Mergers of Publicly Traded Banking Organizations Revisited

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THE PAST FEW YEARS HAVE SEEN A SURGE IN BANKING MERGERS. IN MORE THAN 3,844 MERGERS AND ACQUISITIONS BETWEEN 1989 AND 1999, ACQUIRING INSTITUTIONS PURCHASED MORE THAN $3 TRILLION IN ASSETS (SEE TABLE 1). A NUMBER OF REASONS HAVE BEEN ADVANCED FOR SUCH ACQUISITIONS, INCLUDING THE NEED TO CONSOLIDATE TO ACHIEVE COST SAVINGS AND OPERATIONAL EFFICIENCIES, TO BE BETTER ABLE TO COMPETE IN THE GLOBAL MARKETPLACE, OR TO PROVIDE FOR THE CONTROLLED EXIT OF INEFFICIENT FIRMS FROM THE FINANCIAL SERVICES INDUSTRY.

This article adds to the limited existing research on the effects of bank mergers by analyzing consolidations between 1989 and 1996, a period of almost unprecedented banking consolidation involving acquisitions impossible in earlier times. Consistent with previous studies, the findings suggest that the various expected performance and earnings benefits of mergers may not in fact be realized.

Earlier Studies

Evidence supporting consolidation to achieve cost savings and operational efficiencies is sparse. Pilloff and Santomero (1997) review the research evidence and claims for efficiency gains, concluding that there is little empirical evidence of mergers achieving efficiency gains or other important performance or wealth-improving gains. Their findings undermine a major rationale for consolidation and in doing so raise questions about other benefits mergers may provide to the public and about alternative motivations such as gaining market power and their effects on the public. Almost all the evidence in the Pilloff and Santomero study is based on data from the 1980s. The 1990s have seen many more mergers of much larger and more geographically widespread banks, and evidence from this decade provides a larger group of mergers to study.

A recent empirical study by Pilloff (1996) covers only the first two years of this decade, but it hints at the motivations for mergers in the 1990s. Pilloff builds upon the work of Cornett and Tehranian (1992), who use data on thirty acquisitions from 1982 to 1987. Those authors examine balance-sheet and stock market data on mergers involving publicly traded banking organizations and find some evidence of superior postmerger performance. Cash flows on assets increased, resulting from the merged institution's enhanced ability to attract loans. Evidence also shows increased employee productivity and asset growth. Cornett and Tehranian examine accounting information for evidence of performance improvements resulting from large banking organization mergers and compare the findings with earnings expectations for such acquisitions using stock market data and standard event study methodology.

Pilloff (1996) studies forty-eight deals, again between publicly traded banking firms or their subsidiaries, over the 1982–91 period. He concludes that, while profitability appears to be unchanged, interpretation of the efficiency effects is less clear. The ratio of postmerger expenses to assets increases but so does return on equity, reflecting the fact that both revenues and leverage increase to offset the increase in expenses. The implication is that operating efficiency decreases slightly, despite the fact that returns to shareholders rose. Finally, there is some evidence of a slight increase in the resultant bank's loan-to-asset ratio.

Cross-sectional analysis of the merging banks' characteristics implies that differences in the premerger characteristics of the acquiring and acquired firms do not affect the resultant firm's postmerger performance, but the premerger characteristics of the acquiring firm do affect postmerger performance. Specifically, acquisitions by less-efficient firms are more likely to result in efficiency gains as measured by expense variables. Acquisitions by larger acquirers and of relatively larger targets are more likely to be associated with reduced expenses but not necessarily with lower total costs. Finally, despite the claims of acquirers, greater overlap of the merging banks' markets does not seem to be associated with better performance. This result brings into question the often-claimed expected benefit that the ability to reduce marketing departments or eliminate redundant offices would result in improved efficiency or profitability.

In terms of the equity market's view of these acquisitions, Pilloff's evidence suggests that the market, on average, does not expect improved profit performance. However, his cross-sectional regressions reveal that improved performance is more likely to be expected in cases involving high premerger expense ratios, especially when the acquired firm has a higher expense ratio than the acquiring firm and the merger partners have a high degree of market overlap.

