 and 1987, Cornett and Tehranian (1992) find that merged banks tend to perform better than the banking industry overall. This superior performance resulted from improvements in the merged banks' ability to attract loans and deposits, employee productivity, and asset growth. (For a recent literature review on bank merger performance, see Berger, DeYoung, Genay, and Udell, 2000.)

Cornett and Tehranian (1992) examine operating cash flows as well as several accounting variables of the merged banks for one to three years after the mergers. Recognizing that accounting data are not perfect measures of economic performance, they utilize both accounting and market data to determine whether stock price gains associated with mergers announcement (short run) are the result of real economic gains (long run). Interestingly, they find a significant correlation between announcement-period abnormal stock returns and the various long-term performance measures, and conclude that market participants are able to identify in advance the improved performance associated with bank acquisitions.[6] We focus on short-term performance, using market data, rather than testing whether mergers will result in efficiency gains or improved long-run performance.

Overall, the empirical results presented in the previous studies have been mixed and largely depend on the sample period, sample observations, and methodology. We reexamine this issue using more recent and more complete data on bank mergers. Our results are more applicable to current policy issues than previous studies, given the rapidly evolving environment the banking industry faces.

The data

We obtained details of all bank mergers and acquisitions from 1990 to mid-1998 from the Security Data Corporation (SDC). To be included in our sample, both the target and bidding banks must be publicly traded.[7] We obtained financial data from the quarterly call reports and bank holding company Y9 reports, as of yearend prior to the merger announcement date. Stock market returns for target banks and the stock market index are from the Center for Research in Security Prices data tape. The merger announcement date, target name, acquirer name, value of the deal, bid premium, and other characteristics of the merger announcement are from the SDC database. We obtained the HHIs for various banking markets from the Board of Governors of the Federal Reserve System.

Banking agencies consider a local, economically integrated area to be a banking market. In practice, this usually means a city, a metropolitan statistical area (MSA), or a rural county. We matched the target bank's headquarters with an MSA or county. This does not allow us to consider a target bank present in several different market areas and points to the difficulty of using local market concentration measures for banking organizations that have broad geographical scope and product mix. The price that a bank offers (or accepts) reflects the activities of the entire organization.

The methodology

We use a *regression model* that relates a target bank bid premium to profitability, asset size, financial leverage, loan quality, Southeast indicator variable, Riegle–Neal indicator variable, and a concentration measure. A formal discussion of the model is presented in box 3.

To capture the profitability of a target banking organization, we include the return on equity and the return on assets in the year before the merger announcement date. We expect the sign on profitability to be positive, as higher profits are more attractive.

We include a variable that measures the size of each target. Bank size, as measured by the natural logarithm of total assets, may be either positively or negatively associated with the attractiveness of a given target. A positive coefficient for this variable would be consistent with the hypothesis that potential bidders look for significant targets that participate in significant markets. A negative coefficient, if found, may reflect the cost of melding the culture of a large target bank with that of the acquirer.

Banking organizations are required by regulation to meet minimum capital requirements. This regulation is aimed at reducing the risk-taking propensities of bank shareholders. That is, capital acts as a form of co-insurance with federal deposit insurance. We include the leverage ratio, defined as the capital-to-deposit ratio, in the year before the merger announcement date. We expect the sign on the leverage ratio to be negative. A high capital-to-deposit ratio may be an indication that the target banking organization is using capital inefficiently. This argument is consistent with Beatty, Santomero, and Smirlock (1987), Fraser and Kolari (1988), and Rogowski and Simonson (1989). A well-capitalized acquirer seeks target banks that offer an ample inexpensive source of funds.

Because loans are usually the most illiquid and subject to the greatest default risk of all bank assets, a bank's risk is greatly influenced by the quality of its loan portfolio. The ratio of loans to total assets measures the potential effects of loan losses on assets and equity and the illiquidity of assets. According to our hypothesis, the greater the proportion of loans to

BOX 3

The model

The following basic specification is used to examine the factors that are correlated with the bid premium offered for the target (*BVPREM*):

$$
\begin{aligned}
1)\quad BVPREM_{j,t} = {} & \alpha_0 + \alpha_1 PROFIT_{j,t} + \alpha_2 LEV_{j,t} \\
& + \alpha_3 SIZE_{j,t} + \alpha_4 LOAN_{j,t} \\
& + \alpha_5 CHARGE_{j,t} + \alpha_6 MEQUAL_{j,t} \\
& + \alpha_7 THRIFT_{j,t} + \alpha_8 SEAST_{j,t} \\
& + \alpha_9 RNEAL_{j,t} + \varepsilon_{j,t},
\end{aligned}
$$

