SMALL BUSINESS LENDING BY BANKS INVOLVED IN MERGERS

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Abstract:

The paper uses data on the volume outstanding of small business loans from the midyear Call reports to summarize the nature of small business lending at banks that were involved in mergers between June 1993 and June 1996. Then, a model of gradual adjustment by the consolidated bank following the merger is estimated to determine whether the portfolio share of small business loans at the consolidated bank tends to move over time towards either the pre-merger share at the acquiring bank or the typical share at other banks of roughly the same size as the consolidated bank.

In an era of rapid consolidation in the banking industry, the effect of mergers on the availability of credit to small businesses is a question that merits a great deal of scrutiny by researchers and policymakers. Depending on the general attitude of the acquiring institution, the current trend of consolidation in the banking industry could either boost or limit the volume of funds flowing towards small businesses. For instance, if acquiring institutions, on average, had more profitable investment opportunities than the small business loans of the banks that they acquired, then one could expect these assets to be run off by the new, merged institution. On the other hand, it also seems plausible that a reasonable means for a bank to expand its portfolio of small business loans would be to purchase another bank that had a large volume of these loans and a staff that was skilled in monitoring them. Of course, one could imagine other attitudes of acquiring and acquired banks towards small business lending, but these two suffice to show that the net effect of consolidation on small business lending is ambiguous theoretically.

The purpose of this paper is twofold. First, it summarizes the nature of small business lending at those banks involved in mergers between June 1993 and June 1996. This period was chosen because banks first were required to report the volume and number of business loans by the initial size of the loan in the midyear Call report beginning in 1993, and June 1996 is the most recent reading that is available.

The paper then reviews the major previous contributions in this area, examining critically the major assumptions embodied in

their projections for the effect of consolidation on the level of small business lending. A facet of this last endeavor involves determining if actual patterns of lending following a merger correspond to those predicted by previous theoretical work.

Several definitions and assumptions that are employed throughout this paper are best addressed at the outset. First, banks with less than $250 million of assets are termed small banks, those with $250 million to $5 billion of assets are termed medium banks and those with more than $5 billion of assets are termed large banks.

Small business loans, which throughout this paper are the outstanding balances of commercial and industrial (C&I) loans that originally were in amounts of less than $1 million, are assumed to go to small businesses. The data for small business loans on the Call are reported by the initial size of the loan, not the size of the borrower. That is, the data reflect small loans to businesses rather than loans to small businesses. Treating all of the data as loans to small businesses, though a reasonable assumption that is supported by some empirical results, (especially for very small and very large loans (Scanlon 1981)) likely introduces some error into the analysis.

The paper frequently contrasts characteristics of banks that purchased another bank with those of banks that were purchased. Distinguishing the bank that acquires another from the bank that was acquired is a subtle problem that falls to the generators of banking statistics. The procedure that is employed is described

extensively in the National Information Center Processing Instruction Guide. Speaking roughly, analysts follow a decision tree that first determines, if possible, which of the parties to a merger of banks had dominant management in the consolidated institution. If this rule fails, the analyst checks the charter type. At the next node on the decision tree, the successor is designated as the party that had the most sound financial condition before the merger, and then, the type of insurance held by the parties to the merger is considered. If the analyst is unable to designate the surviving bank according to any of these measures, then the largest party prior to the merger is deemed the successor bank.

The analysis is performed mainly at the bank level rather than at the bank holding company level. While good arguments also can be made for carrying out the analysis at the holding company level, the bank level seemed a bit more appropriate. The issue that determines which level of organization to examine is the degree of control that the holding company exerts on the allocation of its member's assets towards small business loans. If each member of a holding company has broad control over the allocation of its assets, then it seems that one should treat each member of the holding company as an individual decision maker. If, in contrast, the holding company controls tightly the asset allocation of its members, then treating each member that acquires another bank as a more or less identical miniature of the entire holding company would tend to overweight the decisions of the parent, the ultimate

decision maker in this sort of business structure. A significant portion of the merger activity during the sample period involves intra-holding-company acquisitions which might also suffer from the same type of problem. The approach taken was to use the data at the bank level, but to recalculate at each point along the way the results with data aggregated to the highest bank holding company involved in any particular merger. Because most intra-holding company acquisitions occurred on a single day, and same-day acquisitions were aggregated for each acquirer in both data sets (as will be discussed more completely in the data section), the major characteristics of acquiring banks when viewed at the bank level are quite similar to the characteristics of acquiring institutions when the data that are aggregated to the holding company level. However, the regression results for the simple model that is developed in this paper change substantially when the data are aggregated to the highest holding company, as shall be discussed in the section on regression results.