More recently, Banerjee and Cooperman (1998) use event study methodology to investigate returns to targets and acquirers, using data on a sample of thirty acquiring and sixty-two target banking organizations with assets greater than $100 million between the years 1990 and 1995. The methodology presumes that equity investors are well informed about the average impact of mergers on profit expectations and about the characteristics of the specific merger partners that may affect the results of their particular deal. They compare econometrically the stock market performance of the merging banks' shares with the average control performance during several periods leading up to the merger. These periods are called event windows and begin from one to fifty days before the merger was announced and extend through the actual announcement day. The differences between the merging banks' predicted and actual share performance compared with that of a control sample of nonmerging banks during the event windows are called abnormal returns.

With the breakdown of McFadden Act barriers to interstate mergers, many more potential acquisitions became legally and practically feasible than under the regional compact regime in place during the late 1980s and early 1990s.

Banerjee and Cooperman find a significantly negative abnormal cumulative return of 1.3 percent in a one-day window, $[-1, 0]$, for the acquiring firms, and a huge and significantly positive abnormal return—13.11 percent—for target firms over this same period. They also find significant cumulative abnormal returns for the target for every event window from $[-50, 0]$ to $[-1, 0]$, and an 11.3 percent abnormal return on the day following the merger announcement. Acquiring firms' returns were slightly less negative and marginally statistically significant on the day of the merger and the day following. The authors then specify four hypotheses to explain these abnormal returns and the motives for mergers. These are an efficiency hypothesis, a capital-quality hypothesis, a risk-reduction hypothesis, and a profitability hypothesis. Their efficiency hypothesis suggests, ceteris paribus, that when the target firms are relatively less efficient than the acquirers, the merger will offer the combined firms greater opportunity to realize increased profitability through efficiency gains, thus generating higher abnormal returns. Their capital-quality hypothesis suggests that acquirers with higher capital ratios will experience greater abnormal returns. To explain the relative distribution of abnormal returns between target and acquirer, the authors suggest that

targets with lower capital ratios relative to the acquirer will have higher abnormal returns. The remaining hypotheses suggest that the less efficient, the more profitable, and the less risky the target is relative to the acquirer, the higher the abnormal returns to the target will be. Using cross-section regressions to test these hypotheses, they find some support for the efficiency hypothesis, no support for the capital-quality hypothesis, some support for the profitability hypotheses, and weak support for the risk-reduction hypothesis.

Consolidation in the 1990s

This article presents evidence on efficiency gains and other impacts of large bank mergers, mostly in the 1990s. It replicates the analysis of Pilloff (1996) and investigates market reactions to these mergers. The principal difference between this article and the others cited is that the sample of mergers is both more current and larger. It consists of consolidations among traded firms occurring in the period from 1989 to 1996.[1] While the period includes three years' overlap with the Pilloff study and six years' overlap with that of Banerjee and Cooperman, it does encompass more recent acquisitions as well. Not only is this sample of traded firms larger but it also includes a number of consolidations among the largest banking organizations in the country. Moreover, with passage of the Reigle-Neal Act of 1994 and the resulting breakdown of the McFadden Act barriers to interstate mergers, many more potential acquisitions became legally and practically feasible than under the regional compact regime in place during the late 1980s and early 1990s.

Data. The data in this study include all mergers between publicly traded firms occurring between 1989 and 1996. As in Pilloff's study, the following restrictions are required of the sample: (1) both the acquired and acquiring firms have daily return data available on the Center for Research on Securities Prices (CRSP) files, or their parent companies do; (2) the merger is the primary transaction for the acquired and acquiring companies one year before and one year after the announcement date; (3) for at least three months prior to and thirty days after the acquisition, no other mergers of either firms were announced; (4) neither firm was encouraged by its primary banking regulator to seek a merger partner; and (5) there must have been at least eight quarters of pre- and postmerger performance data available on the surviving acquirer. Information on returns and the market index used to calculate the abnormal returns comes from the daily CRSP files. Company income and balance-sheet data are from the Federal Reserve Y9 Bank Holding Company Report and the Report of Condition and Report of Income and Dividends. Finally, data on deal characteristics and timing are from the SNL Securities database.