where *PROFIT* is a measure of profitability of the target one-year before the merger announcement date; *LEV* is the capital-to-deposit ratio one year before the merger announcement date; *SIZE* is the natural logarithm of total assets of the target banking organization; *LOAN* is ratio of total loans to total assets; *CHARGE* is the ratio of net chargeoffs- to-loans; *MEQUAL* is an indicator variable that is equal to one if the target and the acquirer are of equal asset size and zero otherwise; *THRIFT* is an indicator variable that is equal to one if the target is a savings and loan association and zero otherwise; *SEAST* is an indicator variable that is equal to one if the target and acquirer are located in the Southeast regional compact (AL, AR, FL, GA, KY, LA, MD, MS, NC, SC, TN, VA, and DC) and zero otherwise; *RNEAL* is an indicator variable that is equal to one if the merger announcement date is after 1994 and zero otherwise; and $\varepsilon_{j,t}$ is a random error term. The *MEQUAL* variable is included in the equation to determine whether banks involved in mergers of equals are offered a different price than other banks. The *THRIFT* variable is included in the equation to control for the different charter between banking organizations and thrift institutions. The *SEAST* variable is included to capture whether the southeast regional compact led to differences in bid premium. This indicator variable absorbs the effects of all factors that are common to banking organizations in the Southeast. The *RNEAL* variable is included to capture the impact of the Riegle–Neal Act on bid premiums.

In some specifications, we include indicator variables for the year of the announcement date of the acquisitions that range between 1990 and mid-1998. These variables are introduced to account for the effect of omitted macroeconomic and other variables that may influence the overall level of acquisition activity over time and, thus, the merger premium paid for a given transaction.

total assets, the greater the potential for loan losses and the lower the liquidity of assets, *ceteris paribus*. Everything else held constant, this should lead to a lower bid premium. However, because loans offer the potential for geographical diversification, the loan portfolio could have a positive impact on the bid premium. Thus, we include the ratio of net chargeoffs to loans to capture asset quality more directly.

Another hypothesis we examine is whether state and federal laws on interstate and intrastate branching and banking influence the price offered for target banks. To capture whether the Southeast regional compact led to differences in bid premiums, we include a Southeast indicator variable, which absorbs the effects of all factors that are common to banks in the Southeast.

Our regression equation also includes an indicator variable that captures the impact of the Riegle–Neal Act on the bid premium. A positive coefficient on this variable is consistent with the notion that the universe of actual or potential bidder has increased, resulting in higher acquisition prices. A negative coefficient is consistent with the notion that liberalization of interstate banking laws reduces excess profits, leading to lower merger prices.

Finally, we include indicator variables for the year of the merger announcement date from 1990 to mid-1998 to account for the effects of omitted macroeconomic and other variables that may influence the level of acquisition activity over time and, thus, the merger premium paid for a given transaction.

The results

Table 4 provides a summary of selected financial characteristics of the target, bid premiums, and cumulative abnormal returns (CAR). The standardized cumulative abnormal returns (SCAR) are the cumulative abnormal returns adjusted for the error in forecasting the returns (see box 2). The results show that targets with lower capital-to-asset ratios and higher profitability (larger return on assets) tend to obtain larger stock price gains, as measured by CAR and SCAR, around the merger announcement date than those with high capital-to-asset ratios or lower profitability. In addition, the stock market abnormal returns around the announcement of the merger seem to be larger at

TABLE 4

Selected financial characteristics of target and price information

Financial characteristics	Quartile (1 = lowest)	Range % (of explanatory variable)	Mean values		
			CAR (%)	SCAR (%)	BVPREM
Book value of capital/total assets	1	2.2–6.8	14.0	5.1	2.1
	2	6.8–8.1	11.0	4.2	2.4
	3	8.1–9.4	12.5	4.8	2.1
	4	9.4–25.4	8.3	3.4	2.2
Total loans/total assets	1	22.3–55.5	12.1	4.8	1.9
	2	55.5–63.5	13.3	5.3	2.3
	3	63.5–68.9	9.2	3.9	2.3
	4	68.9–89.2	11.1	3.5	2.2
Total assets (in millions)	1	35.7–272.0	11.4	3.6	2.1
	2	272.0–902.3	13.2	4.4	2.0
	3	902.3–3,276.1	10.2	4.1	2.3
	4	3,276.1–260,159	11.0	5.5	2.2
Return on assets	1	–1.3–0.4	10.8	3.6	1.6
	2	0.4–0.9	12.9	4.8	2.1
	3	0.9–1.2	10.5	3.9	2.2
	4	1.2–2.2	11.5	5.2	2.8
Riegle–Neal (0 before act, 1 after)	0	96 (122)	13.0	4.1	1.7
	1	146 (205)	10.4	4.6	2.4

Notes: CAR is cumulative abnormal returns; SCAR is standardized cumulative abnormal returns; BVPREM is the bid premium offered for the target. CAR and SCAR means are computed using data for a subsample of 242 acquirer institutions. Number of observations in parentheses is out of the 327 observations constituting the entire sample.