Characteristics of banks involved in mergers

The upper panel of Table 1 shows that from mid 1993 to mid 1996 almost half of the number of purchases of small banks were by other small banks (655 of 1434). This observation perhaps is a bit surprising given the tone of the discourse in the popular press, which generally depicts large national and regional banks rapidly snatching up smaller banks. Furthermore, most of the remaining

Mergers & Acquisitions of U.S. Commercial Banks
June 1993 to June 1996[1]

Number of Acquired Banks
By Size of Acquired and Acquirer[2]

Size of Acquired Bank Assets, millions of dollars:	Size of Acquiring Bank Assets, millions of dollars: Total (1)	250 or less (2)	251 – 5,000 (3)	More than 5,000 (4)
(1) 250 or less	1434	655	610	119
(2) 251 – 5,000	253	13	161	79
(3) More than 5,000	21	–	3	18
(4) Total	1658	668	774	216

Number of Acquired Banks or Bank Holding Companies
By Size of Acquired and Acquirer[3]

Size of Acquired Bank or Bank Holding Company Assets, millions of dollars:	Size of Acquiring Bank Holding Company Assets, millions of dollars: Total (1)	250 or less (2)	251 – 5,000 (3)	More than 5,000 (4)
(1) 250 or less	818	348	349	121
(2) 251 – 5,000	164	15	87	62
(3) More than 5,000	29	1	10	1
(4) Total	1011	364	446	201

Small C&I and Small Farm Loans at Banks Involved in Mergers[4]

Size of Bank Assets, millions of dollars:	Median Ratio of Small C&I Loans to Total Assets			
	Acquiring Banks		Acquired Banks	
	Bank Holding Company	Independent	Bank Holding Company	Independent
(1)250 or less	7.3	8.4	6.3	7.3
(2)251 – 5,000	5.5	9.3	2.0	5.0
(3)More than 5,000	3.7		0.3	3.0

1. Assets and loan volumes are from the most recent June Call Report at the time of the merger.
2. Each member of a bank holding company is treated separately. The data include independent banks and individual members of a bank holding company.
3. Data for members of each acquiring bank holding company are aggregated to the highest holding company. The data for acquired institutions include independent banks and holding companies.
4. "Small" refers to loans that were originally less than $1 million.

purchases of small banks were by medium-sized banks, leaving large banks a relatively minor role to play in the consolidation of small banks into larger entities.

The middle panel of the table shows the merger activity of banking institutions when data for the acquiring institutions were aggregated to the level of the highest holding company, and intra-holding-company transactions were thrown out. Thus, this middle panel includes data for acquisitions by independent banks and by members of bank holding companies when the target of the acquisition was outside the holding company. When presented this way, the total number of mergers of all sizes of banks fell to 1011, compared with 1658 total mergers in the upper panel. As was the case for individual banks, when members of bank holding companies are treated as one entity, small banking institutions were the predominate purchasers of other small institutions, and medium-sized organizations were the next most common acquirer of small banking companies. When data were aggregated by holding company, large banking organizations still accounted for many fewer mergers than either medium or small organizations.

The lower part of Table 1 shows that between mid 1993 and mid 1996, among banking institutions that were involved in mergers: 1) independent banks tended to be more aggressive lenders to small businesses than members of bank holding companies; 2) smaller banks generally were more aggressive small business lenders than larger banks; and 3) acquiring institutions tended to be more aggressive small business lenders than comparably-sized and comparably-

structured acquired institutions. For example, small, independent, acquiring banks held 8.4 percent of their assets in small business loans, a full percentage point more than the 7.3 percent allocation at small banks independent banks that were acquired, and more than two percentage points more than the ratio at small bank holding companies that were acquired. Medium-sized, independent banks that acquired another institution were the most aggressive group of small business lenders in the sample, devoting 9.3 percent of their assets to small business loans, almost a percentage point more than independent, small, acquiring banks. During the sample period, large bank holding companies that acquired another bank had a median ratio of small loans to assets of 3.7 percent, which is considerably greater than the ratio at large banking institutions that were acquired during the period, but it is far below the median ratio of roughly 6 to 7 percent at small banks or bank holding companies that were acquired.