Table 2 summarizes the key features of the sample on a year-by-year basis. The mean asset size of acquirers over the period is $32 billion while the mean target is $5 billion. These sizes are substantially larger than the mean acquirer size of $5 billion and mean target size of $3 billion in Pilloff's sample. However, the relative size of the target in the current sample, 16 percent, is smaller than the relative target size in Pilloff's sample, which was 26 percent.[2]

Performance Changes. To investigate the performance effects of mergers, consolidated pre- and post-merger ratios of profitability, operating efficiency, and portfolio composition are compared. For bank holding companies all comparisons are on a consolidated entity basis, and for bank acquirers the comparisons are on a bank basis. As a benchmark and to abstract from industry-wide effects, each performance ratio was calculated on an industry-adjusted basis. Following Pilloff, the change-in-performance ratio, $\Delta X(j)$, is the difference between the pro forma industry-adjusted measure for the institutions involved in the merger, X^{pre}, and the postmerger industry-adjusted measure, X^{post}. For each institution, X^{pre} is calculated as the difference between the average of the eight quarters prior to the merger less the average for a peer group of institutions. Similarly, X^{post} is the average of the eight quarters after the acquisition. To construct the peer or benchmark industry comparison, Pilloff used all firms in excess of $1 billion in assets and formed six geographic subregions for the nation as a whole. Because of the extensive changes in the geographic span of banking organizations during the 1990s as restrictions on interstate banking have been phased out, geographic controls are now less meaningful than they were for Pilloff's sample. This article does not report tests of merging banks' performance variables on the basis of geographic categories.

Table 3 compares the pro forma pre- and post-merger performance and change in performance for the sample. The pro forma merging institutions appear to have higher earnings-to-asset ratios but a lower rate of return on equity and higher noninterest expense than the control firms. They are better capitalized and somewhat more efficient, having a lower ratio of expenses to assets and a lower ratio of expenses to revenues; and they make more loans than their peers. After the merger, the resulting institutions remain slightly better earners in terms of their rate of return on assets but the income-to-equity ratio declines somewhat more. They also continue to have statistically significantly lower total expenses, higher noninterest ex-pense, and less leverage; and they make more loans than their peer institutions.[3]

However, looking at the change in the performance measures, it is not clear that mergers result in signifi-

cant performance improvements. Overall performance may even deteriorate. Two of the three measures of rate of return on equity decline significantly. Expense efficiency is mixed, with the expenses-to-asset ratio increasing somewhat relative to peer institutions, while the expense-to-revenue ratio remains below that of peer institutions. Finally, the ratio of premises to assets is larger, and there is a marginally statistically significant decrease in leverage while the loan-to-asset ratio increases significantly.

These results are different from those found in Pilloff's earlier study. Pilloff finds an efficiency improvement in terms of the ratio of expenses-to-revenue and observes that postmerger leverage increases relative to the peer institutions whereas leverage decreases in the 1990s data. He observes only two of the six profitability measures—both measures of the rate of return on equity—to be significantly different after merger, and this effect is the result of increased leverage, which increases profitability.[4] In addition, the combined pro forma banks are less different from their peers in Pilloff's study than in this more recent sample. Pilloff also finds smaller loan-to-asset ratio effects, albeit in the same direction, but the change in the ratio is not statistically significant.

Postmerger performance may be influenced by the premerger performance of either the acquirer or target or the relative difference in acquirer and target firm performance. For example, a strong acquirer may believe that it has superior managerial capabilities and thus look for poor performing targets to which its superior management may be applied. Alternatively, a poorly performing acquirer may seek a merger partner and use the acquisition as the catalyst to overcome managerial inertia and improve its operations.

To test the influence of a merger partner's characteristics, correlations between premerger characteristics and changes in postmerger performance are examined in Table 4. The greater the acquirer's profitability, the more negative the merger's earnings impact is, and the same is true for the target. There is some evidence of a greater efficiency gain the larger the target's expense ratio is. However, the impact is somewhat offset when the acquirer's profits are large relative to the target.

The results are not supportive of positive earnings impacts of mergers in general.

Pilloff also hypothesizes that performance changes may be related to both size and the relative size of the acquirer and target. Table 5 presents the correlations between changes in performance measures and the target's and acquirer's initial size and their relative size. Two of the changes in profitability are positively related to acquirer size while only one of the target's profit characteristics is marginally positively significant. This finding may suggest that the larger the acquirer is relative to the target, the more the change in profitability is likely to be positive. Expenses are more likely to increase when the acquirer is large, as is the loan-to-asset ratio. Only the target's initial size is positively related to the change in the resultant bank's capital position. Finally, the larger the relative size of the target is, the more likely leverage is to be reduced and the more likely the loan ratio is to decline.