TABLE 5

Pricing of bank mergers, regional, and financial characteristics

	Book value premium	Standardized cumulative excess returns
Southeast regional compact		
Yes (AL, AR, FL, GA, KY, LA, MD, MS, NC, SC, TN, VA and DC)	2.4469	5.6950
No	2.0600	3.9400
Difference	0.3869 (2.06)**	1.7550 (1.51)
Before Riegle–Neal Act	2.4687	7.2392
After Riegle–Neal Act	1.7907	2.5294
Difference	0.6780 (3.80)***	4.7098 (2.73)***
Asset characteristics		
Assets ≥$10 billion[a]	2.3612	8.1679
Assets <$10 billion	2.1456	4.0603
Difference	0.2156 (0.89)	4.1076 (3.37)***
Banks versus thrifts		
Banks	2.2500	4.4376
Thrifts	1.4721	3.9604
Difference	0.7779 (7.21)***	0.4772 (0.46)

[a]Excluding banking organizations classified as mergers of equals.
***Indicates significance at the 1 percent level.
**Indicates significance at the 5 percent level.
Note: The t-statistics are in parentheses.

larger target banks. The abnormal returns tend to decline as the target's proportion of loans to assets increases. Similarly, the bid premiums tend to increase with the target's return on assets, and have become larger in the post-Riegle–Neal period. Unlike the abnormal returns, the bid premiums offered for targets seem to be positively correlated with the loan to assets ratio.

Table 5 presents the bid premiums and the standardized cumulative abnormal returns for different target characteristics. The target's abnormal returns around the merger announcement date are significantly larger for targets in the Southeast regional compact. Interestingly, while both the bid premiums and the abnormal returns are generally larger in the post-Riegle–Neal periods (as presented in table 4), they are significantly smaller for target banks in the Southeast.

The results from both tables 4 and 5 suggest that the bid premiums are not statistically different among targets with different asset sizes. However, the stock market reaction (the standardized cumulative abnormal returns) varies depending on the size of the target banks. Overall, the larger the target bank, the larger the standardized cumulative abnormal returns around the merger date (see table 4).[8] Finally, table 5 shows that the standardized cumulative abnormal returns are not statistically different whether the target is a bank or thrift. However, the bid premiums offered for target banks are, on average, significantly larger then those offered for thrifts.

Table 6 separates the megamerger deals from the rest of the sample. The pattern of variation of the bid premiums according to target size is now more evident. Within the large target bank group, there appears to be a U-shaped relationship between total assets and bid premiums: relatively high for the lowest quartile of banking organizations, decreasing to the next quartile, and rising thereafter. There appears to be little if any noticeable pattern in bid premiums for targets with total assets less than $10 billion. While returns are smaller for megamergers of target banks larger than $10 billion than for other mergers, there is no clear pattern of variation in standardized cumulative abnormal returns within each group.

Table 7 provides information on market concentration and merger prices. These numbers suggest that bid premiums increase with concentration, especially for banks with total assets greater than or equal to $10 billion. Thus, it appears that large

TABLE 6

Size and pricing of bank mergers

	Quartile (1 = lowest)	Book value premium	SCAR[b]
Assets ≥$10 billion[a]	1	2.43	8.61
	2	1.83	3.21
	3	2.50	11.65
	4	2.69	9.27
Assets <$10 billion	1	2.16	2.72
	2	2.03	4.84
	3	2.25	3.74
	4	2.15	4.46

[a]Excluding banking organizations classified as mergers of equals.
[b]Standardized cumulative abnormal returns.

TABLE 7

Market concentration and the pricing of bank mergers

	Concentration quartile (1 = lowest)	Book value premium	SCAR[b]
Assets ≥$10 billion[a]	1	1.61	7.68
	2	2.35	11.93
	3	2.43	3.49
	4	2.93	9.59
Assets <$10 billion	1	1.93	4.15
	2	2.48	5.62
	3	2.00	3.05
	4	2.17	3.27

[a]Excluding banking organizations classified as mergers of equals.
[b]Standardized cumulative abnormal returns.

banks pay more for target banks located in less competitive markets.

