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Atul Gupta
Bentley College
Lalatendu Misra
University of Texas at San Antonio

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Atul Gupta*
Bentley College

Lalatendu Misra**
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Abstract

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Keywords: Bank mergers, Managerial motivations, Merger gains

JEL Classification: G14/G21/G34

* Department of Finance, Bentley College, Waltham, MA 02154; E-mail, agupta@bentley.edu
** Department of Finance, UTSA, One University Circle, SA 78249-0637; lmisra@utsa.edu
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1. Introduction

Stock price based studies of mergers of U.S. financial institutions consistently report that approximately one half of these transactions result in value declines for the bidder-target pair. Several studies, however, report mixed findings on the relationship between merger gains and deal characteristics, such as the relative size of the transaction, inter-state versus intra-state bids, and the method of payment. We focus primarily on two deal characteristics in this paper and pose the following questions. First, do relatively large mergers create more value? Second, do larger bid premiums represent a source of wealth transfer from acquiring to target firm shareholders or do they signal larger expected merger gains?

We argue that answers to these questions depend upon the market's assessment of the managerial objectives driving individual bids. In particular, we posit that merger bids can be initiated either by managers attempting to maximize value, or by managers who have non-synergistic motives, generally classified under the rubric of agency and/or hubris (Roll, 1986). Good managers run firms with efficient incentive and monitoring systems which work to ensure that corporate policy is focused on maximizing value. In contrast, some managers may initiate mergers in attempts to maximize personal gains, potentially to the detriment of the firm's stockholders. We hypothesize that the relationship between aggregate merger gains, deal size, and bid premiums is asymmetric across value-enhancing versus value-reducing transactions, and test these predictions on a large sample of bank mergers. Our findings suggest that these relationships are asymmetric, and provide new insight into how the market values merger bids.

There is considerable evidence in the literature supporting a relationship between managerial objectives and observed merger gains. For example, Morck, Shleifer, and Vishny (1990) use diversifying mergers, acquisitions of rapidly growing targets, and poor managerial performance in

the pre-acquisition period as proxies for the presence of adverse managerial incentives. They document that deals with these characteristics yield lower returns to bidding firm shareholders, and conclude that adverse managerial objectives may drive value-reducing acquisitions. Hughes, Lang, Mester, Moon, and Pagano (2003) document that asset acquisitions and asset sales are associated with improved performance at bank holding companies where management is not entrenched. In contrast, at banks with entrenched management asset sales lead to smaller improvements, while asset acquisitions are associated with worse performance compared to firms with non-entrenched management. Malmendier and Tate (2005) study the impact of managerial overconfidence on merger gains. CEOs that hold company options until expiration are classified as overconfident and observed wealth losses are found to be significantly larger for overconfident managers. Datta, Iskandar-Datta, and Raman (2001) use the proportion of management compensation that is equity-based as a proxy for agency problems, and find that gains to acquiring firms in non-financial mergers are significantly larger for firms with above median values of equity-based compensation.

These findings permit the conclusion that the price reaction to a merger bid incorporates the market's assessment of the magnitude of agency problems at the acquiring firm. Controlling for differential managerial objectives when analyzing the relationship between merger gains, deal size, and the premium paid for the target can thus be expected to yield useful insights into these relationships.

Assuming that the market classifies managers into value-enhancing and value-reducing groups yields interesting implications for the expected relationship between merger gains, deal size, and the bid premium for the target. Consider, for example, the relationship between merger gains and deal size. It is intuitively plausible that larger mergers entail greater risks than smaller deals, and possibly offer higher value gains. What is the expected relationship between deal size and value gains? This may depend upon whether the bid is initiated with value-enhancing or value-reducing motivations. Value maximizing managers will engage in large mergers if they are confident that the

risk-return trade-off is favorable. For this set of bidders, merger gains should thus be positively related to deal size. Value-reducing managers, in contrast, may be less concerned about shareholder wealth and are more likely to make deals where the risk-return tradeoff is less favorable. For this set of managers, larger deals can also (possibly) yield greater personal benefits to management at the expense of the firm's shareholders. This implies that in bids made by value-reducing managers, merger gains should be negatively related to deal size.[1]

Now consider the expected relationship between merger gains and the premium bid for target shares. Value-reducing managers are motivated to merge for possible personal benefits, without primary regard to the impact on stockholder wealth. This implies that the initial bid should be increasing in managerial assessment of personal gains from the merger. Given that the personal gains to these managers may come at the expense of the firm's shareholders, the merger gains should be negatively related to the bid premium for target shares. Conversely, value-enhancing managers will bid higher premiums only if they expect the deal to have larger value creating potential. In deals made by such managers the bid premium may well serve as a signal of deal quality, suggesting the presence of a positive relationship between merger gains and the bid premium.

In order to test the hypothesis that the relationship between merger gains, deal size, and bid premium is asymmetric across managerial motivations, we first identify sub-sets of mergers initiated by value-enhancing and value-reducing motivations, and then estimate cross-sectional regressions on

[1] The literature on financial mergers suggests differing expectations for the expected relationship between deal size and merger gains. For example, Gorton and Rosen (1995) argue that in financial mergers managers are insulated from the market for corporate control, and are motivated by empire building. This suggests that the underlying motivation for mergers is not value maximization, and creates an expectation that larger mergers should generate larger value losses. Bliss and Rosen (2003) document that CEO compensations in U.S. financial institutions is positively related to firm size; this may create managerial incentives to maximize firm size. Large banks may also benefit from implicit deposit insurance subsidies if they are considered as being "too big to fail". The possibility of receiving future regulatory subsidies based on firm size may make size maximization a desirable course of action for some financial institutions. O'Hara and Shaw (1990) find evidence consistent with this proposition. In contrast, Houston and Ryngaert (1994), DeLong (2001) and Houston, James, and Ryngaert (2001) report that aggregate gains in financial mergers are positively related to the ratio of target to acquiring firm size. Moeller, Schlingemann, and Stulz (2004) report the existence of a strong size effect on announcement period abnormal returns in a large sample of non-financial mergers.

these sub-samples. One approach to identifying such sub-samples is to posit a set of ex-ante explanatory variables that can effectively sort out the managerial motivations underlying particular transactions. The difficulty with this approach lies in identifying a comprehensive set of explanatory variables that captures how the market differentiates between differing managerial motivations. The findings of Morck, Shleifer, and Vishny (1990), Hughes et al. (2003), Malmendier and Tate (2003), and Datta, Iskandar-Datta, and Raman (2001) attest to the wide range of variables the market may use to make such a determination. An interesting and common feature in the literature is that different empirical proxies used to capture managerial motivations in these papers all yield the consistent finding that the positive price reaction is larger (smaller) for bids announced by managers at firms with relatively low (high) agency problems. This observation suggests an alternative empirical approach to distinguishing between value-enhancing and value-reducing managers.

Our primary approach in this paper assumes the market can distinguish between differing managerial motivations, and this information is discernable from the observed wealth changes to the acquirer and target when a merger is announced. Wealth increasing (reducing) mergers are primarily made by value-enhancing (-reducing) managers. The findings of the papers cited earlier provide the rationale for this approach, as the value creation is reported to be larger in mergers where agency problems are lower.[2] As an alternative to the classification based on announcement period abnormal returns, we examine long term performance measures similar in spirit to the one employed by Cornett, McNutt, and Tehranian (2006). Findings from this analysis, although weak, are consistent with those from our announcement period abnormal return based classification.

Our empirical work utilizes a sample of 503 merger bids between publicly traded U.S. banks over the years 1981 through 2004. We choose to study bank mergers because a single industry

[2] Berkovitch and Narayanan (1993) argue that value-enhancing transactions are more likely to be motivated by synergy, while deals that destroy value are more likely to have non value-enhancing motivations. We replicate the correlation analysis utilized by Berkovitch and Narayanan, not reported but available, to confirm the presence and the role of differing managerial motivations in our sample of mergers.

analysis allows us to focus on the issue of interest without potential complications arising from inter-industry differences in the relative importance of different value drivers. In addition, earlier studies of mergers between financial institutions consistently report that approximately one half of these deals destroy value (e.g., Houston and Ryngaert, 1994; Becher, 2000; and Houston, James, and Ryngaert, 2001); suggesting the presence of substantially different managerial motivations driving different bids in this industry.

