What do Bank Acquirers Pay for in Bank Mergers?

Ken Cyree
Frank R. Day/Mississippi Bankers Association Chair
University of Mississippi
School of Business Administration
227 Holman Hall
P.O. Box 1848
University, MS 38677-1848
(662) 915-1103
kcyree@bus.olemiss.edu

Abstract

This paper studies what target, market, and acquirer characteristics influence premiums over book value in bank acquisitions. The average target receives 1.67 times book value from 2001 Q3 to 2005 Q4. Acquisition premiums rise with acquirer size and capital ratios. Targets with high proportions of core and large deposits receive higher premiums, and particularly so when the target has higher relative proportions than the acquirer. When using target variables relative to acquirers, premiums rise with average bank size in the market, and in three separate models premiums rise with market growth in assets, loans, and deposits.

Preliminary Version
February 2007

What do Bank Acquirers Pay for in Bank Mergers?

Abstract

This paper studies what target, market, and acquirer characteristics influence premiums over book value in bank acquisitions. The average target receives 1.67 times book value from 2001 Q3 to 2005 Q4. Acquisition premiums rise with acquirer size and capital ratios. Targets with high proportions of core and large deposits receive higher premiums, and particularly so when the target has higher relative proportions than the acquirer. When using target variables relative to acquirers, premiums rise with average bank size in the market, and in three separate models premiums rise with market growth in assets, loans, and deposits.

What do Bank Acquirers Pay for in Bank Mergers?

1.   Introduction

"Texas is such a great state for business, and that's why it's a great state for banking," said Scott Alaniz, an equity research analyst for Sandler, O'Neill & Partners LP. ...For Sterling Bancshares Inc. in Houston, that meant acquiring Dallas-based Prestonwood Bancshares Inc. and its subsidiary, Oaks Bank & Trust Co., for $ 34 million in cash. "That is a great price -- over 20 times earnings," Mr. Alaniz said. "And three times book value is a great price."

Dallas Morning News, July 17, 2005

Banks often appear to enter "hot" markets that have high growth as shown by the above quote.

What is less clear is what exactly banks are paying for to enter these markets? In other words,

are banks entering markets for rapidly growing market conditions or for other target-specific

reasons, or because they are limited in their own markets? Conventional wisdom suggests

bankers may also enter markets to acquire low cost deposits, such as core deposits, which have

limited availability and growth in their home market(s) and be willing to pay a premium for these

deposits. What acquirers actually pay for in a merger has important implications for acquiring

bank shareholders to value an acquisition, and for target bank shareholders to see if the deal is

properly valued.

The focus of this study is on smaller banks and not large publicly traded banks because

small and medium-sized banks are important entrants into new markets and are more likely to be

selective upon entering a market due to a larger proportion of resources devoted to the new entry.

Similarly, it is important to discover what acquirers value in a takeover for smaller non-public

banks to aid in valuation of non-public targets and to make a target bank attractive to buyers.

Although valuation of non-public banks is common in court cases and takeovers, little attention

has been given to the topic as the majority of studies focus on large mergers and acquisitions of

public firms.

2.   Literature

Prior research has shown that premiums to targets are typically positive and statistically and economically significant, on average. Most studies investigate the premiums paid for public target banks in mergers and acquisitions (M&A). For example, Beatty Santomero, and Smirlock (1987) find that acquirers pay larger market-to-book premiums for targets with higher return on equity and those in more concentrated markets. Cheng, Gup, and Wall (1989) find similar results, and Palia (1993) finds a positive relation between the target bank's return on assets and the merger premium. Becher (2000) finds that publicly traded targets gain 22% on average for a sample of mergers in the 1990s. Target market premiums range from 9.66% found by Cornett and De for 37 targets, to over 36% by Neely (1987) for 26 target banks.

Other research reviews bank entry and expansion into markets, including entry through M&A activity. For example, Berger, Bonime, Goldberg, and White (2004) find that M&A activity in a market increases the probability of additional M&A activity. Wheelock and Wilson (2000) find that smaller banks that are less efficient with lower ROA were more likely to be acquired, but many of these banks were near failure. Cheng, Gup, and Wall (1989) show that merger premiums rise as target assets and core deposits grow. However, Palia (1993) finds that faster growing banks do not command a higher premium for a sample from the late 1980's. Thus, the question remains open whether or not banks enter markets that are growing, or acquire targets with characteristics such as high proportions of core deposits.

Banks can enter markets through building de novo branches, but the focus of this paper is on acquiring other banks so that the merger premium can be measured. Cyree, Wansley, and Boehm (1999) show that banks with high proportions of securities are more likely to acquire another bank as compared to expanding bank products or branching. They also find banks in

high income growth states are less likely to grow externally, suggesting that those banks in lower growth states are using takeovers to get into more rapidly growing markets. While Cyree et al. find banks wish to move into high growth markets, they do not estimate the premium paid or whether or not the determinants of the premiums are related strictly to the market or the acquiring or target bank characteristics.

Most empirical results are aimed at publicly traded bidders and targets and use the offer stock price per share to calculate merger premiums. However, the majority of bank M&A activity comes from privately held institutions that do not have offer price information publicly listed around M&A activity. In traditional bank M&A analysis, acquirers and other bank stakeholders such as boards of directors, industry analysts, and competitors value deals based on the premium over book value for the entire acquisition. Surprisingly little is known about what bankers truly value when buying a target institution. Finding determinants of valuation will also aid analysts valuing banking assets in court cases and other situations where the bank is private and valuation is necessary.