Overall, the results do not suggest that the 1990s mergers have resulted in either a positive earnings performance or greater efficiency. Only one of the acquirer's profitability ratios is positively related to its size. Otherwise, larger acquirers are more likely to experience increases in the expense-to-assets ratio and an increase in loans. Larger targets are more likely to be associated with a reduction in leverage.

Market Responses to Megamergers. To see how well and whether the market anticipates and prices any of the acquisitions based on the initial characteristics of the targets or acquirers or whether the changes in performance are anticipated and priced, a standard event study (see Dodd and Warner 1983) is performed similar to that of Pilloff. Several event windows are used to calculate abnormal returns ranging in size from twenty-one days, spanning days $[t = -20, t = 0]$ to only two days $[t = -1, 0]$.

In estimating excess returns, a single-factor ordinary least squares market model is used to provide firm-specific adjustments for risk. The CRSP equally weighted market index is used as the proxy for the market. The parameters of the model are estimated over the period from $[t - 300]$ through $[t - 30]$, where the event day of

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1. *Use of eight quarters of past merger data to evaluate postmerger performance effectively limits the study to mergers consummated no later than year-end 1996.*

2. *In more than 55 percent of the acquisitions, the acquired firm was 20 percent the size of the acquiring firm or greater. In 20 percent of the cases, the acquired firm was less than 3 percent the size of the acquiring firm. This distribution suggests that many of the acquisitions had the potential to meaningfully impact the performance of the resulting firm.*

3. *Since the time for X^{post} starts right after the merger, the costs of the merger are also considered. While this may tend to hide some of the longer-term cost or performance differences, estimates of those costs by equity market participants would be expected to affect the resulting firm's performance from the stockholders' perspective as they value the acquiring firm in the acquisition.*

4. *Only one of the changes in profitability measures (ROE3) was statistically significant whereas two of the change measures in Table 3—ROE1 and ROE2—are marginally statistically significant at the 10 percent level.*

the merger or acquisition is defined as day $[t = 0]$. The firm-specific, single-index model control return is of the form $\hat{R}_{j,\,t} = \beta_0 + \beta_1 R_{m,\,t}$, where $\hat{R}$ is the control for bank j during day t, $R_{m,\,t}$ is the return on the CRSP equally weighted index, and β_t is estimated model parameters.

Daily abnormal returns for a given bank j on day t are defined as $AR_{j,\,t} = R_{j,\,t} - \hat{R}_{j,\,t}$, where $AR_{j,\,t}$ is the abnormal return for bank j on day t, and $R_{j,\,t}$ is the realized daily return for bank j on day t. Individual abnormal returns $AR_{j,\,t}$ are then aggregated to form a portfolio of daily abnormal returns:

$$ AR_t = \frac{1}{N} \sum_{j=1}^{N} AR_{j,\,t}, \qquad (1) $$

where N is the number of firms in the portfolio for day t. Cumulative abnormal returns are calculated as

$$ CAR_t = \sum_{t_b}^{t_c} AR_t, \qquad (2) $$

where t_b begins and t_c ends the cumulating period.

The results are shown in Table 6 and indicate that only the abnormal returns in the window $[-1, 0]$ are statistically significant and positive, amounting to a two-day cumulative abnormal return of 0.77 percent. In contrast, Pilloff finds only a statistically significant cumulative return for the much longer event window $[-10, 0]$, and that return is also larger, at 1.4 percent. Overall, the more current sample has a narrower range of plus and minus abnormal returns for event period $[-1, 0]$ than Pilloff's sample, but it does have a larger standard deviation.[5]

The question then arises whether the abnormal returns are related to the premerger characteristics or sizes of the merging firms or to the changes in their performance ratios. Table 7 shows the correlations between the initial merger partners' ratios and sizes and the abnormal returns for the $[-1, 0]$ event window. Only one each of the acquirer's and target's profitability measures are positive and significant. Moreover, the higher the expense-to-assets ratio, the lower the abnormal returns. The higher the core deposits ratio of the acquirer, the more likely abnormal returns are to be positive. Finally, only the target's size and the relative size of the acquirer to the target are positively related to abnormal returns. Interestingly, in Table 8 none of the abnormal returns were related to performance changes.