Our results on wealth gains to bidding and target firms in the sample are consistent with those reported in the literature. Targets gain 16.12% on average and acquirers lose 1.84% upon announcement of the bid. The aggregate impact on bidder-target pairs is 0.29% on average. The aggregate wealth impact is positive or value-enhancing for 253 transactions, and negative or value-reducing for 250 mergers. We examine the relationship between aggregate merger gains, deal size, and the bid premium, while controlling for location variables, regulatory regimes, and the method of payment. Cross-sectional analyses of aggregate merger gains utilize truncated regressions conditioned on managerial motivations, and yield coefficient estimates for deal size that have different signs in the two sub-samples. Replicating the tests on a sub-sample of bids where the ratio of target to acquiring firm assets is larger than 10% yields similar results.

Our analysis of the price response of acquiring and target firms reveals that in value-reducing deals, transactions involving relatively large targets yield smaller gains to both acquiring and target firms and to the combined entity compared to transactions involving small targets. The bid premium has a strong positive impact, primarily on the target side. We find that changes in regulatory regimes have had a significant positive impact on target gains, presumably by inducing a more competitive climate for acquisitions over time.

2. Sample

2.1 Data and sample characteristics

We obtain an initial sample from the mergers and acquisitions database compiled by *Securities Data Corporation* (SDC). We restrict the sample to cases where both the acquiring and target firms are banks, where the entire target firm is acquired, and exclude acquisitions of selected branches or subsidiaries, or transactions involving federally assisted acquisitions of insolvent institutions.[3] Bidders are so defined in the SDC database; however, we ensure that the bidder firm is the surviving entity in CRSP. Bids in the sample represent the initial merger announcement for a unique target; we exclude bid revisions and announcements of bids by additional bidders for the same target.

Our initial sample consists of 3,925 merger bids by banks from 1981 to 2004. We eliminated 2,559 bids where the target firm was classified by SDC as a non-public institution. Of the remaining cases, we eliminated 439 bids because daily returns for the acquiring or target firm are not available from the CRSP files. For each of the remaining 927 transactions, we searched *Dow Jones Interactive* for news reports describing the merger. We eliminated bids for a number of reasons including when no news reports could be identified or the announcement was not about a merger bid but dealt with other news such as merger cancellations, bid revisions, or regulatory approval of a merger. We also eliminated cases when the news included announcements regarding dividends, share repurchases, and prior news or rumors about the bid. We trimmed the sample by 1% on each side using relative size (ratio of target to acquirer assets) and by relative bid (ratio of the bid amount to target stock price). Our final sample contains 503 bids.

We disaggregate the sample by regulatory regime because the passage of each of three pieces of legislation made substantive changes to permissible M&A activity in the banking industry. In particular, while the Financial Institutions Reform, Recovery and Enforcement Act of 1989 (FIRREA) was primarily designed to address the savings and loan crisis, the Act also allowed

[3] We exclude federally assisted acquisitions of insolvent financial institutions from the sample because earlier studies have documented that bidder gains in these transactions are influenced by excessive subsidies provided by the resolution authority to acquiring firms (see James and Wier, 1987; and Gupta, LeCompte and Misra, 1993).

commercial banks to buy failed thrift institutions. The Riegel-Neal Interstate Banking and Branching Efficiency Act of 1994 effectively repealed the McFadden Act of 1927 and allowed banks to expand on a nationwide basis. Finally, the Gramm-Leach-Bliley Financial Services Modernization Act of 199 effectively repealed the Glass-Steagall Act of 1933 and permitted commercial banks to expand into the securities industry and acquire non-banking firms. Distinguishing between interstate and intrastate bids is also important because nationwide branching was not permitted prior to the passage of the Riegel-Neal Act in 1994, and banking firms had to comply with a variety of rules enacted by different states; the Riegel-Neal Act effectively leveled the playing field for M&A activity in the banking sector.[4]

We present selected sample characteristics in Table 1. As we show in Panel A, there are 107 cases in the Pre-FIRREA period (prior to September, 1989), 185 cases in the Pre-Riegle-Neal period (September, 1989 to June, 1997), 113 cases in the Pre-Gramm-Leach-Bliley period (July, 1997 to March, 2000), and 98 cases subsequent to the Gramm-Leach-Bliley Act. There are 274 acquisitions across state lines, 229 bids in the same state, and 36 mergers in the same city. The proportion of interstate mergers is relatively constant across regulatory regimes. The dominant form of payment is stock, which accounts for 324 bids (64.4%), followed by 83 bids with mixed stock and cash financing, 51 cash-financed deals, and 45 transactions where the form of financing is not known. The incidence of stock-financed transactions was higher in the 1989 to 2000 period.

We provide the size distribution of sample firms and the amount of the initial bid in Panel B of Table 1. The average value of acquirer assets is $28.17 billion and the average market value of acquirer equity is $4.55 billion; the market value of equity is computed as the average of the firm's

[4] Changes in regulatory structure have been found to have a significant impact on firm values. The Financial Services Modernization Act of 1999, for example, had a positive impact on the values of commercial banks and investment banks, but thrift values were not impacted (Czyrnik and Klein, 2004). Akhibe and Whyte (2001) report that this regulatory change had a positive impact on the values of brokerage firms and insurance companies. Hendershott, Lee and Tompkins (2002) find that larger and better performing banks, insurance companies and investment banks obtained higher abnormal returns upon passage of this Act.

market value over the days t = (-30, -21) relative to the bid announcement day, t = 0. Target firms are substantially smaller in size with average total assets of $5.52 billion and average market equity value of $803 million. The sample average of the relative size of target assets compared to that of the acquirer is 25.8% with a median of 14%. The relative size of the target's market value of equity compared to that of the acquirer is 22.7% on average with a median of 12.1%. We employ the relative size of assets in our cross-sectional regressions. To examine the robustness of the relative asset size measure, we restrict the relative target size to exceed 10% of the acquirer assets in one specification. In this restricted sub-sample of 301 cases, the average value of relative size is 40.3%.

The average initial bid is $1,060 million and the median bid is $159 million; the final amount paid to the target may well be different from the initial bid. The ratio of the amount initially bid relative to the market value of target equity, called *Relative Bid*, is the amount bid per dollar of target equity. This variable has a mean value of 148.3% and a median of 141.3%.

<<Insert Table 1 about here>>

2.2. Event study

We employ standard event study methods (see for example MacKinlay, 1997) to compute abnormal returns. We use news reports of the merger from *Dow Jones Interactive* to define the bid date. If the announcement appears in the print media, we designate the day of the news story as day zero in event time. In cases where the merger announcement appears over a wire service, we assign the date of the wire report as day t = –1. Since a print story is never found to precede a wire report, and in many instances follows the day of the wire report, this approach yields a consistent treatment of announcement dates. We use the three-day window t = (-1, 1) as the announcement period, and estimate abnormal returns for three different entities – acquiring firms, target firms, and bidder-target

pairs.[5] Market model coefficients are estimated using daily returns data and the CRSP equally weighted index over days t = (-230, -21) in event time.

We show the announcement period CAR and associated test statistics in Panel A of Table 2; the classification for value-reducing and value-enhancing mergers is based on negative and positive three-day CARs for the bidder-target pair. The average response for acquirers is –1.84%, with a positive price response in 153 cases (30.4%); the average loss for acquiring firms is -3.62% in value-reducing mergers and -0.08% in value-enhancing deals.

Average gains to target firms are 16.12% with 87% of the sample, or 437 firms, experiencing positive abnormal returns. In value-reducing mergers, target firms gain 11.99% compared to 20.21% in value-enhancing mergers. For the bidder-target pair, the average gain is 0.29%, which is statistically significant at the 5% level ($z = 2.16$). In value-reducing mergers, the average loss to the pair is of the order of -2.80%, compared to an average gain of 3.35% in value-enhancing mergers.

We investigate the robustness of the results with regard to the size of the target, as relatively small targets may be adding noise to the results. In Panel B, we present announcement period returns for a sub-sample of 301 bids where the relative size of target assets exceeds 10% of acquirer assets. The results are generally comparable to the results shown for the full sample.

<<Insert Tables 2 about here>>

3. Incentives, ownership and other characteristics

3.1. Size and bid premium

We present summary statistics for several deal characteristics for mergers sorted according to managerial motives in Table 3. As we show in Panel A, *Relative size*, computed as the ratio of total assets of the target relative to the acquirer is similar across value-enhancing and value-reducing

[5] We construct hypothetical value-weighted portfolios of each set of merger partners over the period t = (-250, +1) in event time. Following DeLong (2001), we obtain the market value of equity for the acquirer (AEV_t) and the target (TEV_t) respectively. The combined market value on day t is given by $CEV_t = AEV_t + TEV_t$. The return to the bidder-target portfolio for day t is computed as $R_t = [(CEV_t / CEV_{t-1})-1]$.

mergers. We use market values of equity to compute *Relative size* in Panel B. Value-enhancing mergers tend to be associated with relatively larger targets, compared to value-reducing mergers. The average value of *Relative size* for value-enhancing mergers is 25.2% compared to 20.2% for value-reducing mergers, and the difference between the average measures is statistically significant at the 5% level ($t = 2.00$). We estimate *Relative bid* in Panel C as the ratio of the initial bid amount to the market value of the target's equity. The mean and median values of *Relative bid* are comparable across value-reducing and value-enhancing mergers and the differences are not statistically significant.