3.   **Data and Method**

The data come from the Call and Income Reports from the Federal Reserve and the FDIC merger file from 2001 through 2005. FASB Statement No. 141 required banks to use the purchasing method of accounting for mergers and acquisitions beginning on June 30, 2001. I use the prior quarter, 2001 Q2, as a base and calculate the change in quarter-over-quarter goodwill as the goodwill resulting from new acquisitions, less impairment. Accounting rules require banks to compare the fair market value of the acquired bank and if the market value is less than the goodwill from the resulting transaction, an impairment charge is levied. However, actual

impairment charges to date have been nonexistent, with no banks that have goodwill reporting

any impairment in the four years of the sample, at least as reported on the Call reports.

3.1   Final Sample and Descriptive Statistics

The final sample contains banks that have all necessary data and were involved in an

unassisted merger. In addition, banks are required to have only one merger in the year

surrounding the merger activity so that the increase in goodwill reflects only one takeover.

Using these screens for the data yields a final sample of 288 matched acquirer-target

observations.

The premium over book value is a gross valuation measure that would be used as a

multiplier. For example, if a target bank had $10 million of book value equity and the premium

is 1.5, then the increase in goodwill would be $5 million for the acquirer and the total paid would

be $15 million. Thus, the premium as specified is used as a multiplier to obtain the valuation of

the merger as is common in industry practice. Figure 1 presents the average premium over book

value quarterly from 2001 Q3 to 2005 Q4. The average premium for the entire sample period is

1.67 and shows variation over time ranging from about 1.25 to almost 2.0 with higher premiums

after 2003.

Table 1 contains means and t-tests for differences in means for the banks and their

markets. Panel A presents the means for the target market of banks in the sample versus those

target markets for banks that had multiple mergers and were not included in the final sample. In

effect, Panel A is a test to see how the final sample markets differ from markets where there

were banks that were more active acquirers who had other acquisitions within a year. The in-

sample average bank in the target market has about $688 million in assets compared to $997

4

million for target markets that were excluded from the sample. The average return on assets is 87 basis points for in-sample target markets and this difference is statistically equal to target markets not in the sample. The average capital (equity-to-assets) ratio is 11.05 percent, identical to out-of-sample markets. The average bank for the target market in the sample has loans-to-deposits of 76 percent, with commercial loans comprising 16 percent of assets with each of these variables statistically equal to out-of-sample markets. Agricultural loans-to-assets have the largest statistical differences with in-sample markets having over three percentage points higher proportions of agricultural loans, indicating the higher likelihood that markets in the sample are more rural. Loan losses average 14 basis points as a proportion of assets for the banks in the target market in the sample, which is statistically different from the 17 basis points for markets not in the sample. Large deposits to assets in the target market for sample banks are almost 13 percent. None of the growth rates or deposit ratios are statistically different. Collectively, the markets included in the sample are statistically equal to those that were not, with the exceptions of average bank size, loan-losses, and agricultural loans-to-assets reflecting the fact that smaller non-public acquirers tend to acquire targets in smaller, more rural markets.

Panel B of Table 1 presents the means for target banks in the final sample versus the acquiring banks. In this panel, means are at the bank level and not the market level as in Panel A. Loan growth, asset growth, and deposit growth is significantly lower for the target bank. This is in stark contrast to the conventional wisdom that banks are buying fast-growing target banks, whether measured as loan, asset, or total deposit growth. Acquirer banks are almost six times as large on average, although the actual relative size ratio for the matched pairs of acquirers and targets (not shown) is about nine. Acquirers are also significantly older, have higher pre-tax ROA and ROE, and larger proportions of loans-to-assets as well as loans-to-

deposits. Target banks also have significantly higher core deposit ratios, consistent with the

hypothesis that acquirers are taking over the target bank to tap into that bank's core deposit base.

Overall, the univariate results suggest that acquirers are looking for smaller banks, in

markets that are growing even though the target bank is not, with lower accounting performance

and lending. This implies that acquirers view the target bank as an opportunity to improve

performance if they can at least raise the accounting performance to that of the pre-acquisition

acquirer. Acquirers also appear to be acquiring institutions with higher proportions of core

deposits, a hypothesis we will explore more fully in the pooled regressions below.

3.2   Pooled regression model

The univariate statistics reveal that acquirers are not routinely acquiring higher growth

targets, but this finding does not account for other factors. I use a pooled regression model in

order to investigate the determinants of the acquisition premium. The model is:

$$
\begin{aligned}
PREM = \alpha + \sum_{i=2002}^{2005} YEARi + \beta_1 LnAssets + \beta_2 AcqGrowth_j + \beta_3 T \arg Growth_j + \beta_4 MktGrowth_j + \\
\beta_5 COREDEP + \beta_6 TCOREDEP + \beta_7 MCOREDEP + \beta_8 EBTROA + \beta_9 CAPRATIO + \\
\beta_{10} LLR2TA + \beta_{11} CNILOANS + \beta_{12} AGLOANS + \beta_{13} LOAN2DEP + \beta_{14} BIGDEPS + \\
\beta_{15} TAGE + \beta_{16} TLnAsset + \beta_{17} TEBTROA + \beta_{18} TLLR2TA + \beta_{19} TCNILOANS + \\
\beta_{20} TAGLOANS + \beta_{21} TLOAN2DEP + \beta_{22} TBIGDEPS + \beta_{23} MLnAsset + \beta_{24} MEBTROA + \\
\beta_{25} MCAPRATIO + \beta_{26} MLLR2TA + \beta_{27} MCNILOANS + \beta_{28} MAGLOANS + \beta_{29} MLOAN2DEP \\
+ \beta_{30} MBIGDEPS + \varepsilon
\end{aligned}
\tag{1}
$$

where PREM is the premium over book value paid for the target stated in gross terms (e.g., 2.0 is

two times book value). The YEAR variables are yearly indicators and allow for yearly fixed

effects, with 2001 omitted to prevent perfect multicollinearity.