Table 8 provides detail on megamergers of targets larger than $10 billion, as well as megamergers of equals—the bid premium and the standardized cumulative abnormal return around the merger announcement date are presented for each merger deal. The standardized cumulative abnormal returns, on average, are much larger for megamergers overall than for megamergers of equals. The problem of melding the culture of a large target bank with that of the acquirer is anticipated by the market to be more serious in megamergers of equals deals. Unlike the standardized cumulative abnormal returns, the bid premiums are approximately the same, on average, for both megamergers of equals and other megamergers.

The statistics presented in tables 4, 5, 6, 7, and 8 are averages, and do not control for the other characteristics of the target, the acquiring bank, the deal, and the year of the merger. We control for these characteristics in the regression analysis presented in tables 9–11.

Table 9 presents the regression analysis explaining the bid premiums offered for targets using the financial characteristics of the target and selected factors associated with the transaction, based on equation 1 in box 3. The first three columns present the results using return on book equity as a measure of profitability. The last three columns present the results using return on assets as a measure of profitability. Columns 1 and 4 of table 9 represent the basic model for each measure of profitability, excluding the time indicator variables and the composite of the Southeast region compact indicator and the Riegle–Neal indicator. Columns 2 and 5 expand the basic equation to include the composite term. Finally, columns 3 and 6 add the time indicator variables that control for the year of each merger announcement.

The results in column 1 of table 9 show that more profitable target banks, as measured by higher return on equity, are offered larger bid premiums than less profitable targets. The bid premium increases with the asset size of the target and decreases with the ratio of equity to deposits, although the effects are not statistically significant. Similarly, the loan-to-assets and net-chargeoffs-to-loans ratios are both insignificant in explaining variation in the bid premium across deals. The results also indicate that bid premiums are larger for target banks than thrifts, larger for targets located in the Southeast regional compact, and larger in the post-Riegle–Neal period. The results in table 9 also suggest that the bid premiums tend to be lower for megamergers of equals than for other mergers. However, this effect is not statistically significant at conventional levels.

Table 9, column 2 includes the composite term that interacts the Riegle–Neal indicator variable with the Southeast regional compact indicator variable. The total impact on the bid premium for target banks located in the Southeast regional compact after Riegle–Neal is the sum of the coefficients on the Southeast regional compact indicator variable, 0.4459, and the Riegle–Neal and Southeast regional compact composite indicator variable, –0.2681. Thus, holding everything else constant, in the post-Riegle–Neal period, bid premiums are lower in the Southeast regional compact states than in the pre-Riegle–Neal period.

Column 3 of table 9 reports the results of including time indicator variables (and excluding the Riegle–Neal indicator variable) and the composite term in the basic regression equation. When we add the time indicator variables, the coefficient estimates on return on equity, thrift indicator, and Southeast regional compact indicator are qualitatively similar to those reported in column 1 of table 9. For example, the coefficient on the Southeast regional compact indicator continues to suggest that mergers between banking organizations located in the Southeast states during the post-Riegle–Neal period result in higher bid premiums than those in other states. The effect of 0.4333 in this specification is even greater than the effect of 0.3439 in the basic model in column 1. In the specification in column 3, both the asset size of the target banks and the ratio of equity to deposits are now significantly correlated with bid premiums. The results suggest that larger target banks receive larger bid premiums. This result is consistent with the notion that banks are using their increased freedom to merge in a way intended to increase the value of their deposit insurance, generating higher bid