As shown in Panel D, stock payment is the dominant mode of financing in bank mergers, and is more frequent in value-reducing bids (176 cases) compared to value-enhancing deals (148 cases). The proportion of stock financed transactions is 58.5% in value-enhancing mergers compared to 70.4% in value-reducing mergers. We find the difference of proportions binomial test to be significant at the 1% level ($z = 2.81$). Changes in regulatory regimes provided for a more hospitable but more competitive climate for bank acquisitions over the sample period. As we show in Panel E, the proportion of value-enhancing transactions was larger in the post-Gramm period and lower in the pre-Gramm period. Out of the 253 value-enhancing mergers, 130 are across state lines and the remaining 123 are intrastate. For the 250 value-reducing mergers, 144 are of the interstate type and 106 mergers are of the intrastate type. Interstate mergers are more numerous in the sample accounting for 54.5% of the total sample. The difference of proportions however, is not significant.

<<Insert Table 3 about here>>

3.2. CEO Ownership and Compensation

Incentives can be expected to influence the quality of managerial decisions. The approach to classifying transactions based on the sign of the abnormal returns, whether short-term or long-term, is not an *ex-ante* classification scheme. Variables such as compensation and ownership of the acquirer are likely to influence the acquisition decision and have an impact on the observed abnormal

returns. We present some compensation and ownership data to provide a qualitative basis for discussion.[6]

We obtain acquirer CEO compensation data for the year preceding the bid from *Execucomp*. Data are available for 228 cases, consisting of 97 value-enhancing and 131 value-reducing mergers. We examine salary and bonus, and total compensation including options and scale both the variables by the market capitalization of the acquirer. We present summary statistics for current compensation and associated test statistics in Panel A, and summary statistics for total compensation in Panel B of Table 4. Both measures of compensation are statistically smaller for value-reducing bids. We present information on CEO ownership in Panel C of Table 4. Shares held by the CEO as a percentage of shares outstanding is somewhat larger for value-enhancing deals, but the difference between the sub-samples is not statistically significant. As we show in Panel D, acquiring firms that make value-reducing bids are statistically larger in terms of total assets compared to firms that make value-enhancing bids.

<<Insert Table 4 about here>>

3.3. Incentives and the quality of merger decisions

In this section we present evidence on two aspects of the merger decision; whether the CEOs' acquisition choices are consistent with the incentives implicit in their compensation, and whether CEOs exhibit consistent decisions across time in multiple merger cases. As we show in Table 4, normalized values of compensation, and total compensation including options are larger for value-enhancing mergers compared to value-reducing bids. We use compensation data to classify CEOs

[6] We thank a referee of this *journal* for suggesting that we examine the role of CEO compensation and present a descriptive analysis of differences between value-enhancing and value-reducing transactions.

into two groups, highly-paid and not-highly-paid, split by the median value of 0.08% for normalized total compensation including options in the available 228 cases.[7]

Although not reported in a table, we obtain the frequency of value-enhancing transactions made by highly-paid CEOs and compute a binomial *z*-statistic against the null hypothesis that highly-paid managers make value-enhancing mergers 50% of the time. Sixty out of the 97 value-enhancing transactions are made by highly-paid managers; the proportion of 62% value-enhancing mergers made by highly-paid managers is significant at better than the 5% level ($z = 2.34$). Conversely, 77 of the 131 value-reducing transactions are made by CEOs who are classified as not-highly-paid; the proportion of correctly classified mergers is 58% which is significant at the 5% level ($z = 2.01$). It appears that highly-paid CEOs are more likely to engage in value-enhancing mergers, compared to CEOs who are not highly-paid.

3.4. Consistency in acquirer decisions

The 503 acquisition bids in the sample are made by 197 firms; 100 acquirers make one bid each with 57 value-enhancing mergers, and 97 firms make a total of 403 bids out of which 196 (49%) are value-enhancing deals. Multiple acquirers, who are larger acquirers, make proportionately fewer value-enhancing mergers compared to smaller, one-time acquirers. Do firms making multiple acquisitions sometimes make good acquisitions and at other times make poor acquisitions, or do poor (good) acquirers consistently engage in poor (good) transactions?

We create a measure of the overall quality of a multiple acquirer's decisions to examine the issue of consistency across bids. We assign value of +1 to value-enhancing transactions and -1 to value-reducing mergers, and sum the scores for all the acquisitions made by a firm. A firm with three deals, for example, can get scores of +3 for all good, +1 for two good and one bad, -1 for one good

[7] Based on this dichotomization, we find that low-paid managers have a lower three-day combined CAR of -0.46% and an acquirer CAR of -2.09% compared to higher-paid managers, who have a combined three-day CAR of -0.05% and an acquirer CAR of -1.60%. Differences between the CAR values are not statistically significant.

and two bad, or -3 for all bad mergers. We compute the quality of acquisitions as the ratio of the total score to the total number of acquisitions made by the acquirer.

Firms with quality scores of +0.33 (-0.33) or greater (less) are presumed to make consistently good (poor) acquisitions, while firms with quality scores in the range of -0.32 to +0.32 are assumed to not exhibit a consistent pattern. In results not reported in tables, we find that out of the 97 multiple acquirers 25 firms (94 cases) made good acquisitions, 31 firms (109 cases) made bad acquisitions, and are unable to detect consistency in performance based on these rules for the remaining 41 firms (200 cases). These findings suggest that while some firms exhibit consistency in the quality of their acquisitions, this is not true for the sample as a whole.

4. Cross-sectional analysis

In this section we report results from cross-sectional regressions relating merger gains to proxies for deal size, bid premium, and other bid characteristics. We present results for the full sample of bids, and also for sub-samples of value-enhancing and value-reducing bids, where the latter are determined using positive and negative values of the announcement period abnormal return. Sub-sample regressions utilize truncated regressions, and these are described next.

4.1. Truncated Regression for short-term specification

We obtain the abnormal return to bidder-target pair i at the time of the announcement as AR_i over the 3-day window t = (-1, 1). Conditional on the merger type, the three-day announcement period cumulative abnormal return for the acquirer-target pair is:

$$CAR_i \mid type = E(CAR_i \mid type) + \varepsilon_i, \qquad type = value\text{-}enhancing, value\text{-}reducing \tag{1}$$

One approach to estimating the conditioning variable is to posit a set of proxies that enable sorting the sample of deals by types of motivation. An alternative approach is to assume that observed values of CAR_i are themselves informative and reveal the market's assessment of managerial motives distinguishing good mergers from bad. Our approach in the short-term

classification utilizes the announcement period market response to classify value-enhancing and value-reducing transactions. The cumulative abnormal return equation (1) is written as:

$$CAR_i \mid CAR_i > 0 = E(CAR_i \mid CAR_i > 0) + \varepsilon_i \text{ and} \tag{2}$$

$$CAR_i \mid CAR_i \leq 0 = E(CAR_i \mid CAR_i \leq 0) + \xi_i \tag{3}$$

Our objective is to estimate the relationship between observed values of CAR_i in equations (2) and (3) against a set of explanatory variables. The estimation problem in such a specification is that since the dependant variable is truncated at zero, OLS estimation is inconsistent.[8] We employ a truncated regression procedure to estimate the conditional regressions (see, Green, 2000). Based on explanatory variables $\mathbf{x}$, equation (2) can be written as a truncated regression:

$$E[CAR_i \mid CAR_i > 0] = \boldsymbol{\beta}'\mathbf{x}_i + \sigma \frac{n(z_i)}{N(z_i)} \equiv \boldsymbol{\beta}'\mathbf{x}_i + \sigma\lambda(z_i) \tag{4}$$

where $n(z_i)$ and $N(z_i)$ refer respectively to the normal density and the distribution functions with the standardized variate z_i given by $z_i \equiv \boldsymbol{\beta}'\mathbf{x}_i / \sigma$. Since a truncated distribution has a cumulative density of less than one, the procedure inflates this density to attain a value of one. The mean of the truncated normal is a function of the truncation point and the conditional mean is a non-linear function of $\mathbf{x}$ and β. The truncated regression corresponding to value-reducing mergers is:

$$E[CAR_i \mid CAR_i \leq 0] = \boldsymbol{\beta}'\mathbf{x}_i + \sigma \frac{n(z_i)}{1 - N(z_i)} \equiv \boldsymbol{\beta}'\mathbf{x}_i + \sigma\pi(z_i) \tag{5}$$

[8] Eckbo, Maksimovic, and Williams (1990) examine an equation similar to equation (2) as an equilibrium condition for non-anticipated mergers under the construct that managers choose to make announcements when merger gains are assessed as being non-negative. The implied distribution of private information revealed by the announcement is thus truncated from below (also see, Prabhala, 1997). Empirical evidence in the merger literature, however, reveals that a large proportion of acquirers lose in merger transactions, as do a large proportion of bidder-target pairs. These findings suggest that many merger bids may be driven by non-synergistic motives, such that managerial actions yield personal gains to management but result in value losses for shareholders. We focus our analysis on the aggregate value gain to the bidder-target pair, and our interest in proposing the two regressions corresponding to value-enhancing and value-reducing deals is to examine factors that explain changes in aggregate value at the time of the merger announcement.