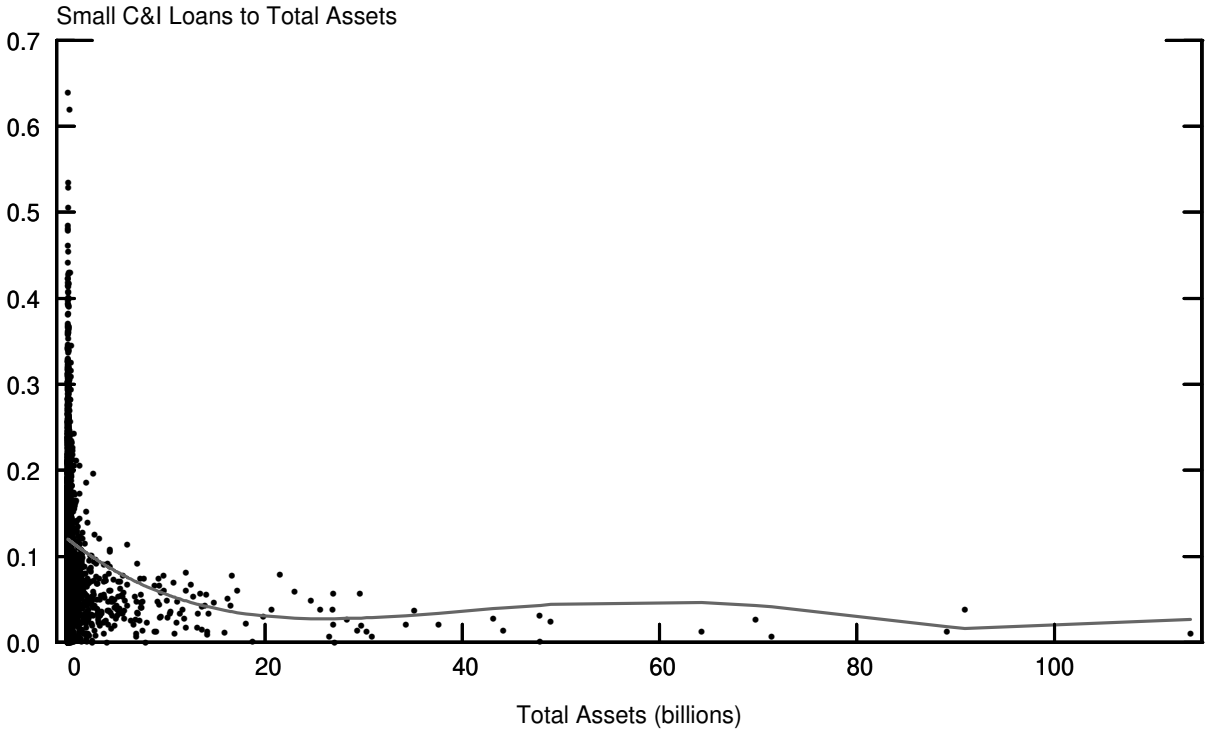
The main purpose of this paper is to assess empirically the claim that consolidation leads to reductions in small business lending by banks. Conceptually, such a reduction could come from two separate sources. First, if after a merger, large acquiring banks adjusted the proportion of assets at the new, consolidated bank back to a level comparable with that which prevailed before the purchase, then purchases of smaller banks by large banks could tend to lessen the volume of small business loans that flows through commercial banks. However, the pattern of acquisitions that was discussed earlier indicated that the bulk of purchases

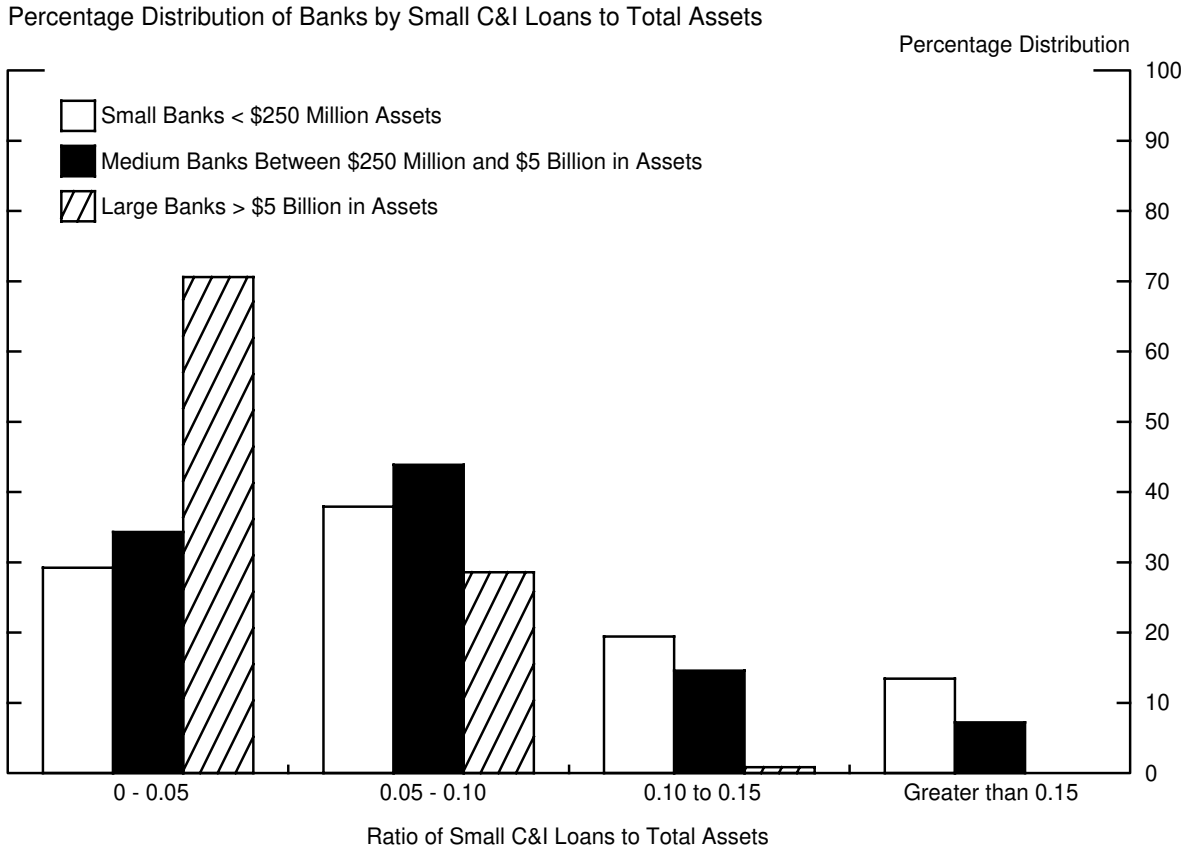
were by small and medium sized banks that held a relatively substantial amount of small business loans. Thus, it seems possible that, on average, the management of each consolidated bank tended to view small business loans as a more attractive investment than did the management of the bank that was acquired, suggesting that consolidation may have promoted small business lending. A second way that consolidation could lessen the flow of small business loans through banks would be if the small and medium-sized banks that accounted for most of the merger activity began to view small business loans less favorably as they grew through acquisitions.