The variables of interest are the growth variables and the core deposit variables. The

growth variables for the acquirer, target, and market are subscripted with j because the model for

asset, loan, and deposit growth are all estimated separately. The core deposit variables have either no prefix for acquirers, a "T" prefix for the target, or an "M" prefix for the average core deposit-to-asset ratio in the market. In fact, for all variables in the models, those with no prefix are the acquirer variable, a "T" prefix is for the target, and an "M" prefix for the target market average as a whole.

Control variables are added for accounting performance through pre-tax return on assets (EBTROA) because some banks could be S-Corporations and have differential tax treatment. Risk is proxied by loan-loss reserves scaled by assets (LLR2TA, TLLR2TA, and MLLR2TA for the acquirer, target, and market respectively) and the capital ratio for the acquirer, and market. The capital ratio for the target is omitted because the dependent variable PREM is a function of the target bank's equity level and ratio. The risk variables indicate whether or not acquisition premiums vary with the amount of problem loans of the acquirer, or in the case of the target, a potential opportunity to provide improved lending policies due to poor loan underwriting by the target bank. The CNILOANS and AGLOANS variables are commercial loans and agricultural loans scalded by assets to account for product mix, with each for the acquirer, target, and market. It is expected that banks with deficient commercial lending would wish to acquire either targets that are successful at evidenced by higher commercial loans-to-asset ratios, or that these banks could enter markets with high proportions of commercial lending (an opportunity to lend) or low proportions (lower competition).

For deposits, the model contains large deposits for the acquirer, target, and market, as well as core deposits. It is expected that since large deposits are more national in scope (e.g., brokered deposits or jumbo CDs) that acquiring banks would focus more on the more locally oriented core deposits and be willing to pay higher premiums when their core deposit-to-asset

7

ratios are low and the target's are high as well as the market. However, it could also be the case that acquirers are willing to pay higher premiums for those banks with higher proportions of large deposits.

The variables in equation (1) are decoupled between the acquirer and target and the lack of matching makes inference difficult with respect to what acquirers are willing to pay for given the differences between the acquirer and target. For example, an acquirer with low proportions of core deposits might be willing to pay more for a target with relatively more. To further investigate the differential effects of these variables across matched pairs of acquirers and targets, equation (1) is modified to reflect the relative nature of these variables with the target variable divided by the acquirer:

$$
\begin{aligned}
PREM = {} & \alpha + \beta_1 RASSETS + \beta_2 GROWTH_j + \beta_3 MktGrowth_j + \beta_4 REBTROA \\
& + \beta_5 RCAPRATIO + \beta_6 RLLR2TA + \beta_7 RCNILOANS + \beta_8 RAGLOANS + \beta_9 RLOAN2DEP + \\
& \beta_{10} RBIGDEPS + \beta_{11} MLnAsset + \beta_{12} MEBTROA + \beta_{13} MCAPRATIO + \beta_{14} MLLR2TA + \\
& \beta_{15} MCNILOANS + \beta_{16} MAGLOANS + \beta_{17} MLOAN2DEP + \beta_{18} MBIGDEPS + \varepsilon
\end{aligned}
\tag{2}
$$

where the "R" prefix denote a relative variable with the target divided by the acquirer. If any relative increase in the variable is valuable, then the premium would rise. For example, if an acquirer in a slow growth market were willing to pay a higher premium for a target in a higher growth market, the coefficient for the relative loan growth variable would be positive.

4.   Empirical Results

In this section, I discuss the empirical results for each model estimated with both OLS regression and a censored Tobit model because the dependent variable is truncated at one. At the end of the section are robustness checks.

4.1   OLS pooled regression results

Table 2 contains the results from the OLS regression for all three growth models: assets, loans, and deposits. The yearly indicators are all insignificant. For all three models, acquirer size is positive and significantly related to the premium over book value. This implies that larger banks pay more in takeovers than smaller acquirers, all else constant. The growth variables are consistent and insignificant in all three models. Core deposit variables reveal that acquirers with lower core deposit ratios pay higher premiums over book value as shown by the negative and significant coefficient for COREDEP. Similarly, the premium over book value rises with the core deposit ratio for the target, suggesting that banks are acquiring targets with higher core deposits.

Control variables indicate acquirers with higher capital ratios pay higher premiums over book value for target banks implying willingness to spend excess capital on takeovers, ceteris paribus. Acquirers pay less for targets with higher proportions of loan losses, but the coefficients in all three models are only significant at the ten-percent level. Targets with higher proportions of commercial lending receive lower takeover premiums, perhaps due to acquirers desiring greater possibility for future growth in commercial lending. Younger target banks receive higher premiums over book value, but the variables in all three models are significant at only the ten-percent level. Targets with higher proportions of large deposits also receive higher premiums as shown by the positive sign on BIGDEPS. All of the market variables are insignificant.

4.2   Censored regression results

The results in Table 2 could be statistically biased because the dependent variable is truncated at one by construction.[1] In order to account for possible bias in the estimates, the Tobit regression model is used with a truncation point of one for the dependent variable. Table 3 presents the results from the censored Tobit regressions for all three growth models.

The results are very similar to OLS estimation. Larger acquirers still pay higher premiums as shown by the coefficient for the log of assets variable. Growth is still insignificant in all three models. Core deposit ratios influence premiums negatively for the acquirer and positively for the target indicating willingness to pay higher premiums for core deposits.

Control variables are likewise consistent with the OLS results with acquirer capital ratios being positively related to the premium over target book value and the proportion of commercial loans negatively related. Loan-losses are still negative and significant. The proportion of large deposits to assets estimate is still positive and significant, but in the censored regression model, the level of significance is now at the one-percent level. The sigma estimate is highly significant in all three models indicating that the censoring constraint is significant and important to account for in this specification.