The coefficients corresponding to truncation below zero indicate the response of value drivers to value-enhancing mergers, while truncation above zero indicates the response to value-reducing mergers. If there are systematic differences across the two types of mergers we should observe differences in the β coefficients of equations (4) and (5).

For purposes of comparison we estimate a non-truncated regression similar to those reported in the literature. We also examine CAR values for the acquiring and target firms employing the same set of variables, but using a dummy variable to capture value-reducing and value-enhancing mergers. Since our classification in the latter is based on the sign of the abnormal returns to the pair, no truncation on the acquirer or target returns is involved and the use of a dummy variable *D* as shown in the specification below is appropriate:

$$AR_i = \delta' \mathbf{x}_i + \gamma' D\mathbf{x}_i \qquad (6)$$

where AR_i refers to the announcement period abnormal return of the acquirer or target. *D* is a dummy variable that takes a value of 1 for value-enhancing mergers and zero otherwise. The coefficients δ capture the effect of value-reducing mergers and γ captures the marginal effect of value-enhancing mergers. The sum, $\delta + \gamma$, captures the total effect of value-enhancing mergers. The coefficients δ and $\delta + \gamma$ are estimated for both the acquiring and target firms. We also estimate the equation in a SUR framework, not reported here, and obtain similar results.

4.2. Independent variables

We are interested in examining the relationship between merger gains, *Relative size*, *Acquirer size*, and *Relative bid*. We compute *Relative size* as the ratio of target to bidder total assets, *Acquirer size* as the log of acquirer assets, and *Relative bid* as the ratio of the initial bid to the target's market value of equity. We employ the variable *Correlation*, which provides a measure of the potential for focus enhancement or diversification in the merger. We use the correlation between market model residuals for the acquiring and target firms over the estimation period. A higher degree of correlation

between residuals for the target and the acquiring firm suggests focus-enhancing mergers and lower values of the correlation suggest diversifying mergers (see, Cornett et al., 2006).

We use *Compensation* and *Ownership* measures in a sub-sample where data is available. *Compensation* is the log of total CEO compensation as a percent of the firm's market capitalization. *Ownership* is the log of percent share ownership of the CEO. We expect both variables to be positively associated with value creation.

We employ control variables *Interstate*, *City*, and *Stock pmt*, and regime variables *Pre-Riegle*, *Post-Riegle*, and *Post-Gramm*. *Interstate* has a value of one if the merger is across state lines, and *City* takes on a value of one if the acquirer and the target are located in the same city. We include the location variables since interstate mergers may offer greater geographic expansion potential, making them relatively more valuable (Cornett and Tehranian, 1989, 1990). In contrast, Houston and Ryngaert (1994) find that abnormal returns are greater in transactions where there is a larger degree of overlap between the two firms, creating a larger potential for cost savings. Houston, James, and Ryngaert (2001) report that managerial estimates of cost savings are correlated with estimated merger gains. Given that larger cost savings are more likely for 'in-market' mergers, these findings suggest that merger gains may be larger for intrastate mergers relative to interstate transactions. The expected signs for *Interstate* and *City* are thus difficult to specify a priori.

Stock pmt has a value of one if the acquirer's stock is used as payment. Earlier studies report mixed findings. For example, Baradwaj, Dubofsky, and Fraser (1991), Houston and Ryngaert (1994), and Becher (2000) find that cash mergers are better for acquiring firm stockholders, while Cornett and De (1991a, 1991b) find that the method of payment does not have a differential impact on announcement period gains. Travlos (1987) reports a negative response to stock-financing in non-banking acquisitions; we expect *Stock pmt* to have a negative coefficient.

Successive regulatory regimes have reduced barriers to M&A activity and potentially created a more competitive environment for bank mergers. Changes in the regimes have increased the

potential for target gains and decreased the potential for acquirer gains in bank mergers. Relative to the *Pre-FIRREA* period, we expect that the target should get larger returns in the later time periods, or the coefficients should be increasing, whereas returns to acquiring firms should be smaller in later time periods, or the coefficients should be decreasing. Further, regime changes have also increased the risk consequences to acquirers (Akhigbe and Whyte, 2004). Regime dummies are included to capture the valuation impact of substantive changes in the economic and regulatory environment of the financial sector. We use the *Pre-FIRREA* period as the benchmark and the regime dummies take a value of 1 for bids occurring during specific regimes. For value-enhancing mergers, we expect a negative sign for the dummy coefficients compared to the *Pre-FIRREA* period. For value-reducing mergers we do not have a specific expectation.

4.3. Cross-sectional findings

We report results in Table 5 utilizing the three-day abnormal return as the dependent variable. To control for heteroskedasticity, we employ weighted least squares, with the inverse of the standard deviations of the announcement period excess returns serving as weights. We present the results for the entire sample in Panel A, and a sub-sample based on relative size in excess of 10% in Panel B. Regressions reported in Panels C and D include CEO ownership and compensation measures as additional explanatory variables.

We note, in the first column in Panel A with 503 cases, that the coefficients for *Relative size* and *Acquirer size* are not statistically significant. *Relative bid* is positive and significant, and *Correlation* is positive but not significant. The statistically significant and negative coefficient for *Interstate* is consistent with the findings of Houston and Ryngaert (1994), Houston, James, and Ryngaert (2001), DeLong (2001), and Cornett, Hovakimian, Pallia, and Tehranian (2003). *City* has a positive coefficient but is not statistically significant. The negative and significant coefficient for *Stock pmt* is consistent with the information signaling effects of stock payment reported in earlier

studies of the market for corporate control (see, Houston and Ryngaert, 1994; Becher, 2000; and Cornett et al., 2003). The coefficients attached to regulatory regimes are not significant.

We present the findings from truncated regressions on sub-samples of value-reducing and value-enhancing mergers in the next two columns of Panel A. Consistent with the arguments presented in section 1, the coefficients for *Relative size* have opposite signs for the two sub-samples and both are statistically significant. This finding confirms that deal size has an asymmetric impact on aggregate merger gains, and depends upon the market's perception of whether management is motivated by value creation or has other, non value-maximizing objectives.

The coefficients for *Acquirer size* also have opposite signs, but neither is statistically significant. *Relative bid* has positive coefficients in both regressions, but is statistically significant only for value-enhancing mergers. The finding of a positive and statistically significant coefficient for *Relative bid* in the sample of value-enhancing mergers suggests that higher premiums may in fact serve as signals of deal quality in mergers initiated by value-maximizing managers.

Estimated coefficients for *Interstate* and *City* are informative, in that neither is statistically significant in the value-reducing sub-sample. In contrast, *Interstate* has a negative and statistically significant coefficient for value-enhancing mergers, and *City* has a positive (although not statistically significant) coefficient. Taken together, the latter findings suggest that more value is created by in-market deals which offer greater opportunities for cost savings. As expected, the variable *Stock pmt* has a negative coefficient in both sub-samples, but it is statistically significant only in value-reducing deals. This suggests that in deals that the market believes are motivated by value creation, the valuation impact of the method of payment is not significant at the margin.

For value-reducing mergers, coefficients for the regulatory regimes are positive and significant for the *Pre-Riegle* and *Post-Gramm* periods, indicating that value losses have been lower in the post-FIRREA period. In the value-enhancing sub-sample, the coefficients for all the regimes

are negative but the only significant coefficient is for the *Pre-Riegle* period; this indicates that value gains have been lower in the more competitive post-FIRREA period.