Previous empirical work

Abstracting considerably, previous empirical work, as exemplified by Peek and Rosengren (1995) and Berger, Kashyap, and Scalise (1995) generally notes a relationship similar to that shown in the upper panel of Figure 1, which plots on the vertical scale the ratio to total assets of the dollar amount of commercial and industrial loans that were initially in amounts of less than $1 million (small C&I loans) against the size of the bank as measured by total assets on the horizontal scale. Although detail on the volume and number of small C&I loans has been reported on the June Call reports since 1993, the figure shows data from the latest report (1996). The plot indicates that large banks tend to devote a smaller share of their assets to small business loans than the

Distribution of Small C&I Loans to Total Assets





typical small bank. Nevertheless, it is apparent that many small banks also eschew small C&I loans.

The bottom panel of the figure shows the percentage distribution of the ratio broken out by small, medium, and large institutions. For each size group of banks, the percentage distribution of the ratio is skewed upwards. Although it is apparent from the figure that most banks, regardless of whether they are large or small, hold less than 10 percent of their assets as small C&I loans, the incidence of a substantial concentration on small business loans tends to decline quite rapidly for larger banks. For instance, among banks with more than $5 billion of assets, no institution holds more than 10 percent of its assets as small business loans, while a substantial number of smaller banks surpass this proportion of small business lending. This panel also highlights the wide range of lending practices regarding small C&I loans at small and medium institutions. For instance, many small banks make no small C&I loans, while many others devote more than 15 percent of their assets to such loans.

As a final indicator of the strength of the tendency for smaller banks to devote a larger share of assets to small business loans, a simple regression of the ratio on assets yields an estimate of the slope parameter that is highly significant--the absolute value of the t-ratio is about 10.

Previous studies generally tend to project the effect of consolidation on small C&I loans by assuming that the management of the new bank adjusts the ratio of small C&I lending to assets to

match the ratio that prevailed at other banks that are roughly comparable to its new, larger size. As a result, consolidation implies less small business lending.

Berger, Kashyap, and Scalise use data from a quarterly sample of 350 banks (the Survey of Terms of Bank Lending (STBL), FR 2028A) that is conducted by the Federal Reserve to estimate the distribution of C&I lending by size of loan and by size of bank. They use the estimated distribution and its behavior over time to extrapolate the pattern of lending under a regime of rapid consolidation. They project that consolidation will reduce small C&I lending substantially. Perhaps the most elaborate of the papers using the observed correlation between the size of a bank and its focus on small business lending, this paper also includes an extensive review of the literature on consolidation and lending to small businesses.

Berger and Udell (1995) combine data from the mid-year Call report on small business lending and a time series of STBL data to estimate price and quantity equations for small C&I loans. They find that larger banks tend to charge lower rates on small C&I loans and to offer relatively less of such credit than smaller banks. In general, they find some support for the notion that larger or more organizationally complex banking institutions tend to make fewer loans to small businesses.