Conclusion

Using data from the 1990s to extend existing analysis of banking mergers, this article examines the performance and value effects of banking organization acquisitions. Specifically, examining recent data allows considering whether there is evidence of efficiency or other gains from the wave of in-market and market extension acquisitions flowing from the erosion and final elimination of the McFadden Act.

Consistent with the results of earlier studies, the efficiency and performance effects were mixed. Evidence suggests that the better-performing institutions tended to target the higher-performing targets, but the resulting mergers did not significantly improve profit performance or efficiency. There were marginal declines in leverage and increases in loan portfolio composition. Moreover, the effects, except for portfolio allocation, were even smaller than those found by Pilloff in his study using data primarily from the 1980s. In addition, looking at the market's reaction to proposed mergers, there is only weak evidence that the market viewed acquisitions with favor. It did, however, tend to be less optimistic about the savings from mergers when expense ratios were higher. The overall conclusion is that the widely touted earnings, efficiency, and other performance and earning benefits of megamergers still remain in doubt.

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5. Direct comparison with Pilloff's results are difficult because he uses a different method of computing abnormal returns.

Years	Number of Banks	Bank Assets ($ Millions)	Bank Deposits ($ Millions)
1989	142	81,228	64,035
1990	170	36,392	31,031
1991	262	275,137	202,618
1992	319	104,800	90,315
1993	373	127,529	103,089
1994	444	99,981	79,740
1995	358	486,275	347,684
1996	364	188,727	155,399
1997	346	256,857	196,249
1998	406	1,086,872	656,882
1999[a]	81[a]	87,132	59,605
Total	3,844	3,210,785	2,279,563

[a] As of April 5, 1999

Source: Information on returns and the market index used to calculate the abnormal returns came from the daily CRSP files. Company income and balance-sheet data are from the Federal Reserve Y9 Bank Holding Company Report and the Report of Condition and Report of Income and Dividends. Data on deal characteristics, acquisition prices, and premium calculations are from the SNL Securities database.

TABLE 2   Summary of Mergers in Sample

Total Assets ($ Millions) at End of Quarter before Merger Date

	Number of Mergers	Acquirer			Target			Relative Size (Percent)[a]
		Mean	Minimum	Maximum	Mean	Minimum	Maximum	Mean
1989	4	18,867	5,730	48,048	1,016	273	2,308	9.2
1990	8	20,511	470	48,737	3,010	261	7,883	19.3
1991	7	22,478	384	76,884	10,672	314	65,639	24.7
1992	18	28,380	1,289	119,902	6,751	207	72,873	16.7
1993	16	32,254	511	141,966	2,509	95	16,626	10.0
1994	18	36,064	519	197,543	2,262	154	21,643	12.9
1995	9	23,671	283	83,803	5,855	204	33,122	22.3
1996	14	53,020	1,200	194,375	9,319	177	54,593	18.0
Full Sample	94	32,216	283	197,543	5,196	95	72,873	16.1

[a] Relative size equals target total assets divided by target plus acquirer total assets, with assets measured at the end of the quarter before the merger date.

Sources, Tables 2–8: Information on returns and the market index used to calculate the abnormal returns came from the daily CRSP files. Company income and balance-sheet data are from the Federal Reserve Y9 Bank Holding Company Report and the Report of Condition and Report of Income and Dividends. Data on deal characteristics, acquisition prices, and premium calculations are from the SNL Securities database.

TABLE 3 Premerger, Postmerger, and Changes in Performance (Percent)