We present findings for the sub-sample of mergers where *Relative size* exceeds 10% in Panel B of Table 5. Not surprisingly, regression results for this sample of 301 bids are similar to those for the full sample of 503 deals reported in the first column of Panel A. Findings for the sub-samples of value-reducing and value-enhancing bids, given in the second and third columns of Panel B, are also similar to those reported in Panel A. In particular, it is noteworthy that *Relative size* again has opposite signs in the two sub-samples, although only one is statistically significant. Coefficients for *Acquirer size* also have opposing signs, and both are statistically significant. These findings support the proposition that acquiring firm size and the relative size of the bidder and target firm have an asymmetric impact on merger value; within the set of good deals, larger deals are positively related to value, whereas in the set of value-reducing deals larger transactions induce larger losses.

Coefficient estimates for *Relative bid*, *Correlation*, *Interstate*, *City*, and *Stock pmt* are similar to those reported in columns two and three of Panel A, with the exception that *Relative bid* now has a statistically significant coefficient for the value-reducing sub-sample of mergers. The interpretation of the other findings is similar to those reported earlier. The regulatory regime variables behave in a manner similar to that reported in Panel A.[9]

We include CEO *Compensation* and *Ownership* as explanatory variables in Panel C, and restrict this sample to deals with *Relative size* greater than 10% in Panel D. *Relative size* and *Relative bid* continue to have positive and statistically significant coefficients for value-enhancing deals, and *Stock pmt* is negative and statistically significant only in value-reducing bids. *Compensation* has a

[9] The announcement period CARs from Pre-FIRREA to Post-Gramm regimes are; -1.92%, -0.88%, -2.21%, and -2.39% for acquirers, 11.42%, 15.38%, 15.97%, and 21.80% for targets, and 0.27%, 0.39%, -1.00%, and 1.69% for the bidder-target pair. All the responses are statistically significant with the exception of the combined response during the Pre-Riegle period.

positive and statistically significant coefficient in both samples, but is not significant in any of the sub-samples of value-reducing and value-enhancing bids.[10]

<<Insert Table 5 about here>>

4.4. Acquirer and Target Regressions

We examine abnormal returns to the acquirer and target based on whether or not the merger is value-enhancing in two independent WLS specifications, with the acquirer and the target standard deviations during the event period serving as the weights in the respective equations. We report findings for the acquiring firms in Panel A of Table 6, and for target firms in Panel B.

Relative size is negative and significant in value-reducing transactions for both acquirer and target, confirming that in the set of bad deals, larger deals are worse for both acquiring and target firm stockholders; *Relative size* is not significant in value-enhancing transactions, and *Acquirer size* is not significant in any of the specifications. The positive coefficient for *Relative bid* in target regressions is to be expected, since a larger initial bid indicates a larger premium for target shares. The coefficient for *Relative bid* is negative for acquiring firms, but only in the value-enhancing sub-sample; this finding is intuitively reasonable, in that while larger bids imply larger target gains and may signal deal quality, they come out of the pockets of acquiring firm stockholders. The geographic variables are not significant in any sub-sample. The coefficient attached to *Stock pmt* is negative and significant in the value-reducing acquirer regression but not significant in the target regressions.

For the acquirer, the regulatory regime variables are positive and significant in the *Pre-Riegle* period. The acquirer gains are higher in the *Pre-Riegle* period compared to the *Pre-FIRREA* period. Subsequent to FIRREA, opening up the market to acquisitions may have lead to larger acquirer gains compared to the prior period. However, in the subsequent *Post-Riegle* and *Post-Gramm* periods, the

[10] The sample sizes are smaller in Panels C and D because compensation data are not available for all the firms in the sample. In some regressions, the variable *City* is excluded since there are too few observations to estimate this coefficient. Further, the *Pre-Riegle* period constitutes the benchmark for the regressions in Panels C and D, since compensation data in the *Execucomp* database are not available for the *Pre-FIRREA* period.

gains to acquirers decline possibly due to enhanced competition in the acquisition market. The target abnormal returns are higher in the *Pre-Riegle* period compared to the *Pre-FIRREA* period. The gains to the targets increase over time, again suggesting the target firms may have captured most of the merger gains in a competitive acquisition market. The abnormal returns regressions are highly significant and have R^2 of the order of 39% and 75% for the acquirer and the target respectively.

<<Insert Table 6 about here>>

5. Analysis based on long term return

5.1. Classifications of merger types

Our classification of mergers into sub-samples of value-enhancing or value-reducing bids utilizes the announcement period abnormal return as a measure of value gains expected from the merger. Under semi-strong form of market efficiency, the announcement period CAR provides an unbiased expectation of the value gain from the merger.[11,12]

An alternative classification approach employs longer-term stock price changes for the merged entity to distinguish ex-post between value-enhancing and value-reducing mergers. This approach allows for the possibility that the market does not accurately value the merger at the time of the announcement. For a sample of 99 bank mergers, Cornett et al. (2006) report an abnormal return of 2.29% for the merged entity over two years following the merger. This abnormal return is greater than the announcement period return of 0.29% reported in Panel A of Table 2 and 0.53% reported for a sub-sample in Panel B, and suggests the possibility that the initial estimate of the value created by

[11] We thank a reviewer for pointing out the need to examine longer term performance in addition to the short term price response.

[12] Classifying mergers as good or bad deals on the basis of observed abnormal returns requires the implicit assumption that such abnormal returns are estimated without error. Errors induce the potential for misclassification, with a higher likelihood for misclassification when abnormal returns are small (positive or negative). We use bootstrap procedures to evaluate the sensitivity of our findings to measurement errors and to generate appropriate test statistics for comparing coefficients. The bootstrapped results are in conformity with the reported results. For the sake of brevity, the bootstrap results are not reported here.

the merger is adjusted as more information becomes available, and the revision is positive on average.

Cornett et al. (2006) present three proxies for capturing value gains from a merger: the change in operating performance from pre-merger to post-merger, the change in ROA, and the announcement period CAR. Their regressions relating value changes to a variety of firm and deal characteristics yield similar results across these measures. In particular, the announcement period CAR captures the relationship of firm/deal characteristics to value in a manner similar to relationships based on changes in operating performance following the merger.

5.2. Estimating long term performance

We employ longer term buy-and-hold abnormal returns to examine the robustness of the findings reported in Table 5. We utilize monthly returns for the sample and benchmark portfolios for a period one year preceding the delisting of the target and two years following the delisting. We use the delisting date since the target entity continues as a separate firm in the post-announcement period with a median duration of six months between announcement and delisting. We compute a value weighted portfolio return for the acquirer-target pair in the pre-period and use the acquirer return in the post-period, and broadly follow the procedure outlined in Daniel, Grinblatt, Titman, and Wurmers (1997).

Our benchmark portfolio is constructed from CRSP financial firms from SIC codes 6710, 11, and 12 with 50% of observations, and codes 6020, 21, and 22 with 34% of observations, codes 6023 to 6030 account for 10% of observations; the remainder are from other SIC codes. We have an average of 530 firms per month from 1981 to 2004. We compute the market value and the 12 month trailing compounded return as a momentum measure for each firm. We assign the stocks to 25 portfolios sorted by market value and momentum quintiles, with an average of 21 stocks in each bin. We match the sample firm against the corresponding benchmark portfolio based on value and momentum. Since the bin sizes are relatively small, we do not further sort the portfolio by book-to-

market. Cornett et al (2006) focus on long-term returns using value, market-to-book, and momentum sorts for the benchmark portfolio.

We adjust the sample stock return by the equally weighted return of the benchmark portfolio by month. Adjustment by median portfolio return or value weighted return provides similar results. The buy-and-hold abnormal returns for the period preceding the event is then calculated as:

$$BHAR_{i,pre} = \left[\prod_{t=-1}^{-12} (1 + R_{i,t}) - \prod_{t=-1}^{-12} (1 + R_{benchmark,t}) \right] \quad (7)$$

where $R_{i,t}$ is the weighted average return of the acquirer-target portfolio, and $R_{benchmark,t}$ is the equally weighted average return of the benchmark portfolio for month t. Similarly, we estimate $BHAR_{i,post}$ over the +1 to +24 month period.

Multiple acquirers pose the potential for contamination since the post-period of an earlier acquisition may overlap the pre-period of a later acquisition. We cull the sample of cases where delisting dates for successive targets for the same acquirer occur within a span of two years, leaving us with a usable sample of 214 bids. We summarize the *BHAR* results in the next section.

