The Impact of State Deposit Caps on Bank Merger Premiums*

DAVID R. HAKES
KENNETH H. BROWN
ALLEN RAPPAPORT
University of Northern Iowa
Cedar Falls, Iowa

I. Introduction

Nineteen states set a ceiling on the percent of total deposits that any one banking organization may hold in that state. This ceiling is known as a deposit cap. Once a bank has reached a state's ceiling, either through growth or merger, it may not acquire additional banks in that state. Thus, the presence of a deposit cap may eliminate potential bidders for a merger target. We argue that fewer bidders for a target bank may reduce the ratio of purchase price to book value, or what has been termed the "merger premium." In this short paper, we empirically address the impact of state deposit caps on bank merger premiums. We find, as expected, that the presence of deposit caps significantly reduces bank merger premiums.

An analysis of the impact of deposit caps on bank merger premiums is particularly important for the following reason: On September 29, 1994, President Clinton signed into law the Riegle-Neal Interstate Banking and Branching Efficiency Act [6] effectively striking down the McFadden Act of 1927 and its subsequent 1933 amendments. The new interstate banking law, which became effective on September 29, 1995, establishes a uniform state deposit cap of 30 percent for those states with no existing deposit cap and a national deposit cap of 10 percent. Although we cannot yet measure the impact of the new federally imposed deposit caps on merger premiums because limited data has accumulated since their imposition, we can measure the impact of existing state deposit caps. Our results may be useful as an indicator of the expected impact of the new federally imposed caps. In addition, our results may be immediately useful to various state legislatures as they seek to adjust their existing state deposit caps.

Though previous studies employ financial, market structure, and regulatory data to explain the variation in bank merger premiums, no existing research has included deposit caps as determinants of bank merger premiums. We address the impact of deposit caps by employing them as additional explanatory variables in a model explaining merger premiums for the period of 1989 through 1994. Thus, while our results support many of the conclusions found in the existing lit-

*This is a revised version of a paper presented at the Southern Economic Association Meetings in New Orleans, Louisiana, November 1995. This research was supported, in part, by a grant from the University of Northern Iowa Graduate College. The authors wish to thank Wylie Anderson, Howard Bodenhorn, Ed Gamber, Roger Koenker, Ken McCormick, Janet Rives, and an anonymous referee for helpful comments and suggestions. The usual disclaimer applies.

erature, we generate several unique results. We find that deposit caps significantly reduce the merger premium paid to target banks. Further, we find that deposit caps cause a greater reduction in the merger premium paid to moderate size target banks when compared to either extremely small or extremely large target banks. We also find that merger premiums are larger when the target banks have larger off-balance sheet income and when targets are purchased with acquirer stock as opposed to cash (i.e., stock swap). Finally, our results refute results found in previous studies which suggest that there is a premium paid by acquirers to enter less concentrated banking markets.

In section II we identify the literature on the determinants of bank merger premiums and develop the empirical model we use to explain merger premiums. In section III we report the results of our estimations. Section IV contains some concluding remarks.

II. Model and Data

The empirical procedure we employ draws heavily from research by Palia [8], Cheng, Gup, and Wall [3], Fraser and Kolari [5], Rhoades [10], and Beatty, Santomero, and Smirlock [2]. Specifically, in order to avoid missing-variable bias in our model, we include explanatory variables that these previous studies have shown to be significant determinants of bank merger premiums. Therefore, the following discussion is limited to a brief description of the components of these studies we use to form the general structure of our model. For a recent and more extensive review of the literature on bank merger premiums, see Palia [8, 92–93].

Bank merger premiums have been defined uniformly in the literature as the ratio of purchase price to book value of the target bank. As in previous studies, we use the ratio of bid price to book value on the date the merger is *announced* because the final purchase value is uncertain when stock of the acquirer is used to purchase the target bank. The studies mentioned above explain the variation in this ratio with a variety of variables. We can group these explanatory variables into the following categories: financial, market structure, and regulatory.[1] Note that the purpose of the explanatory variables is to capture information that may influence the market value of a target bank *beyond* that which is captured by its book value.