Strahan and Weston (1995) adopt a different approach by examining the actual growth of the ratio of small C&I loans to assets at banks that were involved in mergers between June 1993 and

June 1994. The change was measured from June 1993 until June 1995 in an attempt to allow organizations that were involved in mergers sufficient time to adjust their concentration of small business loans. They found that banks that were involved in mergers tended to hold more small business loans relative to assets than banks of a similar size that were not involved in mergers. They also looked explicitly at holding company affiliation and determined that small banks that were owned by large banking companies made fewer small business loans than either small independent banks or small banks that are members of small holding companies. This general observation is consistent with those of Keeton (1995), who used data from the June 1994 Call Report to conclude that "banks with a high degree of branching, smaller banks of in-state MBHCs and banks owned by out-of-state MBHCs all tend to lend a smaller proportion of their funds to small businesses than other banks."

Among a series of their articles assessing the effect of nationwide tight credit conditions in the early 1990s on banking activity in New England, Peek and Rosengren (1995) also looked explicitly at banks located in New England that acquired another bank from mid-1993 to mid-1994. Among the thirteen banks that fit this description, they found that most reduced the share of small C&I loans to assets following the acquisition. The authors noted that this tendency to reduce the allocation of assets towards small business loans was most evident for larger acquiring banks.

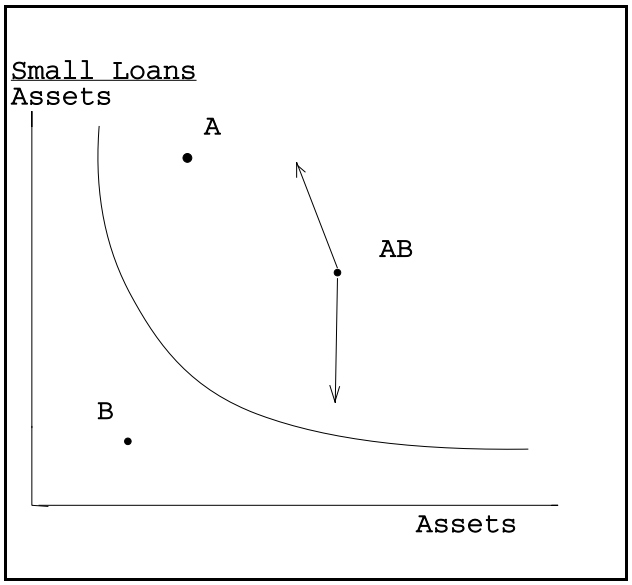
This paper extends the approach taken by Strahan and Weston and that of Peek and Rosengren in several ways. First, it

incorporates mergers from mid 1993 until mid 1996, which adds many observations because the rate of mergers has been running at about 1000 acquisitions each year. Second, rather than comparing pre-merger and post-merger volume of small business lending, the main focus of this paper is on the adjustments in the portfolio of small business loans that were made by banks that were involved in mergers.

The basic model

Consider a bank, A, that acquires another bank, B, to form the new, larger bank AB. In figure 2, which shows a stylized relationship of banks according to their assets relative to their ratio of small C&I loans to assets, AB lies to the right of A and B reflecting the greater assets of the combined institutions. In an effort to mimic the typical pattern of acquisitions that was discussed earlier, bank A is assumed to be a more aggressive lender to small businesses than other banks (it lies above the curve), while bank B is assumed to be a less aggressive lender to small businesses. AB also lies somewhere in the vertical space between A and B

Figure 2.



because at the instant that the banks merge, the combined banks hold a ratio of small C&I loans to assets that is a weighted average of the ratio at each individual bank. The question of interest is whether the new, consolidated bank AB moves to allocate its assets as bank A did before the merger or if it allocates assets more like other banks of its new size.

It is assumed that the consolidated bank cannot immediately reallocate its assets; indeed, Strahan and Weston (1995) assert that complete adjustment requires at least two years. As a result, a partial adjustment model is adopted, where the true target ratio of small business loans to assets is unknown, but is assumed to be correlated with either the pre-merger allocation of the acquiring bank or the allocation of other banks of a size comparable to the consolidated bank. Letting AB_t represent the ratio of small C&I loans to assets t days after an acquisition for consolidated bank AB (the result of bank A purchasing bank B),

$$AB_t - AB_0 = f\ [\ \overline{AB}_t - AB_0\ ,\ A_0 + \hat{A} - AB_0\ ] \quad . \qquad (1)$$

AB_0 represents the initial ratio of small C&I loans to assets at the composite bank, that is, the ratio is constructed by combining the preacquisition loans and assets of banks A and B at the instant that the banks merge. $\overline{AB}_t$ represents the average change in the ratio for banks of roughly the same size as the consolidated bank. A_0 is the ratio of small C&I loans to assets at the acquiring bank measured before the acquisition, and $\hat{A}$ represents the average change in the ratio of small loans to assets at banks of a size

similar to that of A before the acquisition.