5.3. Summary results for BHAR

As we show in Panel A of Table 7, the pre-period *BHAR* has an average of 0.04% and a median of -0.18%, while the post-period average *BHAR* is 3.94% with a median of 4.64%. Defining *ΔBHAR* as the difference between the post-period and the pre-period *BHAR* yields an average *ΔBHAR* of 5.85% and median of 4.82%. There are 126 mergers out of the 214 cases or 58.9% of the total which are value-enhancing with positive values of *ΔBHAR* and the remaining 88 cases are value-reducing. We decompose the *BHAR* results according to the classification based on announcement period CAR.

We examine if a sort of the *BHAR* returns based on the announcement period classification provides useful insight into the relationship between short term and long term classifications. As we show in Panels B and C, the 214 long-term *BHAR* returns correspond to 101 value-enhancing and

113 value-reducing cases based on the announcement period CAR classification. The mean and the median pre-*BHAR* returns are positive corresponding to the positive three-day classification and negative corresponding to the negative three-day classification. We conduct a *t*-test of the difference of the pre-*BHAR* means and find that the *t*-statistic is not significant at conventional levels. We find that the mean returns for the post-*BHAR* series are significant and comparable across the sorts with median returns of 5.32% for the value-enhancing and 2.40% for value-reducing classifications. We note that the difference across the mean returns is not statistically significant.

We find that the median returns of *ΔBHAR* are comparable across classifications whereas the mean *ΔBHAR* is larger for negative cases compared to positive cases. While the mean returns are comparable in the post-period, the mean in the pre-period is substantially lower for the negative cases leading to a higher level of *ΔBHAR*. We see that the *t*-statistic corresponding to the difference of means of *ΔBHAR* across the classifications is not significant at conventional levels. We use the McNemar's $\chi 2$-statistic to examine if the CAR-based classification and the one based on pre-*BHAR* are in agreement (see, Conover, 1999). We cannot reject the hypothesis of agreement between the classifications. However, we can reject the hypotheses of agreement between the CAR classification and those based on post-*BHAR* and on *ΔBHAR*.

Our finding that the pre-*BHAR* series provides a similar classification as the announcement period CAR is possibly due to the implicit relationship between the two series. We construct the pre-*BHAR* series over the twelve month period preceding the delisting date, a period that incorporates the announcement effect since announcements typically occur approximately six-months prior to the delisting date. Additionally, the use of a two-year post-delisting period compared to a one year pre-announcement period may induce biases in favor of finding a positive *ΔBHAR*.

<<Insert Table 7 about here>>

5.4. Cross-sectional regressions using BHAR

We use *ΔBHAR* as the dependent variable in the cross-sectional regressions and weight all variables by the inverse of the pre-period standard deviation of returns of the acquirer-target pair. As we note from the results in Table 8, regressions for the entire sample and for the sub-sample with relative size exceeding 10% yield a significant coefficient only for the Pre-Riegle regime. Coefficients of relative size are positive and highly significant in the value-enhancing truncated regressions of Panels A and B. Corresponding coefficients in the value-reducing regressions are negative but not statistically significant. These results together provide weak support for the asymmetric response arguments presented in section 1. In the truncated regressions, the Pre-Riegle coefficients are also positive and significant. Thus, subsequent to the enactment of FIRREA value gains were higher in value-enhancing transactions in the longer term compared to the reductions observed in the short-term abnormal returns in Table 5. Other than this exception, the longer term response is qualitatively similar to the short term response. All the regressions are statistically highly significant.

<<Insert Table 8 about here>>

6. Conclusions

We hypothesize that the relationship between merger gains and deal characteristics may be influenced by the managerial motives underlying the bids. We posit that merger bids can be initiated either by managers with value-enhancing motives, or by managers who have non-synergistic motives, generally classified under the rubric of agency and/or hubris. If sub-sets of deals are driven by differing managerial motivations, then the relationship between underlying value drivers and observed merger gains may be different for the two sets of mergers. We classify value-enhancing (value-reducing) bids as more likely to be motivated by attempts at maximizing shareholder value (maximizing managerial wealth), and then estimate separate cross-sectional truncated regressions for the two sub-samples.

Utilizing a sample of 503 mergers between publicly traded U.S. banks, our empirical work indicates that acquiring firms lose, target firms gain, and the value of the acquirer-target pair increases on average. Combined gains are found to be positive in approximately one-half of the bids, suggesting that bank acquisitions are not overwhelmingly value-enhancing transactions on average. Target firms make large gains in value-enhancing mergers, while acquiring firms do not lose. Acquiring firms suffer significant losses in value-reducing mergers, and target gains in these transactions are significantly smaller than those in value-enhancing deals.

Deal characteristics that explain observed differences in abnormal returns show differences between value-reducing and value-enhancing deals. In particular, by employing a pair of truncated regressions conditioned on managerial objectives, we find that the marginal valuation impact of the relative size of the merger partners, the premium bid for target shares, and the mode of payment is asymmetric across deals made by value-enhancing versus value-reducing managers. Merger gains are increasing (decreasing) in the relative size of the transaction in value-enhancing (value-reducing) transactions. Merger gains are also increasing in the relative size premium bid in value-enhancing deals, suggesting that in bids made by value-maximizing managers the bid premium may serve as a signal of deal quality. We also find that the regulatory regime has a substantial impact on the extent of value creation and more importantly, on the division of the gains.

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Table 1

Descriptive statistics for the sample

This table contains descriptive statistics for a sample of 503 announcements of merger bids between publicly traded banks over the years 1981-2004. We show the time periods pertaining to the important regulatory regimes prevailing over the sample period in Panel A. FIRREA refers to the Financial Institutions Reform, Recovery, and Enforcement Act of 1989, Riegle refers to the Riegle-Neal Interstate Branching and Efficiency Act of 1994, and Gramm refers to the Gramm-Leach-Bliley Financial Modernization Act of 1999; the dates indicate when provisions of each piece of legislation became effective. We present information on the time distribution of bids, the number of interstate versus intrastate bids, and the method of payment used by the acquiring firm in Panel A. We show summary statistics on the size distribution of the acquiring and target firms in Panel B. We present the relative size of the target and the amount paid for the target in Panel C.

Panel A: Sample distribution by regulatory regime					
	N	Interstate	%	Stock Pmt	%
Pre-FIRREA: Sept 1981 to Aug 1989	107	54	50.5%	47	43.9%
Pre-Riegle: Sept 1989 to June 1997	185	106	57.3%	132	71.4%
Pre-Gramm: July 1997 to Mar 2000	113	62	54.9%	99	87.6%
Post-Gramm: Mar 2000 to Aug 2004	98	52	53.1%	46	46.9%
Total	503	274	54.5%	324	64.4%
Panel B: Summary statistics on firm size	Mean	median		minimum	maximum
Acquiring Firms:					
Total assets (in million $)	28,168	9,259		116	792,700
Market value of equity (in million $)	4,549	1,245		13	117,441
Target Firms:					
Total assets (in million $)	5,518	882		37	326,563
Market value of equity (in million $)	803	106		2	54,338
Panel C: Statistics on relative size and bid	Mean	median		minimum	maximum
Relative Size:					
Target assets / Acquirer assets	25.8%	14.0%		0.1%	434.3%
Target equity / Acquirer equity	22.7%	12.1%		0.3%	241.4%
Amount Bid:					
Initial bid (in $ mm)	1,060	159		3.5	61,633
Relative bid: (Initial bid / Target equity)	148.3%	141.3%		100.2%	341.2%

Table 2

Event study results for the acquirer, target, and combined entity

This table summarizes the announcement period abnormal return for bank mergers over the years 1981-2004. We classify the day of the wire announcement as day -1 in event time and the day of the print announcement as day 0. We compute daily returns to the bidder-target pair based on a hypothetical value-weighted portfolio over the period t = (-250, +1). We estimate the parameters of the market model using the CRSP equally weighted market index over the time period t = (-250, -21). We present estimated abnormal returns to acquiring firms, target firms, and the combined entity over the three day period (t=-1 to +1) in Panel A. We classify the sample into value-enhancing (253 cases) and value-reducing (250 cases) bids based on the three-day cumulative abnormal return (CAR) to the combined entity. We present the *z*-statistics for the CAR, and the corresponding significance levels are given below the CAR estimates. We provide the results for the entire sample of 503 cases in Panel A and the results corresponding to the sub-sample of 301 cases where the ratio of target to acquirer assets exceeds 10% in Panel B.