Financial Variables

Previous studies suggest that the financial condition of the target bank influences the merger premium. This effect is captured by the target's profitability, growth, capitalization, portfolio condition, and cost structure. Profitability is proxied by return on assets or return on equity. Growth is proxied by growth in assets or growth in equity. We expect the signs on the above mentioned variables to be positive because higher profits and faster growth are more attractive to the acquirer. Capitalization is represented by the capital to asset ratio. We expect the sign to be negative because a high capital to asset ratio may indicate that the target is using its capital inefficiently and is unusually risk-averse [8]. Alternatively, the lower the capital to asset ratio, the greater the leverage of the institution—more assets per dollar of capital—and the greater the merger premium, ceteris paribus. Portfolio condition is represented by the non-performing assets to assets

1. Some of the previous studies have included variables that were generated specifically for that study and they are unavailable to us for our study. For example, Palia [8] addressed how the separation of ownership and management affected the merger premium.

ratio and cost structure by operating expenses to average assets ratio. We expect the signs on these two variables to be negative.

To the above list of variables which are found in previous studies, we add an additional variable. Greater fee income, or off-balance-sheet income, should increase the premium paid for a target bank because these sources of income are not captured by book value. Examples of fee income, or what is sometimes called soft money, are income from loan securitization and loan servicing on mortgage origination, credit card services, underwriting, and debt guarantees. We proxy this source of income with the target's non-interest income to asset ratio and we expect the sign to be positive.

Although most studies that attempt to explain merger premiums utilize the financial characteristics of the target banks as explanatory variables, Palia [8], and, in particular, Cheng, Gup, and Wall [3], include many of the financial variables described above for both the target and the acquirer. They argue that the same characteristics that make a target appealing make an acquirer better able and more anxious to bid for a target bank, thus raising the merger premium. Therefore, we include the above mentioned financial variables for both the target and the acquirer.

In addition to the financial variables mentioned above, there may be financial synergies between a specific target and a specific acquirer. Previous studies have argued that the value of these broad synergies may be captured by a single variable representing the relative size of the institutions involved in the merger. A relative size variable captures these synergies because the greater is the difference in size, the greater is the likelihood that the acquirer can provide new services and offer new technologies to the smaller target bank, and generally increase the efficiency and profitability of the target bank through economies of scale. Thus, the greater is the difference in size, the greater is the value of the target to the acquirer (for a given target book value) and the greater is the merger premium. We capture this effect with the ratio of target assets to acquirer assets and we expect the sign on this variable to be negative. The reader should note that while the other financial variables in the model capture static financial effects in the sense that they measure existing financial pressures on the merger premium, the relative size variable captures the estimated value of potential financial changes in the post-merger organization.

Finally, we add an additional variable to capture specific financial synergies. Due to liquidity constraints, we suggest that the acquirer will prefer a stock swap over a cash deal. Therefore, we enter the ratio of cash amount to deal value to capture this effect. We expect the sign to be negative.

Market Structure Variables

With regard to market structure characteristics, previous studies have argued that banks pay a premium for interstate acquisitions. This may be because past restrictions on interstate expansion imply that current interstate mergers are likely to add geographical diversity to the resulting institution. Thus, interstate mergers are identified with a dummy variable which equals one for interstate transactions. We expect the sign on this variable to be positive. Previous studies have also argued that acquiring banks are willing to pay premiums to enter more concentrated markets because those markets are more likely to be profitable due to reduced competition. We capture this effect with the four-bank concentration ratio of the state in which the target resides. Previous studies have found the sign on this variable to be positive.

Table I. Deposit Caps

State	Cap	Acquirer Restrictions
Arkansas	0.15 (1/1/89–7/31/93) 0.25 (8/1/93–6/30/94)	—
Colorado	0.25	Out-of-state acquirers only
Iowa	0.10	—
Kansas	0.12 (1/1/89–5/31/91) 0.15 (6/1/91–6/30/94)	—
Kentucky	0.15	—
Massachusetts	1.00 (1/1/89–9/3/90) 0.15 (9/4/90–9/9/93) 0.25 (9/10/93–6/30/94)	Out-of-country acquirers only
Mississippi	0.19	—
Missouri	0.13	—
Montana	1.00 (1/1/89–3/31/93) 0.18 (4/1/93–6/30/94)	—
Nebraska	1.00 (1/1/89–12/31/90) 0.13 (1/1/91–12/31/91) 0.14 (1/1/92–6/30/94)	—
New Hampshire	0.20	—
New Mexico	0.40	Out-of-state acquirers only
North Dakota	1.00 (1/1/89–6/13/91) 0.19 (6/14/91–6/30/94)	Out-of-state acquirers only
Ohio	0.20	Out-of-state acquirers only
Oklahoma	0.11	—
Tennessee	0.165	—
Texas	0.25	Out-of-state acquirers only
Vermont	0.25	—
West Virginia	0.20	—