4.3   OLS pooled regression results with relative variables

It is difficult to use the model in equation (1) to tell if acquirers are paying for individual variables or if they are paying for variables where they are deficient. In particular, it could be that case that slow growing acquirers are willing to pay more for high growth targets, and the specification in equation 1 cannot pick up this relation because the variables have been

---

[1] I removed all banks with a negative premium to book value because it is likely that there was assistance, the bank was in financial distress, or there was an error in the data.

decoupled. To mitigate the problem of not having relative variables, the model in equation 2 has target variables relative to the acquirer. The target variable is placed in the numerator so that an increase in the target variable relative to the acquirer will have a positive effect on the premium to book value in the takeover.

Table 4 contains the results from the OLS regression for all three growth models but with relative variables where each target variable is divided by the acquirer variable. Here, the market growth variable is positive and significant for every model indicating that acquirers are willing to pay more to enter growing markets no matter which growth variable is used. It should be noted that the relative growth variable is insignificant, but when accounting for the paired growth of the target and acquirer together, the overall market growth variable becomes significant, which was not the case when these variables were estimated separately.

The relative core deposit variable is positive and highly significant indicating that those acquirers with lower core deposits as a proportion of assets are willing to pay higher merger premiums to targets with relatively more core deposits. The core deposit result indicates that acquirers pay for these relatively difficult to obtain deposits, and particularly so when their own bank is deficient in attracting core deposits. Positive estimates for relative core deposit variables are consistent with the individual core deposit components being negative for the acquirer and positive for the target.

Similar to the core deposit result, acquirers pay higher premiums for relatively greater proportions of large deposits. This result is less intuitive than the core deposit result since large deposits are more national in scope, but is consistent with the view that these banks view deposits as a local market regardless of the type of deposit.

The market average of commercial loans-to-assets (not on a relative basis) is negative and significant at the ten-percent level in all three models. The sign for market commercial loans is consistent with the prior estimations of equation 1, but the estimates were not consistent when using the acquirer and target variables separately as presented in Tables 2 and 3. The average size of the banks in a market are positive and significant (MLNASSET) but the overall total size of the market (LNSMASSET) remains insignificant suggesting that acquirers will pay higher premiums to compete with larger banks, but not for larger total market size.

4.4   Censored regression results with relative variables

Table 5 presents the results from the censored Tobit regressions for all three growth models with relative variables. In general, the results are the same with a few exceptions in the levels of significance. Acquirers still pay higher premiums over book value for growing markets, larger target deposits relative to acquirer deposits (both core and deposits greater than $100,000), and larger average bank size in a given market. Premiums over book value remain lower for larger proportions of commercial lending in a market. One difference is that in the censored regression results, the average loan-to-deposit ratio (MLOAN2DEP) is negative and significant for the loan growth and asset growth models. The negative relation with market average loans-to-deposits suggests that acquiring banks prefer not to compete with banks that have high proportions of lending, or at least will not pay a higher premium to do so. The sigma estimate is highly significant indicating the importance of specifying the truncated dependent variable in the model.

4.5   Robustness Tests

The findings in the pooled models are consistent, but some robustness tests are necessary to verify the results are not due to some omitted variables or variable definitions. The definition of growth was changed to one year as well as one quarter without changing the overall findings. Also, removing the yearly indicator variables or adding quarterly indicators does not change the overall results.

Additionally, the target capital ratio was added to the model to see the effects on the results. The target capital ratio is negative and highly significant, as would be expected since the dependent variable is the premium over book value and the target capital ratio is book value scaled by assets. When the target capital ratio is added, core deposits remain negative and significant for the acquirer and positive and significant for the target as are the cases in the base models. When target capital ratios are added relative to acquirer capital ratios, the coefficient remains negative and highly significant. In the case of relative capital ratios, however, there could be an effect of acquirers not wishing to pay for excess capital, but these effects are difficult to discover due to the relation of target capital and the dependent variable. In all cases with target capital added, the results for core deposits are the same as the base case, and in the relative model. Market growth remains the same when target capital is added in the relative model from equation (2), although the market growth variable falls to significance at the ten-percent level in one case. In summary, the main results that acquirers are willing to pay more for core deposits and market growth when variables are relative is robust to these changes.

5.   Summary and Conclusions

Conventional wisdom suggests that banks enter markets through mergers and acquisitions to obtain growth and deposits. Acquirers could desire growth in assets, loans, or deposits. Acquirers could also desire core deposits, which are usually local in nature and difficult to obtain in their own market, and could also desire the acquisition of targets with higher proportions of large deposits. Additionally, acquirers could be interested in market characteristics and these target bank characteristics could be a secondary consideration.

In this paper, I study what acquirers are willing to pay a premium over book value for with respect to target and market variables. Additionally, acquiring banks are matched with their target counterparts to investigate if any relative positions are important, such as differential growth or core deposits between the acquirer and target bank.

Univariate results indicate acquirers are growing more quickly than their target bank, but the target market is growing nearly three times as fast as the acquirer for loans, assets, and deposits. Acquirers are much larger, older, have higher ROA and ROE, and loans-to-assets. Core deposits-to-assets are higher for the target bank than the acquiring bank. Loans to assets are lower for the target compared to acquirer. Overall, these univariate results suggest that acquirers are entering faster growing markets and acquire targets with lower performance and growth in those markets, but higher core deposits.

The univariate results do not reveal what acquirers are actually willing to pay for in the merger, but rather the characteristics of what they are buying on average. To investigate what the acquirers are paying for in these mergers, pooled regression models are estimated using separate independent variables (target and acquirer) and with each independent variable relative

to each other (target divided by acquirer). The estimations are performed using both an ordinary least square (OLS) model as well as a truncated Tobit model.