Panel A: total sample	value reducing mergers (250 transactions)	value enhancing mergers (253 transactions)	all mergers (503 transactions)
Acquirer abnormal return:			
Average	-3.62%	-0.08%	-1.84%
z-Statistic	(-21.49)***	(-0.41)	(-15.45)***
Median	-2.73%	-0.09%	-1.49%
Target abnormal return:			
Average	11.99%	20.21%	16.12%
z-Statistic	(52.69)***	(98.29)***	(106.85)***
Median	9.95%	17.43%	13.24%
Combined abnormal return:			
Average	-2.80%	3.35%	0.29%
z-Statistic	(-17.05)***	(19.99)***	(2.16)**
Median	-2.13%	2.09%	0.01%
Panel B: relative size > 10%	(143 transactions)	(158 transactions)	(301 transactions)
Acquirer abnormal return:			
Average	-4.83%	-0.50%	-2.56%
z-Statistic	(-21.75)***	(-2.58)**	(-16.87)***
Median	-4.23%	-0.39%	-2.17%
Target abnormal return:			
Average	10.00%	19.10%	14.48%
z-Statistic	(37.85)***	(75.43)***	(80.74)***
Median	8.90%	15.38%	12.80%
Combined abnormal return:			
Average	-2.28%	3.97%	0.53%
z-Statistic	(-15.81)***	(19.02)***	(2.88)***
Median	-2.81%	2.55%	0.20%

The symbols ***, **, * denote statistical significance at the 10%, 5%, and 1% levels respectively.

Table 3

Size, bid amount, type of payment, regulatory regime, and interstate classified by merger type

This table presents summary statistics on several deal variables. We define the relative size of the bid as the ratio of target total assets to acquirer total assets (*Relative asset size*) and alternatively as the ratio of the target's market value of equity to the acquirer's market value of equity (*Relative equity size*). We present the amount bid per dollar of target equity (*Relative bid*), the method of payment (*Pmt*), the regulatory regime (*Regime*) prevailing at the time of bid, and the location of the target relative to the acquirer (*Interstate*) for the sample of 503 bank mergers classified according to whether the bid is value-enhancing or value-reducing. We employ the CAR of the acquirer-target pair during the three-day period (t = -1, +1) surrounding the announcement (t = 0) and obtain 253 cases of value-enhancing bids (positive CAR) and 250 cases of value-reducing bids (negative CAR). FIRREA refers to the legislation passed in 1989, Riegle refers to the Riegle-Neal Act of 1994, and Gramm refers to the Gramm-Leach-Bliley Act of 1999. We report the *t*-statistics and significance levels for two-sample means tests in Panels A and B. We report *z*-statistics comparing the proportions in Panel C, D, and E.

Panel A: Relative asset size	*mean*	*median*	*minimum*	*maximum*
Relative Size (target assets / acquirer assets)				
Value-enhancing (253)	26.7%	15.4%	0.2%	222.0%
Value-reducing (250)	25.0%	13.1%	0.1%	434.3%
Comparison of means test (*t*-statistic)	0.54			
Panel B: Relative equity size				
Relative Size (target equity/ acquirer equity)				
Value-enhancing (253)	25.2%	13.1%	0.3%	241.4%
Value-reducing (250)	20.2%	10.2%	0.3%	146.8%
Comparison of means test (*t*-statistic)	2.00**			
Panel C: Relative bid				
Initial bid amount / target equity				
Value-enhancing (253)	148.0%	141.8%	100.2%	273.5%
Value-reducing (250)	148.6%	140.2%	100.4%	341.2%
Comparison of means test (*t*-statistic)	0.19			
Panel D: Method of payment	*cash*	*stock*	*mixed*	*unknown*
Value-enhancing (253)	31	148	49	25
Value-reducing (250)	20	176	34	20
Comparison of proportions (*z*-statistic)	1.59	-2.81***	1.75*	0.74
Panel E: Regulatory regime	*Pre-FIRREA*	*Pre-Riegle*	*Pre-Gramm*	*Post-Gramm*
Value-enhancing (253)	58	95	42	58
Value-reducing (250)	49	90	71	40
Comparison of proportions (*z*-statistic)	0.91	0.36	-3.20***	1.97*
Panel F: Target location	*Intrastate*	*Interstate*		
Value-enhancing (253)	123	130		
Value-reducing (250)	106	144		
Comparison of proportions (z-statistic)	1.53	-0.99		

The symbols ***, **, * denote statistical significance at the 10%, 5%, and 1% levels respectively.

Table 4

CEO compensation and ownership

This table presents a summary of compensation and ownership data for acquiring firms' CEOs classified by merger type, based on the CAR of the merged entity over the 3 day period, -1 to 1 in event time. We obtain compensation and ownership data from the *Execucomp* database for the year prior to the year of the bid announcement. Compensation data are available for a sub-sample of 228 cases with 97 cases classified as value-enhancing and 131 cases as value-reducing. *Current compensation* refers to salary plus bonus and *Total compensation and options* refers to total compensation including options. We compare compensation levels for value-reducing bids against value-enhancing bids and report the Wilcoxon ranksum *z*-statistic and the χ^2-statistic for the test of medians.

	mean	median	Wilcoxon *z-statistic*	Median *chi-square*
Panel A: Current compensation relative to market capitalization				
Value-enhancing	0.07%	0.04%		
Value-reducing	0.04%	0.03%	-3.03***	6.36**
Panel B: Total compensation and options relative to market capitalization				
Value-enhancing	0.13%	0.09%		
Value-reducing	0.09%	0.07%	-3.44***	9.49***
Panel C: Shares owned as a percent of shares outstanding				
Value -enhancing	0.69%	0.18%		
Value -reducing	0.52%	0.18%	-0.69	0.02
Panel D: Acquirer total assets (in million $)				
Value -enhancing	42,949	21,247		
Value -reducing	56,656	29,178	2.78***	6.36**

The symbols ***, **, * denote statistical significance at the 10%, 5%, and 1% levels respectively.

Table 5

Cross-sectional regression results of combined gains

This table contains findings from regressing the three-day announcement period abnormal return to the bidder-target pair on a set of explanatory variables. *Relative size* is the ratio of target to acquirer assets, *Acquirer size* is log of acquirer assets, *Relative bid* is bid amount over the market value of the target's equity, *Correlation* is the correlation between the acquirer's and the target's market model residuals over the estimation period, *Interstate* equals 1 if the firms are headquartered in different states, zero otherwise; *City* equals 1 if both firms operate in the same city, zero otherwise; *Stock Pmt* equals 1 for stock-exchange transactions, zero otherwise; *Pre-Riegle, Post-Riegle,* and *Post-Gramm* take on a value of one for deals announced during these periods, and are zero otherwise. All variables are weighted by the inverse of the standard deviation of the three-day combined abnormal returns. Panel A presents the full-sample regression and truncated regressions corresponding to the truncation point of zero. Panel B reports similar regressions for a sub-sample containing bids for which the ratio of target to acquirer assets exceeds 10%. Panel C contains regression results using compensation and ownership variables on a sub-set of cases. Panel D shows results restricting the ownership sample to relative target size in excess of 10%. *Compensation* is measured as the log of total CEO compensation as a percentage of the firm's market capitalization; *Ownership* is measured as the log of total CEO ownership as a percent of shares outstanding. Reported coefficients are 100 times the estimated coefficients. Levels of significance are based on White's *t*-statistics and are given next to the estimates.

Table 5 (continued)

	Panel A: Full sample			B: Relative size exceeds 10%			C: Ownership sample			D: Ownership sample with relative size exceeding 10%		
	Full sample	Value-reducing	Value-enhancing	Sub-sample	Value-reducing	Value-enhancing	Sub-sample	Value-reducing	Value-enhancing	Sub-sample	Value-reducing	Value-enhancing
Intercept	0.12	-1.40	-26.79**	-0.29	0.22	-36.94***	2.46	3.66	-1.45	-1.20	9.82	-4.10
Relative size	1.47	-2.48**	15.88***	1.84	-0.90	16.69***	1.47	-1.95	4.85***	2.61	0.55	7.13***
Acquirer size	-0.08	-0.17	1.35	-0.12	-0.71**	2.67**	-0.08	0.09	-0.55	0.40	0.04	-0.24
Relative bid	1.00**	1.99	7.19**	1.58**	2.32*	7.89**	0.71	2.70	3.00*	2.16*	-4.39	7.15***
Correlation	0.26	0.39	-1.59	0.51	1.48	-3.62	-0.08	-1.59	1.20	-0.67	-2.11	-0.54
Interstate	-0.89*	-0.62	-5.51**	-1.56**	-0.20	-8.24**	0.16	2.30	0.04	-0.92	0.42	-1.69*
City	0.85	-0.25	1.89	1.53	-1.64	0.30	-2.27***	1.66	--	-4.54***	0.33	--
Stock pmt	-1.33***	-2.41**	-1.32	-1.62**	-1.96*	-3.79	-0.87	-4.82**	1.24	-1.82**	-4.59**	-1.96
Pre-Riegle	0.28	4.01***	-7.14**	0.45	4.20***	-6.48*	--	--	--	--	--	--
Post-Riegle	-0.71	2.40	-5.74	-1.19	2.10	-5.07	-0.92	-0.61	-1.34	-0.98	-0.12	-1.52
Post-Gramm	0.73	3.57**	-2.09	0.76	3.97***	-2.10	-0.68	0.59	0.81	-2.08**	0.10	-2.77
Compensation							0.73*	1.40	-0.91	1.37**	0.52	0.36
Ownership							-0.08	-0.29	0.61	-0.18	-0.50	-0.24
F-statistic	2.62***			3.04***			2.95***			4.36***		
R^2 (%)	9.34			14.73			10.01			24.34		
Wald's χ^2		37.2***	34.2***		61.6***	39.63***		14.30	61.78***		28.68***	219.39***
Sample size	503	250	253	301	143	158	228	131	97	98	53	45
Truncated	no	yes	yes	no	yes	yes	no	yes	yes	no	yes	yes
Classification	short	short	short	short	short	short	short	short	short	short	short	short
Relative size exceeds 10%	no	no	no	yes	yes	yes	no	no	no	yes	yes	yes