Note: Dates are given only for states that changed their deposit cap during the sample period of 1/1/89–6/30/94. The dates given refer only to subperiods within the sample period. That is, deposit caps exist prior to the beginning of the sample period and exist after the end of the sample period.

Regulatory Variables

Regulatory restrictions that limit the geographic expansion or the financial structure of the banking enterprise can be expected to affect merger premiums. We follow previous studies by including a dummy variable that equals one when the state in which the target resides restricts statewide branching. We also include a dummy which equals one when the target state allows bank holding company (BHC) acquisitions from out-of-state. We expect a positive sign on each dummy because acquirers prefer markets with less competition due to restrictive branching laws and because open access by out-of-state BHCs increases the number of potential bidders for a target bank.

Deposit caps are the regulatory restrictions that are central to this paper. Recall that deposit caps set the ceiling on the percent of total deposits in a state that any one banking organization may hold. Table I shows the value of the deposit cap for the nineteen states that had a cap in

effect during the sample period of 1989(1)–1994(6). Data on each state's deposit cap was obtained from a survey of the state banking regulators. States not reported in Table I set no ceiling; thus, their effective ceiling is 1.00 or 100 percent. Note that in some cases the cap is only applicable to banking organizations based outside of the target state. This issue is addressed in the next section.

We capture the effect of deposit caps on merger premiums by entering the cap of the target state as both a dummy variable and as the deposit cap value. The value of the cap dummy is set equal to zero *when there is a cap* in the target state and equal to one *when there is no cap.* By specifying the dummy in this manner, we can separate the intercept effect (the effect of a state having a cap regardless of its size) from the marginal effect (the effect of the size of the cap given that the state has a cap). We expect the sign on the deposit cap dummy to be positive because, the existence of a cap (dummy equals zero) reduces the merger premium by eliminating potential purchasers of a target bank. We also expect the sign on the deposit cap value to be positive because a smaller cap should cause a smaller merger premium by eliminating potential acquirers. Finally, since deposit caps eliminate the largest banks from further acquisitions, and since large banks tend not to buy extremely small banks, deposit caps should reduce merger premiums paid to smaller target banks to a lesser extent than to larger target banks.

Data

The financial data utilized in this paper are from SNL Bank M&A DataSource (DEALS section) [11].[2] This data source provides more than 250 fields of data on both the target and acquirer for bank mergers initiated during the period 1982(1)–1994(6). The raw data includes information on 1866 mergers. However, we eliminate mergers that were initiated before 1989(1) because the data is not complete for the pre-1989 period. Mergers that were not completed by 1994(6) are also eliminated. Finally, we eliminate mergers that are missing any observations on the variables we employ in the model. After removing the unsuitable observations, we are left with data on 868 mergers.

The data on branching and BHC restrictions are from the Board of Governors, reprinted in Kohn [7]. The four-bank state concentration ratio data are from various issues of the Board of Governors *Annual Statistical Digest* [1]. Recall that the deposit caps are obtained from our survey of the state banking regulators.

Table II presents the definitions, variable names, and descriptive statistics for all of the variables in the model. Note the following items in Table II: First, the dependent variable, merger premium, is measured as a percent; thus, there is no decimal in the raw data. Second, with regard to the independent variables, previous studies generally employ financial data from only the year preceding the merger announcement. We measure the financial variables as an average of the three years preceding the announcement of the merger because we feel that a three-year average is a less volatile indicator of the financial condition of an institution and three years of financial data was available to us in the SNL data set. Third, note that we report results of estimates where we employ return on assets and asset growth to capture the impact of the target's and acquirer's profitability and growth on the merger premium (as opposed to return on equity

2. This data is proprietary and can be obtained from SNL Securities [11] for a fee. Readers may contact the authors for information regarding how to obtain the data set. All data employed in this paper, other than that obtained from SNL Securities, are available from the authors.