For the models with separate independent variables for the acquirer and target, larger acquirers pay higher premiums over book value. When acquirers have higher core deposit ratios, they pay lower premiums, but pay higher premiums when the target has higher core deposits indicating a willingness to pay for these locally-oriented deposits. Acquirers pay more when their own capital ratios are high and their loan-losses are low. Acquirers also pay higher premiums over book value when the target has high proportions of large deposits.

When measuring the independent variables on a relative basis (target divided by acquirer) market growth is positive and significantly related to the premium over book value indicating acquirers pay for market growth and not target growth, even on a relative basis. The relative core deposit-to-asset variable shows that acquirers pay higher premiums when the target has larger proportions of core deposits, all else equal. Similarly, the premium over book value increases for large deposits on a relative basis indicating acquirers are interested in more competitive and national large deposits in addition to core deposits. Acquirers also pay higher premiums when the banks in the market are larger on average, but not when the overall total market is large.

This paper reveals what acquirers are willing to pay for in mergers and acquisitions. In general, they pay for target deposits and market growth. Acquirers also appear to pay more when they are larger and have higher capital ratios, both of which should have no bearing on the premium paid to the target, but could indicate that these banks have larger proportions of free cash flow that they are spending on acquisitions. Shareholders should be diligent in reviewing

takeover offers to discern what acquirers are buying, and if the premium over book value is

consistent with the strategic goal of the bank and what is valued in the takeover market.

References

Beatty, R. A., A. M. Santomero and M. L. Smirlock, 1987, Bank Merger Premiums: Analysis
and Evidence, Monograph Series in Finance and Economics, 13-33.

Becher, D. A. 2000. "The Valuation Effects of Mergers," *Journal of Corporate Finance* 6, 189-
214.

Berger, A. N., S. D. Bonime, L. G. Goldberg, and L. J. White. 2004. "The Dynamics of Market
Entry: The Effects of Mergers and Acquisitions on Entry in the Banking Industry." *Journal
of Business* 77, 797-834.

Cheng, D. C., B. E. Gup and L. D. Wall. 1989. Financial Determinants of Bank Takeovers,
Journal of Money, Credit and Banking 21, 524-536.

Cornett, M. M., and S. De, 1991, Common Stock Returns in Corporate Takeover Bids: Evidence
from Interstate Bank Mergers, *Journal of Banking and Finance* 15, 273-296.

Cyree, K. B., J.W. Wansley, and T.P. Boehm. 2000. "Determinants of Bank Growth Choice,"
Journal of Banking and Finance 24, 709-734.

Neely, W.P. 1987. "Banking Acquisitions: Acquirer and Target Shareholder Returns," *Financial
Management* VOLUME, 66-74.

Palia, D. 1993. "The Managerial, Regulatory, and Financial Determinants of Bank Merger
Premiums," *Journal of Industrial Economics* 41, 91-102.

Table 1
Means and t-tests for difference in means for matched bank acquirers and targets from 2002
through 2005.

Panel A: Market Level Statistics for Acquisition Markets in Sample and Non in Sample			
	In Sample (N=288)	Not In Sample (N=1,415)	t-statistic for difference
Market Avg. Asset Size (1000s)	688,318	997,834	2.22**
Market loan growth rate (2 yrs.)	0.0910	0.0780	-0.36
Market asset growth rate (2 yrs.)	0.0915	0.0667	-0.80
Market deposit growth rate (2 yrs.)	0.0897	0.0548	-1.34
Market Average Capital Ratio	0.1105	0.1105	0.01
Market Avg. Loan Losses/Assets	0.0014	0.0017	2.38**
Market Average ROA	0.0087	0.0086	-0.30
Market Average ROE	0.0862	0.0811	-1.50
Market Agric. Loans/Assets	0.0756	0.0422	-4.62***
Market Avg. Total Loans/Assets	0.6256	0.6298	0.68
Market Avg. Comm. Loans/Assets	0.1602	0.1528	-1.75*
Market Average Loans-to-Deposits	0.7627	0.7735	1.24
Market Average Core Deps./Assets	0.5654	0.5652	-0.03
Market Avg. Large Deps./Assets	0.1303	0.1286	-0.48
Panel B: Mean Differences between Targets and Acquirers (N=288 for both)			
Variable	Acquirer	Target	t-stat. for difference
Loan Growth	0.0361	0.0175	5.03***
Asset Growth	0.0344	0.0179	5.50***
Deposit Growth	0.0318	0.0169	4.75***
Total Assets	1,450,771	246,944	7.09***
Bank Age in Years	74.0764	56.7222	4.88***
Equity/Assets	0.1063	0.1101	-1.38
Loan Losses/Assets	0.0013	0.0012	0.31
Pre-tax ROA	0.0100	0.0057	7.81***
Pre-tax ROE	0.0995	0.0534	7.89***
Net Interest Margin	0.0267	0.0262	0.39
Loans Past Due > 90 Days/Assets	0.0008	0.0010	-1.00
Agricultural Loans/Assets	0.0638	0.0737	-1.00
Loans/Assets	0.6607	0.6290	3.03***
Liquid Assets/Assets	0.2565	0.2546	0.20
Comm. Loans/Assets	0.1616	0.1609	0.09
Core Deposits/Assets	0.5143	0.5672	-4.62***
Large Deposits/Assets	0.1212	0.1243	-0.55
Loans-to-deposits	0.8328	0.7782	3.63***

*** = significantly different at the one-percent level
**= significantly different at the five-percent level
* = significantly different at the ten-percent level

Table 2
OLS Regression with dependent variable premium over book value paid for the target bank from 2001 through 2005