TABLE 8

Characteristics of large bank mergers during the 1990s

	Acquiring bank	Total assets of target	Book value premium	Standardized excess return	Year
		($ bil.)			
Targets with assets >$10 billion					
Manufacturers Hanover Corporation	Chemical Banking Corporation	61.5	0.70	7.57	1991
C&S/Sovran Corporation	NCNB Corporation	51.4	1.49	4.62	1991
Security Pacific Corporation	BankAmerica Corporation	88.0	1.17	11.50	1991
Ameritrust Corporation	Society Corporation	11.0	1.99	0.65	1991
Manufacturers National Corporation	Comerica Inc.	12.1	1.34	6.46	1991
MNC Financial Inc.	NationsBank Corporation	17.5	1.33	–1.55	1992
Continental Bank Corporation	BankAmerica Corporation	22.5	1.35	10.20	1994
Michigan National Corporation	National Australia Bank Ltd.	10.2	1.69	10.03	1995
Shawmut National Corporation	Fleet Financial Group Inc.	31.3	1.79	9.18	1995
First Fidelity Bancorporation	First Union Corporation	36.2	1.92	13.82	1995
Midlantic Corporation	PNC Bank Corporation	13.3	2.12	6.54	1995
Integra Financial Corporation	National City	13.7	1.97	4.87	1995
Meridian Bancorp Inc.	Corestates Financial Corporation	15.0	2.17	5.71	1995
First Interstate Bancorp	Wells Fargo & Company	55.8	3.35	18.16	1995
BayBanks	Bank of Boston Corporation	10.8	2.22	5.40	1995
Boatmen's Bancshares	NationsBank Corporation	33.7	2.71	14.35	1996
Standard Fed Bancorp	ABN-AMRO Holding NV	13.3	2.05	–2.76	1996
US Bancorp	First Bank System	31.9	3.38	9.76	1997
Central Fidelity Banks Inc.	Wachovia Corporation	10.6	2.81	8.32	1997
Signet Banking Corporation	First Union Corporation	11.7	3.46	18.64	1997
Barnett Banks	NationsBank Corporation	41.4	4.05	10.28	1997
Corestates Financial Corporation	First Union Corporation	45.6	5.39	3.51	1997
First of American Bank	National City	22.1	3.84	12.58	1997
Average		28.7	2.36	8.17	
Mergers of equals					
KeyCorp, Albany, NY	Society Corporation	25.5	1.82	—	1993
BB&T Financial Corporation	Southern National	9.2	2.32	2.29	1994
First Chicago Corporation	NBD Bancorp	65.9	1.30	1.87	1995
Chase Manhattan Corporation	Chemical Banking Corporation	114.0	1.38	3.76	1995
First Chicago NBD Corporation	Banc One Corporation	114.1	3.68	0.52	1998
BankAmerica Corporation	NationsBank Corporation	260.0	3.06	1.52	1998
Wells Fargo & Company	Norwest Corporation	97.5	2.70	–2.13	1998
Average		98.0	2.32	1.30	

premiums with higher asset size. The ratio of equity to deposits (leverage ratio) is significantly negative, indicating that higher leverage targets are offered larger bid premiums than other leveraged institutions. These less-capitalized target banks are viewed by the acquirers as being more efficient in their use of expensive capital funding; thus, the acquirers are willing to pay a larger bid premium. Finally, the time indicators suggest that bid premiums have been increasing over time. For example, merger bid premiums in 1997 were, on average, 0.6692 percentage points below those in 1998, while in 1996 they were 1.2543 percentage points below the 1998 level.

Columns 4 to 6 of table 9 report the results of using return on assets rather than return on equity as a measure of profitability. As in columns 1 to 3, bid premiums increase with profitability as measured by return on assets. Moreover, the asset size of the target banks and the ratio of equity to deposits are statistically significantly related to bid premiums in almost every empirical specification. The coefficients on the thrift and Southeast regional compact indicators are roughly the same as those reported in columns 1–3 of table 9. The model specification fits well, explaining almost 25 percent of the variation in the bid premiums offered for targets across all merger deals.

Table 10 uses the target's standardized excess returns as the dependent variable in the regression equation rather than the bid premium. As shown in