The intuition for this expression is straightforward. The consolidated bank is assumed to move over time towards one of two targets. Either the consolidated bank adjusts its ratio of small C&I loans to deposits to assets in a fashion similar to other banks in its size cohort, or it tends to move its ratio back towards its prepurchase level. In other words:

Change at consolidated bank	=	Divergence from mean for size group	or	Divergence from pre-purchase allocation .

Vertical movements are the primary focus of the model that was shown in figure 1; that is, changes in the assets of a bank are assumed largely to be separable from decisions regarding the allocation of the bank's assets. Certainly, bank AB also might dispose of some assets following the merger; however, the main concern is the allocation of the assets of the consolidated bank, not its choice of the level of assets. Even though the model used for this paper does not consider explicitly the joint choice of the level of assets at the consolidated bank and the allocation of assets towards small business loans, an additional variable, the rate of growth of assets relative to other banks, has been added to the equation.

A simple linear form is assumed so that:

$$AB_t - AB_0 = \alpha + \beta(\overline{AB_t} - AB_0) + \gamma(A_0 + \hat{A} - AB_0) + \delta(K_t - \overline{K_0}). \qquad (2)$$

Here the term $K_t - \overline{K_0}$ represents the growth of assets at consolidated bank AB less the growth of assets at other banks of a similar size.

Assuming that the adjustment requires some time, and the set of mergers between 1993 and 1996 have vintages that range from almost two years to only a few days, it seems reasonable to allow the parameters to vary with time:

$$\begin{aligned} \alpha &= \alpha_0 + \alpha * t \\ \beta &= \beta_0 + \beta * t \\ \gamma &= \gamma_0 + \gamma * t \\ \delta &= \delta_0 + \delta * t \ . \end{aligned} \qquad (3)$$

Here, the coefficients with subscripts reflect the typical divergence of the ratio of small C&I loans to assets at consolidated banks from either the ratio at other banks of a similar size or from their pre-purchase ratio. The time variable is the number of days between the purchase date and June 30 of the year in which readings on loans and assets were taken. The particular year in which the readings were taken differs depending on the maximum time of adjustment that is allowed for the each regression that follows, as shall be illustrated more fully in the estimation section that follows. The unsubscripted coefficients capture the consolidated bank's adjustment of small C&I loans and assets after the acquisition towards one of the two targets.

Substituting the third equation into the second, the equation

to be estimated is:

$$AB_t - AB_0 = \alpha_0 + \alpha * t + \beta_0 * (\overline{AB}_t - AB_0) + \beta * t * (\overline{AB}_t - AB_0)$$
$$+ \gamma_0 * (A_0 + \hat{A} - AB_0) + \gamma * t * (A_0 + \hat{A} - AB_0) + \delta_0 * (K_t - \overline{K}) + \delta * t * (K_t - \overline{K}) . \quad (4)$$

A significant, positive value for β_0 indicates an immediate adjustment by the new bank AB towards the mean of the shares of small business loans at other banks that are comparable in size to the new size of AB, while a positive, statistically-significant value for β indicates that the movement towards this target was more gradual. Similarly, a significant, positive value for γ_0 suggests that the consolidated bank moves quickly back to its pre-acquisition allocation of assets towards small business loans, and the size and significance of γ depends on the bank's adjustment over time. Finally, a positive value for δ_0 or δ implies that the consolidated bank tends to accumulate assets at a rate that is greater than other banks of a similar size.

A number of banks were involved in multiple acquisitions. For banks that purchased numerous others on the same day (for instance, one bank may have purchased numerous members of a bank holding company), all the acquired banks were artificially consolidated so that the transaction appears as one purchase by the acquiring bank. For banks that purchased other banks on several different days, each transaction was entered separately, that is, the purchasing bank for the second transaction was taken to be the artificially

constructed composite bank comprising the original purchaser and its first acquisition. Banks that purchased another bank, but subsequently were themselves purchased by another bank, were excluded from the sample.

Estimation

Table 2 shows the variables included in equation 4 using the data on small loans from the mid-year Call reports for banks that were involved in mergers between mid 1993 and mid 1996. During this period, 1658 banks were acquired by another bank. As mentioned above, some of the banks in these observations purchased more than one bank during the sample period. Indeed, 933 of the transactions involved more than one purchase, 631 of these involved more than one purchase on a single day. Another 87 banks that bought another bank were themselves subsequently the target of an acquisition. After consolidating the multiple purchases and excluding the purchasers who were, in turn, purchased, 1194 observations remained for the estimation.