Performance Measure (X)	Mean X^{pre}	Mean X^{post}	Mean ΔX	Tenth Percentile of ΔX	Ninetieth Percentile of ΔX	Standard Deviation of ΔX
ROA1 = Net Income/Total Assets	0.07***	0.04	–0.03	–0.20	0.18	0.26
ROA2 = Net Operating Income Plus Provisions/Total Assets	0.11	0.08**	–0.04	–0.30	0.27	0.35
ROA3 = Net Operating Income Less Provisions/Total Assets	0.05*	0.05*	0.00	–0.20	0.27	0.23
ROE1= Net Income/Total Equity	0.22	–0.52	–0.74*	–3.70	1.92	0.04
ROE2 = Net Operating Income Plus Provisions/Total Equity	0.53	–0.52	–1.05*	–4.60	3.03	5.46
ROE3 = Net Operating Income Less Provisions/Total Equity	–0.95**	–1.09**	–0.14	–4.50	3.15	3.25
EXPAST = Expenses/Total Assets	–0.28***	–0.19***	0.09**	–0.30	0.65	0.37
EXPREV = Expenses/Revenue	–1.55***	–1.89***	–0.34	–4.80	4.22	3.46
SALAST = Salaries/Total Assets	0.04*	0.05**	0.01	–0.10	0.14	0.11
PREMAST = Premises/Total Assets	0.01	0.02*	0.01**	–0.00	0.07	0.05
NNIXAST = Noninterest Expense/Total Assets	0.10**	0.12**	0.01	–0.20	0.33	0.24
EQAST = Equity/Total Assets	0.68***	0.87***	0.19*	–0.70	1.20	1.07
LOANAST = Loan/Total Assets	6.11***	7.82***	1.72**	–6.00	10.96	7.10
CORAST = Core Deposits/Total Assets	9.95***	9.50***	–0.45	–6.90	5.34	6.26

Note: The term X^{pre} is the average performance during the eight quarters preceding the merger for the target and acquirer combined, and X^{post} is the average combined performance during the eight quarters following the merger. The term ΔX is the difference between premerger and postmerger performance. All performance measures control for size. The notations *, **, *** indicate significance at the 10 percent, 5 percent, and 1 percent levels, respectively.

Performance Measure (X)	Corr (ΔX, X^R)	Corr (ΔX, X^{RA})	Corr (ΔX, X^{RT})
ROA1 = Net Income/Total Assets	0.342***	−0.226**	−0.480***
ROA1 = Net Operating Income Plus Provisions/Total Assets	0.315***	−0.234**	−0.479***
ROA1 = Net Operating Income Less Provisions/Total Assets	0.287***	−0.181*	−0.450***
ROE1 = Net Income/Total Equity	0.363***	−0.252**	−0.463***
ROE2 = Net Operating Income Plus Provisions/Total Equity	0.344***	−0.307***	−0.494***
ROE3 = Net Operating Income Less Provisions/Total Equity	0.057	−0.402***	−0.385***
EXPAST = Expenses/Total Assets	0.255**	0.135	−0.223**
EXPREV = Expenses/Revenue	0.342***	−0.149	−0.440***
SALAST = Salaries/Total Assets	0.315***	0.284***	−0.096
PREMAST = Premises/Total Assets	0.168	0.169	−0.028
NNIXAST = Noninterest Expense/ Total Assets	0.201*	0.152	−0.098
EQAST = Equity/Total Assets	0.239**	0.146	−0.113
LOANAST = Loans/Total Assets	0.234**	0.085	−0.180*
CORAST = Core Deposits/Total Assets	0.261**	−0.088	−0.254**

Note: The term ΔX is the difference between premerger and postmerger performance. The term X^R is the weighted difference between acquirer and target premerger performance. The term X^{RA} is the weighted measure of acquirer premerger performance, and X^{RT} is the weighted measure of target premerger performance. All performance measures control for size. The notations *, **, *** indicate significance at the 10 percent, 5 percent, and 1 percent levels, respectively.

TABLE 5	Correlations of Performance Changes with Size		
Performance Change (ΔX)	Corr (ΔX, LNAAST)	Corr (ΔX, LNTAST)	Corr (ΔX, RELSIZE)
ΔROA1	0.156	0.117	–0.060
ΔROA2	0.218**	0.180*	–0.048
ΔROA3	0.097	0.143	0.053
ΔROE1	0.139	0.057	–0.124
ΔROE2	0.186*	0.096	–0.124
ΔROE3	0.054	–0.011	–0.105
ΔEXPAST	0.267***	0.055	–0.188*
ΔEXPREV	–0.087	–0.158	–0.078
ΔSALAST	–0.116	–0.147	–0.034
ΔPREMAST	0.148	0.072	–0.088
ΔNNIXAST	0.009	–0.044	–0.074
ΔEQAST	0.063	0.212**	0.243**
ΔLOANAST	0.340***	0.127	–0.250**
ΔCORAST	–0.074	–0.056	–0.022

Note: The term ΔX is the difference between premerger and postmerger performance. The terms LNAAST and LNTAST are the logs of acquirer's and target's total assets. Relative size equals target total assets divided by target plus acquirer total assets. Total assets are measured at the end of the quarter before the merger date. All performance measures control for size. The notations *, **, *** indicate significance at the 10 percent, 5 percent, and 1 percent levels, respectively.