TABLE 9

Relationship between bid premium and target financial characteristics

	Profitability as return on equity			Profitability as return on total assets		
Variables	**Basic controls**	**Southeast compact interacted with Riegle–Neal**	**Time binary variables**	**Basic controls**	**Southeast compact interacted with Riegle–Neal**	**Basic variables**
Return on equity	3.3169 (2.82)***	3.2695 (2.86)***	3.0487 (2.82)***	—	—	—
Return on assets	—	—	—	39.8565 (2.69)***	40.4137 (2.73)***	31.8314 (2.18)**
Natural logarithm of total assets	0.0636 (1.54)	0.0630 (1.52)	0.0758 (1.89)*	0.0681 (1.65)*	0.0676 (1.63)*	0.0812 (2.02)**
Book value of equity to total deposits	–2.9059 (–1.51)	–2.8209 (–1.46)	–3.8521 (–2.11)**	–4.1854 (–2.14)**	–4.1216 (–2.10)**	–4.9113 (–2.64)***
Loans to total assets	0.7767 (1.31)	0.7357 (1.24)	0.6238 (1.12)	0.7742 (1.31)	0.7341 (1.24)	0.5952 (1.06)
Net chargeoffs to loans	–12.9726 (–1.18)	–12.6326 (–1.15)	–10.4068 (–1.00)	–14.7443 (–1.37)	–14.4692 (–1.34)	–14.2260 (–1.38)
Thrift indicator	–0.5178 (–2.21)**	–0.5191 (–2.22)**	–0.4248 (–1.92)*	–0.4846 (–2.01)**	–0.4859 (–2.01)**	–0.4412 (–1.92)*
Megamergers of equals indicator	–0.1573 (–0.32)	–0.1281 (–0.26)	–0.4647 (–0.99)	–0.0554 (–0.11)	–0.0254 (–0.05)	–0.3568 (–0.76)
Southeast regional compact indicator	0.3439 (2.39)**	0.4459 (2.44)**	0.4333 (2.51)**	0.3287 (2.27)**	0.4274 (2.34)**	0.4197 (2.42)**
Riegle–Neal	0.3577 (2.52)**	0.2855 (1.75)*	—	0.3621 (2.54)**	0.2923 (1.79)*	—
(Southeast regional compact) x (Riegle–Neal indicator)	—	–0.2681 (–0.91)	–0.2753 (–0.99)	—	–0.2598 (–0.88)	–0.2554 (–0.92)
1990	—	—	–2.1043 (–4.88)***	—	—	–2.0594 (–4.74)***
1991	—	—	–1.5333 (–4.92)***	—	—	–1.5081 (–4.76)***
1992	—	—	–1.5709 (–4.85)***	—	—	–1.5937 (–4.89)***
1993	—	—	–0.9094 (–3.23)***	—	—	–0.9140 (–3.23)***
1994	—	—	–1.0488 (–3.75)***	—	—	–1.0410 (–3.70)***
1995	—	—	–1.3827 (–5.55)***	—	—	–1.3468 (–5.37)**
1996	—	—	–1.2543 (–4.96)***	—	—	–1.2362 (–4.85)***
1997	—	—	–0.6692 (–2.71)***	—	—	–0.6642 (–2.59)**
Number of observations	327	327	327	327	327	327
Adjusted R^2	0.1337	0.1358	0.2432	0.1319	0.1313	0.2355
F-statistic	6.592	6.693	7.1641	6.503	5.926	6.908

***Indicates significance at the 1 percent level.
**Indicates significance at the 5 percent level.
*Indicates significance at the 10 percent level.
Note: Numbers in parentheses are t-statistics.

TABLE 10

Standardized excess returns of target and target financial characteristics

	Profitability as return on equity			Profitability as return on assets		
Variables	**Basic controls**	**Southeast compact interacted with Riegle–Neal**	**Time indicator**	**Basic controls**	**Southeast compact interacted with Riegle–Neal**	**Time indicator**
Return on equity	0.1101 (1.55)	0.1249 (1.78)*	0.1189 (1.66)*	—	—	—
Return on assets	—	—	—	0.7750 (0.82)	0.9671 (1.03)	1.0524 (1.10)
Natural logarithm of total assets	0.0074 (2.88)***	0.0076 (3.00) ***	0.0073 (2.77)***	0.0077 (3.03)***	0.0079 (3.16)***	0.0076 (2.87) ***
Book value of equity to total deposits	–0.1361 (–1.07) (–2.52)**	–0.1267 (–1.01) (–2.58)**	–0.1127 (–0.89) (–2.24)**	–0.1598 (–1.23) (–2.57)**	–0.1561 (–1.22) (–2.62)***	–0.1427 (–1.01) (–2.25)**
Net chargeoffs to loans	0.1095 (–0.16)	0.0187 (–0.03)	0.0113 (–0.02)	0.4139 (–0.51)	0.2940 (–0.44)	0.2370 (–0.35)
Thrift indicator	0.0158 (1.10)	0.0172 (1.22)	0.0141 (0.97)	0.0124 (0.83)	0.0140 (0.95)	0.0120 (0.79)
Megamergers of equals indicator	–0.0592 (2.05)**	0.0518 (1.82)*	–0.0445 (–1.51)	0.0561 (1.94)*	–0.0484 (1.69)*	–0.0412 (–1.40)
Southeast regional compact indicator	0.0224 (2.47)**	0.0421 (3.77)***	0.0420 (3.65) ***	0.0226 (2.45)**	0.0418 (3.72)***	0.0416 (3.60)***
Riegle–Neal indicator	0.0068 (0.77)	–0.0061 (–0.63)	—	0.0074 (0.84)	–0.0052 (–0.54)	—
(Southeast regional compact) × (Riegle-Neal indicator)	— (–2.95) ***	–0.0548 (–2.89)***	–0.0543	—	–0.0538 (–2.89)***	–0.0536 (–2.84) ***
1990	—	—	0.0504 (1.98)**	—	—	0.0519 (2.03)**
1991	—	—	0.0306 (1.55)	—	—	0.0308 (1.54)*
1992	—	—	0.0267 (1.21)	—	—	0.0253 (1.14)
1993	—	—	0.0217 (1.14)	—	—	0.0206 (1.08)
1994	—	—	0.0258 (1.38)	—	—	0.0264 (1.40)
1995	—	—	0.0335 (1.92)*	—	—	0.0349 (2.00)**
1996	—	—	0.0302 (1.75)*	—	—	0.0303 (1.75)*
1997	—	—	0.0136 (0.80)	—	—	0.0141 (0.83)
Number of observations	242	242	242	242	242	242
Adjusted R^2	0.0694	0.0994	0.0994	0.0625	0.0912	0.0933
F-statistics	2.996	3.659	2.565	2.784	3.4519	2.458