Table II. Descriptive Statistics of the Variables in the Model

Variable Definition	Variable Name	Mean	Standard Deviation
Dependent Variable			
Merger premium: ratio of bid price to book value	*MPREM*	151.80	50.61
Independent Variables			
Target's three-year average return on assets (%)	*TROA*	0.667	0.762
Target's three-year average growth in assets (%)	*TGA*	0.026	0.096
Target's three-year average capital to asset ratio	*TCA*	8.207	3.524
Target's three-year average non-performing assets to asset ratio	*TNPA*	1.846	2.314
Target's three-year average non-interest income to asset ratio	*TNIA*	0.824	0.571
Target's three-year average operating expenses to asset ratio	*TOEA*	3.440	3.068
Acquirer's three-year average return on assets (%)	*AROA*	1.014	0.369
Acquirer's three-year average growth in assets (%)	*AGA*	0.135	0.339
Acquirer's three-year average capital to asset ratio	*ACA*	7.746	1.936
Acquirer's three-year average non-performing assets to asset ratio	*ANPA*	1.196	1.351
Acquirer's three-year average non-interest income to asset ratio	*ANIA*	1.209	0.682
Acquirer's three-year average operating expenses to asset ratio	*AOEA*	3.406	0.872
Ratio of target's assets to acquirer's assets	*SIZE*	0.190	0.372
Ratio of cash to deal value	*CASH*	0.497	0.482
Interstate merger, dummy (if interstate *INTER* = 1)	*INTER*	0.660	0.474
Four-bank concentration ratio in the target's state	*TCON*	47.05	15.19
Branching restricted in target's state, dummy (if restricted *BR* = 1)	*BR*	0.198	0.399
BHC acquisition allowed from outside target's state, dummy (if allowed *BHC* = 1)	*BHC*	0.140	0.347
Deposit cap percentage	*CAP*	0.711	0.392
Deposit cap dummy (if *no* cap in target state *CAPDUM* = 1)	*CAPDUM*	0.605	0.489

or equity growth). Our results were not sensitive to this choice. Finally, recall that in order to capture both the intercept and slope effect of deposit caps, we have two measures of deposit caps. *CAP* is the deposit cap in effect in the target state at the time the merger is announced. When there is no cap in effect for a merger, the value of *CAP* is 1.00 because there is no limit to the percent of deposits one bank may hold in that state. To be consistent with *CAP*, *CAPDUM* is the dummy variable previously described that is measured as zero when there *is* a cap in effect and one when no cap is in effect.

III. Results

We summarize the model described in the preceding section with the following equation:

$$\text{Merger Premium} = f\ (\text{target's financial condition, acquirer's financial condition, financial synergies, market structure, regulatory environment; error term}). \quad (1)$$

We estimate equation (1) in a variety of different forms using OLS. Equation (1) is estimated with and without the variables describing the financial condition of the acquirer. Although we find that the variables representing the financial condition of the acquirer are less important than those representing the financial condition of the target, we reject the hypothesis that the coefficients on the acquirer variables are, as a group, equal to zero. Therefore, all estimates reported in this paper contain the acquirer variables.

Since the deposit caps in six states are only applicable to out-of-state (or out-of-country) acquirers, we estimate the model with and without observations from these six states. We are unable to reject the hypothesis that these six states are the same as the other thirteen states with caps. We discuss possible explanations for this result below. Thus, all estimates reported in this paper contain mergers from all fifty states.

Recall, the primary hypothesis tested in our paper is composed of two parts. First, the presence of a deposit cap should eliminate potential bidders for a target bank and lower the merger premium. Second, within states with a deposit cap, smaller caps should further limit bidders and lower the merger premium.