Table 2. Summary Statistics of Regression Variables, 1-Year Time of Adjustment

Variable	Mean	Standard Deviation	25th Percentile	75th Percentile
$AB_t - AB_0$	0.06	0.46	0.03	0.08
t	181.11	102.58	90.00	272.00
$\overline{AB}_t - AB_0$	0.08	0.03	0.06	0.10
$t * (\overline{AB}_t - AB_0)$	14.81	10.74	6.02	22.53
$A_0 + \hat{A} - AB_0$	0.05	0.06	0.02	0.07
$t*(A_0+\hat{A}-AB_0)$	9.17	13.07	1.04	13.60
$K_t - \overline{K}_0$	0.08	0.25	-0.001	0.13
$t * (K_t - \overline{K}_0)$	14.25	49.71	-0.09	21.09

The mean of the dependent variable was 6 percent, suggesting that consolidated banks, on balance, expanded their concentration of small business loans following a merger. This tendency to increase the prevalence of small business loans was widespread among banks involved in mergers--only 25 percent of these institutions expanded their ratio of small business loans to assets by less than 3 percentage points during the months following the merger, while 25 percent increased this ratio by at least 8 percentage points.

In the initial regression, the data were recorded only for the first mid-year call report following a merger--that is, the time variable ranged from 1 to 365 days. This choice of the time of adjustment avoided the dilemma of either double-counting banks that merged before 1995 (by including an observation for both time t and a time t plus 365 days for that merger) or excluding the first

period of adjustment for these banks. A separate set of regression results examined the adjustment over a longer period. The mean interval between the purchase and the next mid-year call report was about 180 days.

The mean for the target associated with other banks of a size comparable to an acquiring bank, $\overline{AB}_t - AB_0$, had an average value of 8 percent, and both the standard deviation and the tightness of the quartiles for this quantity suggest that it was fairly uniform across banks involved in mergers. The target associated with the acquiring bank's pre-purchase concentration of small business loans, $A_0 + \hat{A} - AB_0$, was 5 percent, and it seemed substantially more variable than the other target. Finally, assets grew substantially faster at the consolidated banks in the sample than assets at other banks of roughly the same size. The average growth above the norm for their cohorts was 8 percent, and almost 75 percent of banks involved in mergers grew faster than other, like-sized banks.

Table 3 contains estimates of the parameters in equation 4. The parameter for the target associated with the acquiring bank's pre-purchase concentration of small C&I loans, γ_0, is positive and highly significant statistically, indicating a pronounced tendency for aggressive small business lenders to remain aggressive after the purchase of another bank. The estimate of γ was negative, though it was not significant statistically, which implies that little adjustment of the portfolio of small business loans occurs over time after a consolidation.

Table 3. Parameter Estimates for the Target Small C&I Loan Model, 1-Year Time of Adjustment

Parameter	Estimate	T Statistic
α_0	0.025446	4.738
α	-0.000025	-0.944
β_0	0.019637	0.294
β	0.000560	1.737
γ_0	0.584864	15.556
γ	-0.000289	-1.610
δ_0	-0.010892	-1.116
δ	0.000038	0.783

Adjusted R-squared: .4802
Observations: 1194

Neither β_0 nor β , the parameters for the target associated with small C&I loans at banks comparable in size to the consolidated bank, were significant statistically, suggesting little tendency for consolidated banks to move over time towards the standard of other banks of a comparable size.

Both δ_0 and δ, the parameters associated with the rate of growth of assets at banks that acquired another bank relative to other banks in their size cohort, were quite small and insignificant statistically. This result suggests that during the first year following a merger, the rate at which consolidated banks changed their assets relative to their cohorts had little effect on the consolidated bank's relative concentration of small business

loans.

As mentioned earlier in the paper, several previous studies asserted that banks may take at least two years to adjust completely to an acquisition. Table 4 shows several summary statistics for the variables in equation 4 when the time between the merger and the reading on small business lending from the mid year Call report was between 1 and two years. In other words, the mergers that underlie the numbers in the table and subsequent regressions occurred in either 1993-94 or 1994-95 with the corresponding Call data from June 1995 or June 1996, respectively. Although some of the transactions that were in the previous dataset appear again here with a longer time of adjustment, all of the mergers from 1995-1996 were excluded. Also, more banks that acquired another bank but subsequently were themselves acquired had to be excluded--727 observations remained after these adjustments.

The major changes were to variables associated with the time variable. The summary statistics for the dependent variable and both the targets were little changed from the values when only one year or less of adjustment was allowed. The control for asset growth, $K_t - \overline{K_0}$, was significantly larger, but this undoubtedly reflected the steady accumulation of assets over a longer interval of time.