***Indicates significance at the 1 percent level.
**Indicates significance at the 5 percent level.
*Indicates significance at the 10 percent level.
Note: Numbers in parentheses are t-statistics.

TABLE 11

Bid premiums and financial characteristics with market concentration measure

Variables	Profitability as return on equity	Profitability as return on total assets
Return on equity	3.0500 (2.81)***	—
Return on assets	—	30.9000 (2.18)**
Natural logarithm of total assets	0.0760 (1.88)*	0.0815 (2.02)**
Book value of equity to total deposits	–3.8590 (–2.11)**	–4.9265 (–2.64)**
Loans to total assets	0.6239 (1.12)	0.5944 (1.06)
Net chargeoffs to loans	–10.4294 (–1.00)	–14.2521 (–1.38)
Market concentration	–0.0364 (–0.06)	–0.0625 (–0.11)
Thrift indicator	–0.4243 (–1.91)*	–0.4401 (–1.91)*
Southeast regional compact indicator	0.4323 (2.49)**	0.4179 (2.39)**
(Southeast regional compact) x (Riegle–Neal indicator)	–0.2727 (–0.97)	–0.2509 (–0.88)
1990	–2.1054 (–4.87)***	–2.0611 (–4.74)***
1991	–1.5345 (–4.90)***	–1.5101 (–4.76)***
1992	–1.5720 (–4.84)***	–1.5954 (–4.88)***
1993	–0.9100 (–3.23)***	–0.9150 (–3.22)***
1994	–1.0491 (–3.74)***	–1.0416 (–3.69)***
1995	–1.3819 (–5.53)***	–1.3454 (–5.35)***
1996	–1.2540 (–4.95)***	–1.2355 (–4.84)***
1997	–0.6686 (–2.70)***	–0.6431 (–2.58)**
Number of observations	327	327
Adjusted R^2	0.2408	0.2331
F-statistic	6.744	6.504

***Indicates significance at the 1 percent level.
**Indicates significance at the 5 percent level.
*Indicates significance at the 10 percent level.
Note: Numbers in parentheses are t-statistics.

table 10, the standardized excess returns tend to be greater for more profitable banks. However, the effect is only marginally significant. On the other hand, there is a greater stock market reaction for larger target banks, possibly reflecting the fact that bid premiums tend to increase with target bank asset size. The coefficient on the megamergers of equals indicator variable is negative and, in four out of six cases, statistically significant at conventional levels, indicating that the stock market reacts relatively negatively to announcements of such mergers. For example, the coefficient estimate in column 1 of table 10 suggests that standardized excess returns for these megamergers of equals announcements were 5.92 percentage points less than for other merger announcements. This negative response may be due to the higher cost of melding the culture of two large banking organizations. The Southeast regional compact indicator variable has a positive coefficient in all six specifications in table 10, showing that the target's standardized excess returns around the merger announcement date are significantly larger for targets in the Southeast regional compact states. The composite term that interacts the Riegle–Neal and the Southeast regional compact indicators is negative and statistically significant. Thus, relative to the pre-Riegle–Neal period, the stock market reaction is less in the post-Riegle–Neal period to announcements of mergers of banks located in the Southeast regional compact states. This result is consistent with the notion that bank merger prices will be lower when bank acquisition laws are more liberal.

The target's standardized excess returns around the merger announcement date are significantly lower for targets with higher loan-to-asset ratios. The results indicate that the book value of equity to total deposits and net-charge-offs-to-loans ratios are insignificant in explaining variation in standardized excess returns across deals. As in table 5, the results in table 10 show that standardized excess returns are not statistically different for banks and thrifts.

Table 11 presents the regression analysis explaining merger prices using market concentration, in addition to the financial characteristics of the target and control factors used in tables 9 and 10.

The main results remain pretty much unchanged from table 9. For example, the coefficient on the Southeast regional compact indicator continues to be positive, suggesting that mergers between banking organizations in the Southeast during the post-Riegle–Neal period result in higher bid premiums (and standardized excess returns, which are not shown here but are available from the authors) than those in other states. The results in table 11 indicate that market concentration is not significant in explaining either the variation in the bid premiums that the acquiring banks are willing to pay or the standardized excess returns as a result of the merger announcement, when controlling for characteristics of the targets and the transactions.