To measure the effect of a deposit cap on merger premiums, we estimate the model three ways. We first estimate the model with the deposit cap represented only by *CAPDUM*, the deposit cap dummy variable. As expected, we find that the presence of a deposit cap significantly reduces the merger premium. Next we estimate the model with both *CAPDUM* and *CAP*, the values of the actual deposit caps, for the purpose of detecting the marginal effect of a cap on those states with a cap. Since there is little variance in the actual size of the deposit caps, we find that *CAPDUM* and *CAP* are nearly collinear. Thus, estimates that include both variables generate enormous standard errors on both coefficients, and both coefficients appear to be insignificant. For this reason, to measure the marginal effect of a deposit cap, we estimate the model for just the states with a deposit cap and find that *CAP* is an insignificant determinant of the merger premium within states with a cap. We conclude that the existence of a deposit cap reduces the merger premium significantly regardless of its size; and thus, the impact of a deposit cap is fully captured by a dummy variable. For this reason, we only report the results of estimates of the model where the impact of the deposit cap is measured by the dummy variable, *CAPDUM*.[3]

Table III presents estimates of the model described above. All coefficients on the variables which describe the financial condition of the target are significant and carry the expected sign except for the positive sign on *TOEA*, the target's operating expense to asset ratio. It may be that higher operating expenses are associated with branching operations and branch banks are

3. We generate similar results when we employ *CAP* or *CAPDUM* alone. However, employing *CAP* gives the false impression of a marginal effect. This leads one to think that a movement of a cap from, say, 0.60 to 0.50, would have a marginal effect on the merger premium. First, this would be in error because we have no observations in that range; and second, we have shown that when we estimate the model only for states with a cap, the marginal effect of the cap size is insignificant.

Table III. Regression Results

Variable	Coefficient	*t*-statistic
Constant	142.29**	11.22
TROA	11.13**	5.03
TGA	94.13**	5.46
TCA	−3.06**	−6.47
TNPA	−3.38**	−4.12
TNIA	8.86**	2.88
TOEA	1.42**	2.68
AROA	12.83**	2.66
AGA	−0.77	−0.17
ACA	1.30	1.43
ANPA	2.10	1.55
ANIA	8.82*	2.28
AOEA	−2.71	−0.99
SIZE	−15.65**	−3.68
CASH	−21.51**	−6.44
INTER	−1.91	−0.55
TCON	0.01	0.92
BR	1.65	0.38
BHC	3.29	0.66
CAPDUM	8.93**	2.40
R^2	0.28	
F-statistic	17.57**	
Sample size	868	

*Indicates significance at the 0.05 level.
**Indicates significance at the 0.01 level.

more attractive to acquirers. Although few variables which describe the financial condition of the acquirer are significant, those that are significant carry the expected sign. Both financial synergy variables—*SIZE* and *CASH*—are highly significant. As expected, it appears that acquirers prefer to purchase relatively smaller institutions and prefer to pay with stock swaps rather than cash. Surprisingly, we find that neither of the market structure variables (*INTER* and *TCON*) is a significant determinant of merger premiums. Moreover, none of the regulatory variables, other than deposit caps, are found to be significant.

With regard to the impact of deposit caps, we find that *CAPDUM* is highly significant and carries the expected sign. Indeed, the existence of a deposit cap reduces the merger premium percentage by an average of approximately nine percentage points. Since the mean of the merger premium percentage is approximately 150, our results suggest that the bid price on a target bank is reduced, on average, by 6 percent if the target resides in a state with a deposit cap (assuming that the book value of the target bank is unaffected by the cap).

At first glance, it may appear inexplicable that deposit caps depress merger premiums a similar amount regardless of the size of the cap. There is, however, a ready explanation. Recent research has shown that deposit caps are often set at approximately the percentage of deposits held by the lead bank in the state [9]. Thus, the cap essentially eliminates the largest acquirer in the region from further expansion in a state with a cap, regardless of the size of the cap. This may

Table IV. Results by Target Size

Asset Range of Target	Number of Observations	*CAPDUM* Coefficient	*t*-statistic
Up to $77,002,000	407	4.47	0.85
$77,002,000–$204,117,000	205	18.28**	2.58
Over $204,117,000	256	4.52	0.64

**Indicates significance at the 0.01 level.

also explain why estimates using states that only restrict out-of-state acquirers produce results similar to estimates using states that restrict all acquirers. Each cap eliminates the largest relevant regional acquirer. If the major acquirer is based outside of the state, the out-of-state caps will be found to be equally binding.[4]