Table 4. Summary Statistics of Regression Variables, 2-Year Time of Adjustment

Variable	Mean	Standard Deviation	25th Percentile	75th Percentile
$AB_t - AB_0$	0.06	0.46	0.03	0.08
t	547.04	102.03	456.00	637.00
$\overline{AB}_t - AB_0$	0.08	0.03	0.06	0.10
$t * (\overline{AB}_t - AB_0)$	43.95	19.08	30.91	57.74
$A_0 + \hat{A} - AB_0$	0.04	0.06	0.01	0.07
$t*(A_0+\hat{A}-AB_0)$	23.83	31.77	5.44	36.94
$K_t - \overline{K}_0$	0.18	0.48	-0.02	0.20
$t * (K_t - \overline{K}_0)$	97.20	259.99	-10.80	107.99

Table 5 contains estimates of the parameters of the model shown in Equation 4, that were obtained when the regression included only bank mergers that had a time of adjustment that was greater than one year. As in the previous regression, only γ_0 was significant statistically. There was no evidence that consolidated banks moved over time towards either of the targets. Furthermore, the decline in the adjusted r-square relative to the previous regression indicates that, over the longer interval of time, a smaller proportion of the variability of the ratio of small business loans to assets can be accounted for by the variables that are included in equation 4.

Table 5. Parameter Estimates for the Target Small C&I Loan Model, 2-Year Time of Adjustment

Parameter	Estimate	T Statistic
α_0	0.020126	0.916
α	-0.000007	-0.188
β_0	0.157179	0.591
β	0.000242	0.510
γ_0	0.454206	3.190
γ	-0.000097	-0.374
δ_0	-0.006433	-0.339
δ	0.000012	0.333

Adjusted R-squared: .3345
Observations: 727

Comparing Table 6 with Table 2 indicates the substantial changes that occur in the variables when the transactions of the acquirers are aggregated to the level of the highest holding company. Values for the dependent variable and both targets plummeted to near zero, as aggregate assets and small business loans at the holding company level generally dwarfed the marginal contribution of any particular acquisition. For instance, the dependent variable, $AB_t - AB_0$, was about zero when the data were aggregated to the level of the highest bank holding company--indicating that during the year following an acquisition there was a neglegible change in the share of small business loans to assets at the entire holding company. Similarly, both targets were more or less identical to the initial values immediately following a

merger; that is, both $\overline{AB}_t - AB_0$ and $A_0 + \hat{A} - AB_0$ are near zero.

Table 6. Summary Statistics of Regression Variables, 1-Year Time of Adjustment, Bank Holding Companies Only

Variable	Mean	Standard Deviation	25th Percentile	75th Percentile
$AB_t - AB_0$	-0.0002	0.03	-0.008	0.006
t	180.	101.	90.	271.
$\overline{AB}_t - AB_0$	0.02	0.04	-0.008	0.05
$t * (\overline{AB}_t - AB_0)$	3.50	9.0	-0.95	8.0
$A_0 + \hat{A} - AB_0$	0.002	0.02	-0.006	0.003
$t*(A_0+\hat{A}-AB_0)$	0.23	4.8	-0.83	0.44
$K_t - \overline{K}_0$	1.57	13.9	-0.07	0.13
$t * (K_t - \overline{K}_0)$	255.	2577.	-9.5	23.17

Table 7 shows the parameters obtained by fitting equation 4 to only transactions by bank holding companies. As one might expect given the substantial changes in the dependent variable and both targets, compared with the estimates from the regression that included independent banks and the members of bank holding companies that acquired other banks (shown in Table 3), the parameter estimates changed substantially. As suggested in the previous paragraph, much of the change in the estimates likely came as data on assets and loans for individual members of the holding company were swamped by adding in corresponding data from the other members of the holding company as well as for the high holding company itself.

Table 7. Parameter Estimates for the Target Small C&I Loan Model, 1-Year Time of Adjustment, Bank Holding Companies Only

Parameter	Estimate	T Statistic
α_0	-0.004190	-2.451
α	0.000001	0.064
β_0	0.188808	5.471
β	-0.000156	-0.930
γ_0	0.152867	2.353
γ	0.000817	2.500
δ_0	-0.000015	-0.143
δ	0.000001	1.457

Adjusted R-squared: .1466
Observations: 993

Conclusions

The data and analysis that were presented in this paper suggest that there are several reasons to discount the popular notion that consolidation in the banking sector leads to a constricted flow of credit to small businesses. First, although large banks do tend to devote a smaller share of their assets to small business loans than smaller banks, the main purchasers of small banks have themselves been quite small. Furthermore, the purchasers tend to be much more active small business lenders than either the banks that they purchased or comparably-sized banks that were not involved in a merger. Finally, a regression analysis suggests that banks that acquired another bank largely tended to

revert very quickly towards their original lending philosophy as indicated by their pre-merger allocation of assets towards small C&I loans. This behavior is contrary to the widespread notion that consolidation inevitably leads to less credit for small businesses.

These results should not be carried too far, however, because when loans and assets are aggregated across all members of bank holding companies, the model adopted in this paper does not fit very well. If one is interested in assessing the effect of consolidation on small business lending within bank holding companies, then a much richer model of the interactions of the holding company and its members is necessary.

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