Conclusion

The wave of bank consolidation in the 1990s has dramatically changed the structure of the U.S. banking industry. The number of banks has significantly declined, with much fewer smaller banks and more large superregional and money center banks. The market shares of large banks have also become much larger as a result of megamergers and mergers of equals. The rapid pace of bank mergers and acquisitions is likely to continue into the future. Moreover, the pace of bank acquisitions of security firms and insurance companies is also likely to rise in the future as a result of the recent enactment of the Gramm–Leach–Bliley Act of 1999.

This article presents evidence on the different motivations affecting merger bid premiums that the acquiring banks are willing to offer for the targets as well as the announcement-period abnormal stock returns. We find that the following target banks are likely to be offered a larger bid premium—more profitable targets with higher returns on assets and/or returns on equity, and less-capitalized target banks with high leverage ratios.

The positive correlation between target size and the standardized abnormal (excess) returns around the merger announcement date implies that the market views the mergers positively when the potential bidders look for large targets that participate in significant markets. However, the abnormal returns are significantly lower for megamergers of equals than for other mergers, probably because the market anticipates problems in melding the cultures of two large banks. Regarding the capital ratio, unlike bank regulators, which favor better-capitalized banks, acquiring banks tend to prefer targets that offer an ample, inexpensive source of funds. In addition, target banks tend to receive larger bid offers than thrifts.

Our results show that banks located in the Southeast regional compact states—the only group that operated as a cohesive unit in our sample period, restricting entry by banks from states outside of the region—receive larger bid premiums than targets in other parts of the country. Overall, the bid premiums are larger in the post-Riegle–Neal period, consistent with the notion that as the universe of actual or potential bidders has expanded, acquisition prices have risen.

If market participants are able to identify in advance the improved performance associated with bank acquisitions, as documented in Cornett and Tehranian (1992), the bid premiums and the announcement-period abnormal stock returns examined here should be positively correlated with the long-term performance of the merged banks. Smaller bid premiums and abnormal returns at targets larger than $10 billion in megamergers of equals suggest that future megamerger applications between banks and other bank or nonbank financial institutions should be monitored more closely. Our results also imply that these megamergers of equals are not perceived by the market to have the benefit of creating a bank that is too big to fail.

NOTES

[1]Prior to the Riegle–Neal Act, banking organizations could conduct interstate banking operations through "nonbank banks"—those that do not meet the definition of bank. Banks are commonly defined as institutions that both accept demand deposits and make commercial loans.

[2]States could individually opt out of this branching authority or choose to adopt an earlier starting date.

[3]Siems (1996) examines bank megamerger deals in 1990–95, and concludes that market powers are not the primary motivation for the mergers.

[4]See Cetorelli (1999) for a discussion of the HHI.

[5]When first introduced the 1982, the DOJ horizontal merger guidelines listed in table 2 applied to all U.S. industries. In 1985, the DOJ modified the 1,800/50 rule for bank mergers to 1,800/200 to recognize the impact of competition from thrifts and nondepository institutions.

As mentioned earlier, the Supreme Court, in the Connecticut National Bank case (1974), concluded that thrifts should not be included in the calculation of concentration measures because they were not offering the cluster of banking services. However, the court did recognize that thrifts could be included if they became significant competitors for a broad range of consumer services. With the passage of the Depository Institutions Deregulation and Monetary Control Act (1980) and the Garn–St. Germain

Act (1982), which effectively deregulated the thrift industry, thrifts were authorized to compete with banks in providing the cluster of products previously unique to commercial banking organizations. By the mid-1980s competition from thrifts had grown to such a point that the Federal Reserve Board changed its rules regarding delegation of authority of the Federal Reserve Banks to give thrifts a weight of 50 percent when calculating concentration numbers, to reflect both actual and potential competition from thrifts. In some cases, it may give 100 percent weight to thrifts when they are significant competitors.

[6]Healy, Palepu, and Ruback (1991) perform a similar study on nonregulated firms.

[7]Due to the sample bias problem stemming from this criterion, the result may not be applicable to small banks.

[8]An exception is evident, however, for megamergers of equals (shown in table 8). That is, the abnormal returns are significantly smaller for money center banks with total assets more than $10 billion compared with the rest of the population. The smaller stock price gain around the merger date for megamergers of equals of targets larger than $10 billion may represent a higher cost of melding the culture of a large target bank with that of the acquirer.

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