Variable	Loan Growth Model		Asset Growth Model		Deposit Growth Model	
	Estimate	t-statistic	Estimate	t-statistic	Estimate	t-statistic
Intercept	-2.7395**	-1.97	-2.7353**	-1.97	-2.6259*	-1.90
YEAR02	0.0645	0.43	0.0604	0.40	0.0489	0.33
YEAR03	0.1183	0.85	0.1116	0.80	0.1011	0.73
YEAR04	0.1681	1.15	0.1658	1.14	0.1601	1.10
YEAR05	0.1152	0.80	0.1226	0.85	0.1160	0.80
LnAssets	0.2138***	3.93	0.2141***	3.93	0.2178***	4.00
Acquirer Growth	-0.8632	-0.97	-0.9056	-0.94	-0.6812	-0.73
Target Growth	0.8725	0.98	1.3929	1.12	1.8171	1.56
Market Growth	1.6820	1.16	2.2885	1.21	2.1760	1.27
COREDEP	-1.0278**	-2.36	-1.0747**	-2.48	-1.0707**	-2.47
TCOREDEP	1.5237***	3.76	1.5267***	3.78	1.5023***	3.71
MCOREDEP	-0.5837	-0.91	-0.4864	-0.76	-0.5486	-0.86
EBTROA	-10.1998	-1.37	-11.1585	-1.49	-11.1481	-1.49
CAPRATIO	8.5756***	5.66	8.5300***	5.64	8.4779***	5.64
LLR2TA	-23.1186*	-1.73	-24.0391*	-1.80	-23.4931*	-1.76
CNILOANS	-0.9639*	-1.87	-0.9155*	-1.78	-0.8920*	-1.73
AGLOANS	0.5324	0.73	0.6090	0.84	0.6335	0.88
LOAN2DEP	-0.2369	-0.79	-0.2110	-0.71	-0.2523	-0.85
BIGDEPS	-0.3696	-0.50	-0.3072	-0.41	-0.3229	-0.43
TAGE	-0.0019*	-1.74	-0.0019*	-1.78	-0.0018*	-1.64
TLNASSET	0.0172	0.31	0.0105	0.19	0.0064	0.11
TEBTROA	0.1710	0.03	-0.1684	-0.03	0.1233	0.02
TLLR2TA	9.1044	0.59	7.6490	0.50	7.8891	0.52
TCNILOAN	0.4583	1.20	0.4330	1.14	0.4494	1.18
TAGLOANS	-0.0783	-0.14	-0.1259	-0.23	-0.0952	-0.17
TLOAN2DP	0.2122	0.97	0.2113	0.98	0.2338	1.09
TBIGDEPS	1.7049**	2.62	1.6630**	2.56	1.6187**	2.50
LNSMASSET	0.0097	0.40	0.0116	0.48	0.0088	0.37
MEBTROA	-0.4941	-0.09	-0.7586	-0.15	-0.5765	-0.11
MCAPRATIO	0.2198	0.15	0.4397	0.30	0.4326	0.29
MLLR2TA	26.0267	0.84	28.8021	0.94	27.5572	0.90
MCNILOAN	-0.9167	-1.39	-0.8354	-1.27	-0.8849	-1.35
MAGLOANS	0.4657	0.63	0.4335	0.59	0.3835	0.52
MLOAN2DEP	-0.4978	-1.42	-0.4728	-1.37	-0.4666	-1.36
MLNASSET	0.0655	0.91	0.0591	0.82	0.0582	0.81
MBIGDEPS	-0.2040	-0.22	-0.1951	-0.21	-0.2172	-0.23
Adjusted R^2	0.3589		0.3606		0.3635	

The dependent variable is Premium, equal to the amount of goodwill plus the book value of the target firm, divided by the book value of the target firm. YEARXX is an indicator equal to one in year XX and zero otherwise. LnAssets is the log of total asset size. Growth is either loan, asset, or deposit growth and is compounded over the last eight quarter years for the acquirer, target, or target market. COREDEP is core deposits-to-assets; EBTROA is pre-tax ROA, CAPRATIO is the equity-to-asset ratio; LLR2TA is loan-loss reserve, scaled by assets; CNILOANS are commercial and industrial loans divided by assets; AGLOANS is agricultural loans divided by assets; LOAN2DEP is the loan-to-deposit ratio; BIGDEPS is the ratio of deposits > $100,000 to assets; TAGE is target age, and LNSMASSET is the log of total target market assets. In all cases, no prefix equals the variable for the acquirer, "T" prefixes for the target, and "M" prefix for the target market. N = 288 for targets and 288 for acquirers.
*,**,*** = significant at the ten-, five-, and one-percent level respectively.

Table 3
Censored Tobit Regression with dependent variable premium over book value paid for the target bank from 2001 through 2005