Since we find that deposit caps do indeed reduce bank merger premiums, we test an extension of the hypothesis. Because very large banks tend not to buy extremely small banks, it would seem reasonable that small target banks would have their merger premiums reduced by a smaller percentage than those of large target banks when large regional acquirers are eliminated from the bidding. To test this hypothesis, we employ an arranged regression [12]. We order the observations by the asset size of the target bank, from the smallest to the largest. We sequentially estimate the model, adding one observation per estimate. For the first estimate, we employ the first 50 observations. For the second estimate, we employ the first 51 observations, and so on. For each estimate, we plot the *t*-ratio for the coefficient on *CAPDUM* against the arranged observation number. When the trend line on the *t*-ratio changes, the regression enters a new regime and we establish a break-point in the data. Using an arranged regression, we discover break-points for target banks whose asset size is $77,002,000 and $204,117,000.[5] Two break-points imply three regimes: target banks from approximately zero to $77 million, from $77 million to $204 million, and above $204 million.

Estimates of the coefficient on *CAPDUM* for the three size regimes are reported in Table IV. As expected, the coefficient on *CAPDUM* is small and insignificant for target banks smaller than $77,002,000. Presumably, large regional banks are disinterested in purchasing extremely small banks; thus, elimination of these large regional banks from bidding does not significantly affect the merger premium paid to very small banks. Also, as expected, the coefficient on *CAPDUM* is larger and highly significant for target banks in the $77,002,000 to $204,117,000 range. For target banks in this range, deposit caps reduce the merger premium percentage more than 18 percentage points. For large target banks, however, those above $204,117,000 in assets, the coefficient on *CAPDUM* is small and insignificant. We are at a loss to explain this result with any degree of certainty. We suggest that large publicly traded banks may have a book value that more accurately represents the true value of the bank; and therefore, the variance of the merger premium is simply less for the very large target banks. Alternatively, anecdotal evidence suggests that large acquirers may be more interested in medium sized target banks that still have room to grow in their markets. That is, large banks may merge with large banks to consolidate operations, but large banks buy

4. Existing deposit caps cover a slightly different deposit base in each state [9]. This does not affect our results for the same reason that the size of the cap does not seem to matter—the cap is set at the level necessary and covers the deposits necessary to eliminate the largest regional banks from further acquisitions.

5. The trend on the *t*-statistics diminishes until we reach a minimum of 0.85 which corresponds to the arranged observation number 407. At this point, the trend on the *t*-statistics rises until it reaches a maximum of 2.76 which corresponds to the arranged observation number 612. The *t*-statistics diminish thereafter.

medium sized banks to expand them. Thus, there may be small merger premiums paid to large target banks regardless of where the target resides.[6] In addition, antitrust legislation may have inhibited mergers between extremely large banks altogether. The most likely explanation, however, is that large target banks are often purchased by extremely large acquirers that have no current presence in that state. Therefore, a deposit cap is not a binding constraint in those mergers.

Finally, our study is unique in that we fail to find the variables that describe the market structure and the regulatory environment (other than deposit caps) to be significant determinants of merger premiums. In particular, previous studies find the four-bank concentration ratio to be a highly significant determinant of merger premiums. Authors of these studies argue that acquirers pay a premium to enter a more concentrated market due to the expectation of reduced competition [2; 8]. We suggest that, in these studies, the concentration ratio is spuriously picking up the effect of the missing deposit cap. That is, there is some correlation between a higher concentration ratio and a higher (less restrictive) cap. Note that when we remove the concentration ratio from our study, the results with regard to deposit caps are unchanged. When we remove the deposit cap dummy from the regression, however, the concentration ratio becomes significant at the ten percent level as in other studies.

With regard to the other regulatory variables (branching and BHC restrictions), we also fail to support the findings of previous studies. Again, previous studies may have attributed the effect of the missing deposit caps to the branching and BHC dummies. Alternatively, the branching and BHC restrictions may no longer matter, as fewer states impose them and as the merger activity increases in a less regulated environment. Moreover, the inclusion in our study of the target's operating expenses to average assets ratio may have captured the branching and BHC effects.

IV. Concluding Remarks

We produce evidence that deposit caps are not cosmetic but are binding constraints in the market for target banks. In particular, we show that the presence of deposit caps reduces the merger premium paid to target banks. However, the impact of deposit caps is not symmetric across target banks. We find that the premium paid to moderate size targets—those between $77 million and $204 million in assets—is reduced greatly by the cap restriction while the premium paid to both extremely small and extremely large targets is reduced less consistently. While we expect this result for the small target banks, we are somewhat surprised by this result for the large target banks.