TABLE 6	Consolidated Abnormal Returns at Merger Announcement (Percent)			
Event Window	Mean	Tenth Percentile	Ninetieth Percentile	Standard Deviation
[–1, 0]	0.77*	–3.00	4.93	4.18
[–2, 0]	0.57	–3.60	4.73	4.08
[–5, 0]	0.56	–3.90	4.36	5.09
[–7, 0]	0.35	–4.60	4.50	5.25
[–10, 0]	–0.01	–4.90	4.52	5.04
[–15, 0]	0.01	–5.90	5.09	5.53
[–20, 0]	0.28	–6.20	6.23	5.89

Note: Consolidated abnormal returns equal the cumulative weighted realized returns of acquirers and targets less the cumulative weighted expected returns of acquirers and targets during the event window, with the announcement date at day 0. Expected returns are calculated from a standard market model. The notation * indicates significance at the 10 percent level.

TABLE 7
Correlations of Consolidated Abnormal Returns at
Merger Announcement with Premerger Variables

Performance Measure (X)	Corr (CAR, X^R)	Corr (CAR, X^{RA})	Corr (CAR, X^{RT})
ROA1 = Net Income/Total Assets	−0.070	0.140	0.137
ROA2 = Net Operating Income Plus Provisions/Total Assets	−0.094	0.082	0.140
ROA3 = Net Operating Income Less Provisions/Total Assets	−0.212**	0.046	0.227**
ROE1 = Net Income/Total Equity	−0.038	0.219**	0.122
ROE2 = Net Operating Income Plus Provisions/Total Equity	−0.062	0.139	0.130
ROE3 = Net Operating Income Less Provisions/Total Equity	−0.211**	0.110	0.271**
EXPAST = Expenses/Total Assets	−0.139	−0.554***	−0.300***
EXPREV = Expenses/Revenue	0.109	−0.144	−0.192*
SALAST = Salaries/Total Assets	0.026	−0.023	−0.057
PREMAST = Premises/Total Assets	0.031	0.040	0.003
NNIXAST = Noninterest Expense/ Total Assets	0.038	−0.011	−0.057
EQAST = Equity/Total Assets	−0.095	−0.050	0.056
LOANAST = Loans/Total Assets	0.044	0.188*	0.125
CORAST = Core Deposits/Total Assets	0.246**	0.257**	0.034

Premerger Variable (Z)	Corr (CAR, Z)
LNAAST	0.116
LNTAST	0.232**
RELSIZE	0.194*

Note: The term CAR equals the cumulative weighted returns of acquirers and targets less the cumulative weighted expected returns of acquirers and targets from one day before to the day of the merger announcement. Expected returns are calculated from a standard market model. The term X^R is the weighted difference between acquirer and target premerger performance. The term X^{RA} is the weighted measure of acquirer premerger performance, and X^{RT} is the weighted measure of target premerger performance. All performance measures control for size. The notations *, **, *** indicate significance at the 10 percent, 5 percent, and 1 percent levels, respectively.

TABLE 8
Correlations of Consolidated Abnormal Returns at Merger Announcement with Performance Changes

Performance Change (ΔX)	Corr (CAR, ΔX)
ΔROA1	−0.106
ΔROA2	−0.047
ΔROA3	−0.007
ΔROE1	−0.149
ΔROE2	−0.104
ΔROE3	−0.147
ΔEXPAST	−0.171
ΔEXPREV	−0.126
ΔSALAST	−0.032
ΔPREMAST	0.001
ΔNNIXAST	−0.012
ΔEQAST	0.131
ΔLOANAST	0.082
ΔCORAST	0.117

Note: The term CAR equals the cumulative weighted returns of acquirers and targets less the cumulative weighted expected returns of acquirers and targets from one day before to the day of the merger announcement. Expected returns are calculated from a standard market model. The term ΔX is the difference between premerger and postmerger performance. All performance measures control for size.

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