Variable	Loan Growth Model		Asset Growth Model		Deposit Growth Model	
	Estimate	t-statistic	Estimate	t-statistic	Estimate	t-statistic
Intercept	-2.7395**	-2.10	-2.7353**	-2.10	-2.6259**	-2.03
YEAR02	0.0645	0.46	0.0604	0.43	0.0489	0.35
YEAR03	0.1183	0.91	0.1116	0.85	0.1011	0.78
YEAR04	0.1681	1.23	0.1658	1.22	0.1600	1.18
YEAR05	0.1152	0.86	0.1226	0.91	0.1160	0.86
Lnassets	0.2138***	4.20	0.2141***	4.20	0.2178***	4.27
Acquirer Growth	-0.8632	-1.03	-0.9056	-1.01	-0.6812	-0.78
Target Growth	0.8725	1.05	1.3929	1.20	1.8171*	1.67
Market Growth	1.6820	1.24	2.2885	1.29	2.1760	1.36
COREDEP	-1.0278**	-2.52	-1.0747***	-2.65	-1.0707**	-2.64
TCOREDEP	1.5237***	4.02	1.5267***	4.04	1.5023***	3.97
MCOREDEP	-0.5837	-0.98	-0.4864	-0.81	-0.5486	-0.92
EBTROA	-10.1998	-1.46	-11.1585	-1.59	-11.1481	-1.59
CAPRATIO	8.5756***	6.05	8.5300***	6.03	8.4779***	6.03
LLR2TA	-23.1186*	-1.85	-24.0391*	-1.92	-23.4931*	-1.88
CNILOANS	-0.9639**	-2.00	-0.9154*	-1.90	-0.8920*	-1.85
AGLOANS	0.5324	0.79	0.6090	0.90	0.6335	0.94
LOAN2DEP	-0.2369	-0.85	-0.2110	-0.76	-0.2523	-0.91
BIGDEPS	-0.3696	-0.53	-0.3072	-0.44	-0.3229	-0.46
TAGE	-0.0019	0.00	-0.0019	0.00	-0.0018	0.00
TLNASSET	0.0172	0.33	0.0105	0.20	0.0064	0.12
TEBTROA	0.1710	0.03	-0.1684	-0.03	0.1233	0.02
TLLR2TA	9.1044	0.63	7.6490	0.53	7.8891	0.55
TCNILOAN	0.4583	1.29	0.4330	1.22	0.4494	1.27
TAGLOANS	-0.0783	-0.15	-0.1259	-0.24	-0.0952	-0.18
TLOAN2DP	0.2122	1.03	0.2113	1.04	0.2338	1.17
TBIGDEPS	1.7049***	2.80	1.6630***	2.74	1.6186***	2.67
LNSMASSET	0.0097	0.43	0.0116	0.52	0.0088	0.39
MEBTROA	-0.4941	-0.10	-0.7586	-0.16	-0.5765	-0.12
MCAPRATIO	0.2198	0.16	0.4397	0.32	0.4326	0.31
MLLR2TA	26.0267	0.90	28.8021	1.00	27.5572	0.96
MCNILOAN	-0.9167	-1.48	-0.8354	-1.36	-0.8849	-1.44
MAGLOANS	0.4657	0.68	0.4335	0.63	0.3835	0.56
MLOAN2DEP	-0.4978	-1.52	-0.4728	-1.46	-0.4666	-1.45
MLNASSET	0.0655	0.97	0.0591	0.87	0.0582	0.86
MBIGDEPS	-0.2040	-0.23	-0.1951	-0.22	-0.2172	-0.25
σ	0.5449***	23.96	0.5442***	23.96	0.5430***	23.96

The dependent variable is Premium, equal to the amount of goodwill plus the book value of the target firm, divided by the book value of the target firm. YEARXX is an indicator equal to one in year XX and zero otherwise. LnAssets is the log of total asset size. Growth is either loan, asset, or deposit growth and is compounded over the last eight quarter years for the acquirer, target, or target market. COREDEP is core deposits-to-assets; EBTROA is pre-tax ROA, CAPRATIO is the equity-to-asset ratio; LLR2TA is loan-loss reserve, scaled by assets; CNILOANS are commercial and industrial loans divided by assets; AGLOANS is agricultural loans divided by assets; LOAN2DEP is the loan-to-deposit ratio; BIGDEPS is the ratio of deposits > $100,000 to assets; TAGE is target age, and LNSMASSET is the log of total target market assets. In all cases, no prefix equals the variable for the acquirer, "T" prefixes for the target, and "M" prefix for the target market. N = 288 for targets and 288 for acquirers.
*,**,*** = significant at the ten-, five-, and one-percent level respectively.

Table 4
OLS regression with dependent variable premium over book value paid for the target bank from 2001 through
2005 with target-to-acquirer relative independent variables

Variable	Loan Growth Model		Asset Growth Model		Deposit Growth Model	
	Estimate	t-statistic	Estimate	t-statistic	Estimate	t-statistic
Intercept	-0.2352	-0.17	-0.4479	-0.33	-0.3093	-0.23
YEAR02	0.0233	0.14	0.0308	0.18	0.0193	0.12
YEAR03	0.2345	1.50	0.2152	1.37	0.2159	1.38
YEAR04	0.1812	1.10	0.1754	1.07	0.1782	1.09
YEAR05	0.1911	1.20	0.2100	1.31	0.2188	1.37
Rassets	-0.2792	-1.17	-0.2707	-1.11	-0.2778	-1.16
Relative Growth	-0.0006	-0.63	0.0017	0.52	0.0003	0.11
Market Growth	3.8072**	2.29	4.4842**	2.07	5.1960**	2.63
RCOREDEP	0.4024***	3.44	0.4072***	3.48	0.4144***	3.55
MCOREDEP	-0.9723	-1.34	-0.8344	-1.14	-0.8831	-1.22
RAGE	-0.0065	-0.53	-0.0088	-0.71	-0.0096	-0.77
REBTROA	0.0023	0.77	0.0022	0.73	0.0025	0.84
RLLR2TA	0.0000	-0.07	-0.0001	-0.15	-0.0001	-0.14
RCNILOAN	0.0507	0.90	0.0536	0.95	0.0480	0.85
RLOAN2DP	0.2340	1.28	0.2115	1.15	0.2172	1.19
RBIGDEPS	0.1433**	2.42	0.1350**	2.25	0.1331**	2.24
LNSMASSET	0.0060	0.22	0.0074	0.28	0.0033	0.12
MEBTROA	-3.0319	-0.56	-4.0925	-0.75	-3.5115	-0.65
MCAPRATIO	0.1987	0.12	0.4952	0.30	0.3244	0.20
MLLR2TA	-18.0498	-0.54	-18.7968	-0.56	-18.2692	-0.55
MCNILOAN	-1.3331*	-1.87	-1.1760*	-1.67	-1.2830*	-1.82
MAGLOANS	-0.0328	-0.07	-0.0206	-0.04	0.0050	0.01
MLOAN2DEP	-0.6793*	-1.86	-0.5606	-1.57	-0.5323	-1.49
MLNASSET	0.1744**	2.16	0.1722**	2.13	0.1688**	2.09
MBIGDEPS	-0.1783	-0.18	-0.0451	-0.04	-0.2719	-0.27
Adjusted R^2	0.2239		0.2211		0.2280	