Since small target banks are largely unaffected by deposit caps, it is ironic that support for deposit cap legislation comes from state banking associations which are dominated by small bankers. Indeed, if deposit caps have any affect on the premiums paid to small target banks it would be to reduce them, although apparently in an inconsistent manner. However, since small banks overwhelmingly oppose the removal of deposit caps, it is likely that there are other paths by which small banks are affected by deposit caps. For example, the presence of a deposit cap may inhibit mergers altogether, reducing the number or probability of bank mergers. This could reduce pressure on a small bank to be acquired. A cursory look at the data, however, does not suggest such a conclusion; a representative proportion of merger activity takes place in states with and

6. Descriptive statistics on the merger premium, however, suggest that small, medium, and large targets exhibit similar merger premiums on average.

without deposit caps. A more likely explanation of why small banks wish to maintain deposit caps is that deposit caps may reduce a small bank's competition by restricting a competitor's ability to merge and experience economies of scale. It follows that state banking associations would continue to support deposit caps because a disproportionately large number of their members are not acquired during any given period and these members receive gains due to reduced competition while only a small number of their members are acquired during the same period and experience losses due to a lower selling price.

There are several other findings unique to this study. First, we find evidence that acquirers pay a premium to purchase a bank with acquirer stock as opposed to cash. Second, we find that acquirers pay a premium for targets with greater off-balance-sheet income. Third, we fail to find evidence that banks pay a premium to enter a more concentrated (less competitive) market.

Finally, we offer a note of caution with regard to the application of our study to the new interstate branching law. Although the new branching law contains uniform state and national deposit caps, these caps will not immediately have the same impact as the existing state deposit caps. This difference in impact is because most states with existing caps set their cap at a level equal to the percentage of deposits held by the major acquirer in the area, which immediately eliminates a potential bidder for target banks. The new federal law, however, will not impose an equally binding constraint across states, because some states currently have lead banks that are significantly smaller than the uniform state cap of 30 percent. We should expect, however, that if banks continue to merge in those states which have lead banks smaller than the 30 percent cap, the federally imposed deposit cap will become a binding constraint on bank mergers in an increasing number of states, the result of which will be the elimination of potential bidders for target banks and the reduction of merger premiums paid to target banks.

References

1. *Annual Statistical Digest.* Washington, D.C.: Board of Governors of the Federal Reserve System (various issues).

2. Beatty, Randolph P., Anthony M. Santomero, and Michael L. Smirlock, "Bank Merger Premiums: Analysis and Evidence." Solomon Brothers Center for the Study of Financial Institutions *Monograph Series in Finance and Economics,* Monograph 1987-3.

3. Cheng, David C., Benton E. Gup, and Larry D. Wall, "Financial Determinants of Bank Takeovers." *Journal of Money, Credit, and Banking,* November 1989, 524–36.

4. *Federal Reserve Bulletin.* Washington, D.C.: Board of Governors of the Federal Reserve System (various issues).

5. Fraser, Donald R., and James W. Kolari. "Determinants of Small Bank Acquisition Premiums." Proceedings of *Conference on Bank Structure and Competition,* Federal Reserve Bank of Chicago, 1987, pp. 393–405.

6. Interstate Banking Efficiency Act, HR Conference Report No. 103-651, 103rd Congress, 2nd Session (to accompany HR 3841).

7. Kohn, Meir. *Money, Banking, and Financial Markets,* 2nd edition. Orlando: The Dryden Press, 1993.

8. Palia, Darius, "The Managerial, Regulatory, and Financial Determinants of Bank Merger Premiums." *The Journal of Industrial Economics,* March 1993, 91–102.

9. Rappaport, Allen, "State and Federal Deposit Caps." *The Banking Law Journal,* October 1995, 900–17.

10. Rhoades, Stephen A., "Determinants of Premiums Paid in Bank Acquisitions." *Atlantic Economic Journal,* March 1987, 20–30.

11. SNL Bank M&A DataSource (DEALS Section). SNL Securities, Charlottesville, Va., September 1994.

12. Tsay, Ruey S., "Testing and Modelling Threshold Autoregressive Processes." *Journal of the American Statistical Association,* March 1989, 231–40.