The symbols ***, **, * denote statistical significance at the 10%, 5%, and 1% levels respectively.

Table 6

Cross-sectional regression results of acquirer and target gains

This table contains findings from regressions of three-day abnormal returns to the acquirer and the target for a sample of 503 merger announcements between publicly traded banks. The value-enhancing sub-sample of 253 cases represents bids that elicited a positive announcement period abnormal return for the combined entity. The value-reducing sub-sample of 250 cases represents bids that elicited a announcement period abnormal return for the combined entity. *Relative size* is the ratio of target total assets to acquirer total assets, *Acquirer size* is the log of acquirer assets, *Relative bid* is the bid amount over the target's market value of equity, *Correlation* is the correlation between the acquirer's and the target's market model residuals over the estimation period, *Interstate* equals 1 if the firms are headquartered in different states, zero otherwise; *City* equals 1 if both firms operate in the same city, zero otherwise; *Stock Pmt* equals 1 for stock-exchange transactions, zero otherwise; *Pre-Riegle, Post-Riegle,* and *Post-Gramm* take on a value of one for deals announced during these periods, and are zero otherwise. All variables are weighted by the inverse of the standard deviation of the announcement period abnormal returns of the acquirer and the target firms respectively. Reported coefficients are 100 times the estimated coefficients, and the level of significance based on White's *t*-statistics are given next to the coefficients.

	Panel A: Acquirer abnormal returns		*Panel B: Target abnormal returns*	
	value-reducing	value-enhancing	value-reducing	value-enhancing
Intercept	-2.21	1.24	-0.88	-8.43
Relative Size	-2.33**	0.60	-6.18***	-4.78
Acquirer Size	-0.02	0.06	-0.46	-1.05
Relative Bid	-0.11	-1.52**	8.19***	24.01***
Correlation	-6.75***	0.63	-4.97	-6.83
Interstate	-0.36	-0.02	1.54	0.11
City	-0.51	-0.28	1.23	3.54
Stock Pmt	-0.47	-0.73*	-1.20	3.38
Pre-Riegle	1.59**	1.23**	5.83***	3.21
Post-Riegle	-0.21	0.09	10.75***	10.19***
Post-Gramm	1.13	0.52	11.45***	9.47***
	Acquirer model		Target model	
F-Statistic	12.10		36.75	
Probability	0.00%***		0.00%***	
R^2	38.80%		74.56%	

The symbols ***, **, * denote statistical significance at the 10%, 5%, and 1% levels respectively.

Table 7

BHAR results

This table summarizes findings from using buy-and-hold abnormal returns (BHAR) to capture the longer term performance for a sample of 214 mergers between banking firms over the years 1981-2004. We compute the pre-merger *BHAR* by using the weighted average of target and acquirer returns for the 12 months preceding the delisting date of the target (-1 month to -12 month). Similarly, we obtain the post-merger *BHAR* based on the acquirer's 24 month return subsequent to the delisting date (+1 month to +24 month). We adjust the pre-merger and post-delisting returns for the corresponding periods using returns from an equally weighted benchmark portfolio. We compute the *ΔBHAR* as the post-*BHAR* minus pre-*BHAR*. With the announcement period CAR based classification there are 101 cases corresponding to value-enhancing mergers in Panel B, and 113 cases corresponding to value-reducing transactions in Panel C. We present the mean and median values of the *BHAR* with their corresponding *t*-statistics. We also report the frequency of positive and negative *BHAR*.

	Panel A Long term sample (214 transactions)	Panel B value-enhancing (101 transactions)	Panel C value-reducing (113 transactions)
Pre-*BHAR*:			
Average	-0.18%	1.21%	-1.42%
t-statistic	(-0.14)	(0.65)	(-0.81)
Median	0.04%	1.34%	-1.32%
Positive: Negative	107:107	56:45	51:62
Post-*BHAR*:			
Average	4.64%	4.44%	4.82%
t-statistic	(2.72)***	(1.82)*	(2.01)**
Median	3.94%	5.32%	2.40%
Positive: Negative	125:89	58:43	67:46
ΔBHAR:			
Average	4.82%	3.23%	6.24%
t-statistic	(2.20)**	(1.09)	(1.96)*
Median	5.85%	5.88%	5.85%
Positive: Negative	126:88	58:43	68:45

The symbols ***, **, * denote statistical significance at the 10%, 5%, and 1% levels respectively.

Table 8

Cross-sectional regression results based on longer term performance measure

This table contains findings from regressions on longer term performance for a sample of 214 merger bids by commercial banks over the years 1981-2004. Pre-merger performance uses the weighted average of target and acquirer returns for the 12 months preceding the delisting date for the target, and the post-merger *BHAR* is based on the acquirer's 24 month return subsequent to the delisting; both are adjusted by the return on an equally weighted benchmark portfolio. The dependent variable is the post minus pre adjusted return (*ΔBHAR*). *Relative size* is the ratio of target to acquirer assets, *Acquirer size* is the log of acquirer assets, *Relative bid* is bid amount over the market value of the target's equity, *Correlation* is the correlation between the acquirer's and the target's market model residuals over the estimation period, *Interstate* equals 1 if the firms are headquartered in different states, zero otherwise; *City* equals 1 if both firms operate in the same city, zero otherwise; *Stock pmt* equals 1 for stock-exchange transactions, zero otherwise; *Pre-Riegle, Post-Riegle,* and *Post-Gramm* take a value of one for deals announced during these periods, and are zero otherwise. All variables are weighted by the inverse of the standard deviation of the monthly returns in the pre-event year. We present the full-sample regression in Panel A, and the results of regressions restricted to relative size exceeding 10% in Panel B. Reported coefficients are estimated coefficients times 100. Significance levels based on White's *t*-statistics are given next to the estimates.

Table 8 (continued)

	Panel A: Full sample			B: Relative size exceeds 10%		
	Full sample	Value-reducing	Value-enhancing	Sub-sample	Value-reducing	Value-enhancing
Intercept	-12.79	-29.75	-59.81*	2.38	-24.46	-38.11
Relative size	6.43	-1.85	52.19***	-2.00	-10.16	53.45***
Acquirer size	0.01	0.00	1.53	0.46	2.88	0.73
Relative bid	1.40	6.54	9.35	-7.48	-6.33	-4.49
Correlation	-4.26	-14.84**	-10.92	-4.18	-20.83**	-5.76
Interstate	7.85	12.01	3.53	8.90	20.58*	0.36
City	0.76	6.92	-7.23	8.21	-6.34	13.32
Stock pmt	6.46	5.95	6.05	5.42	0.33	9.88
Pre-Riegle	20.18***	17.28*	45.39***	15.29**	26.82**	42.08**
Post-Riegle	-2.81	-4.55	2.21	-1.33	-5.70	5.44
Post-Gramm	5.39	3.98	19.97	5.52	9.90	20.87
F-statistic	2.88***			2.27**		
R^2 (%)	17.51			16.82		
Wald's χ^2		73.57***	60.17***		71.98***	85.24***
Sample Size	214	88	126	142	57	85
Truncated	no	yes	yes	no	yes	yes
Classification	long	long	long	long	long	long
Relative size exceeds 10%	no	no	no	yes	yes	yes

The symbols ***, **, * denote statistical significance at the 10%, 5%, and 1% levels respectively.