The dependent variable is Premium, equal to the amount of goodwill plus the book value of the target firm, divided
by the book value of the target firm. YEARXX is an indicator equal to one in year XX and zero otherwise. Rassets
is the ratio or target to acquirer total asset size. Relative Growth is either loan, asset, or deposit growth of the target
compounded over the last eight quarter years divided by the acquirer's. Market growth is the compound growth for
the target market. RCOREDEP is the target core deposits-to-assets relative to the acquirer; MCOREDEP is the
target market core deposit-to-asset ratio; RAGE is the relative age of the target to acquirer; REBTROA is relative
pre-tax ROA, RLLR2TA is relative loan-loss reserve, scaled by assets; RCNILOANS are target to acquirer relative
commercial and industrial loans divided by assets; RLOAN2DP is the relative loan-to-deposit ratio; RBIGDEPS is
the ratio of target to acquirer deposits > $100,000 to assets; LNSMASSET is the log of total target market assets. In
all cases, an "R" prefix is for the target relative to the acquirer, and an "M" prefix for the target market. N = 288 for
matched targets and acquirers.
*,**,*** = significant at the ten-, five-, and one-percent level respectively.

Table 5

Censored Tobit regression with dependent variable premium over book value paid for the target bank from 2001 through 2005 with target-to-acquirer relative independent variables

Variable	Loan Growth Model		Asset Growth Model		Deposit Growth Model	
	Estimate	t-statistic	Estimate	t-statistic	Estimate	t-statistic
Intercept	-0.2352	-0.18	-0.4479	-0.34	-0.3093	-0.24
YEAR02	0.0233	0.15	0.0308	0.19	0.0193	0.12
YEAR03	0.2345	1.57	0.2152	1.44	0.2159	1.45
YEAR04	0.1812	1.16	0.1754	1.12	0.1782	1.14
YEAR05	0.1911	1.26	0.2100	1.38	0.2188	1.44
Rassets	-0.2791	-1.22	-0.2707	-1.17	-0.2778	-1.22
Relative Growth	-0.0006	0.01	0.0017	0.01	0.0003	0.01
Market Growth	3.8072**	2.41	4.4842**	2.18	5.1960**	2.77
RCOREDEP	0.4024***	3.62	0.4072***	3.66	0.4144***	3.73
MCOREDEP	-0.9723	-1.41	-0.8344	-1.20	-0.8831	-1.28
RAGE	-0.0065	-0.55	-0.0088	-0.74	-0.0096	-0.81
REBTROA	0.0023	0.01	0.0022	0.01	0.0025	0.01
RLLR2TA	0.0000	0.01	-0.0001	0.01	-0.0001	0.01
RCNILOAN	0.0507	0.95	0.0536	1.00	0.0480	0.90
RLOAN2DP	0.2340	1.34	0.2115	1.21	0.2172	1.25
RBIGDEPS	0.1433**	2.54	0.1350**	2.36	0.1331**	2.36
LNSMASSET	0.0059	0.23	0.0074	0.29	0.0033	0.13
MEBTROA	-3.0319	-0.59	-4.0925	-0.79	-3.5115	-0.68
MCAPRATIO	0.1987	0.12	0.4952	0.31	0.3244	0.20
MLLR2TA	-18.0498	-0.57	-18.7968	-0.59	-18.2692	-0.58
MCNILOAN	-1.3331**	-1.96	-1.1760*	-1.75	-1.2830*	-1.91
MAGLOANS	-0.0328	-0.07	-0.0206	-0.04	0.0050	0.01
MLOAN2DEP	-0.6793**	-1.96	-0.5606*	-1.65	-0.5323	-1.57
MLNASSET	0.1744**	2.27	0.1722**	2.23	0.1688**	2.20
MBIGDEPS	-0.1783	-0.19	-0.0451	-0.05	-0.2719	-0.29
σ	0.6168***	22.98	0.6179***	22.98	0.6151***	22.98

The dependent variable is Premium, equal to the amount of goodwill plus the book value of the target firm, divided by the book value of the target firm. YEARXX is an indicator equal to one in year XX and zero otherwise. Rassets is the ratio or target to acquirer total asset size. Relative Growth is either loan, asset, or deposit growth of the target compounded over the last eight quarter years divided by the acquirer's. Market growth is the compound growth for the target market. RCOREDEP is the target core deposits-to-assets relative to the acquirer; MCOREDEP is the target market core deposit-to-asset ratio; RAGE is the relative age of the target to acquirer; REBTROA is relative pre-tax ROA, RLLR2TA is relative loan-loss reserve, scaled by assets; RCNILOANS are target to acquirer relative commercial and industrial loans divided by assets; RLOAN2DP is the relative loan-to-deposit ratio; RBIGDEPS is the ratio of target to acquirer deposits > \$100,000 to assets; LNSMASSET is the log of total target market assets. In all cases, an "R" prefix is for the target relative to the acquirer, and an "M" prefix for the target market. N = 288 for matched targets and acquirers.

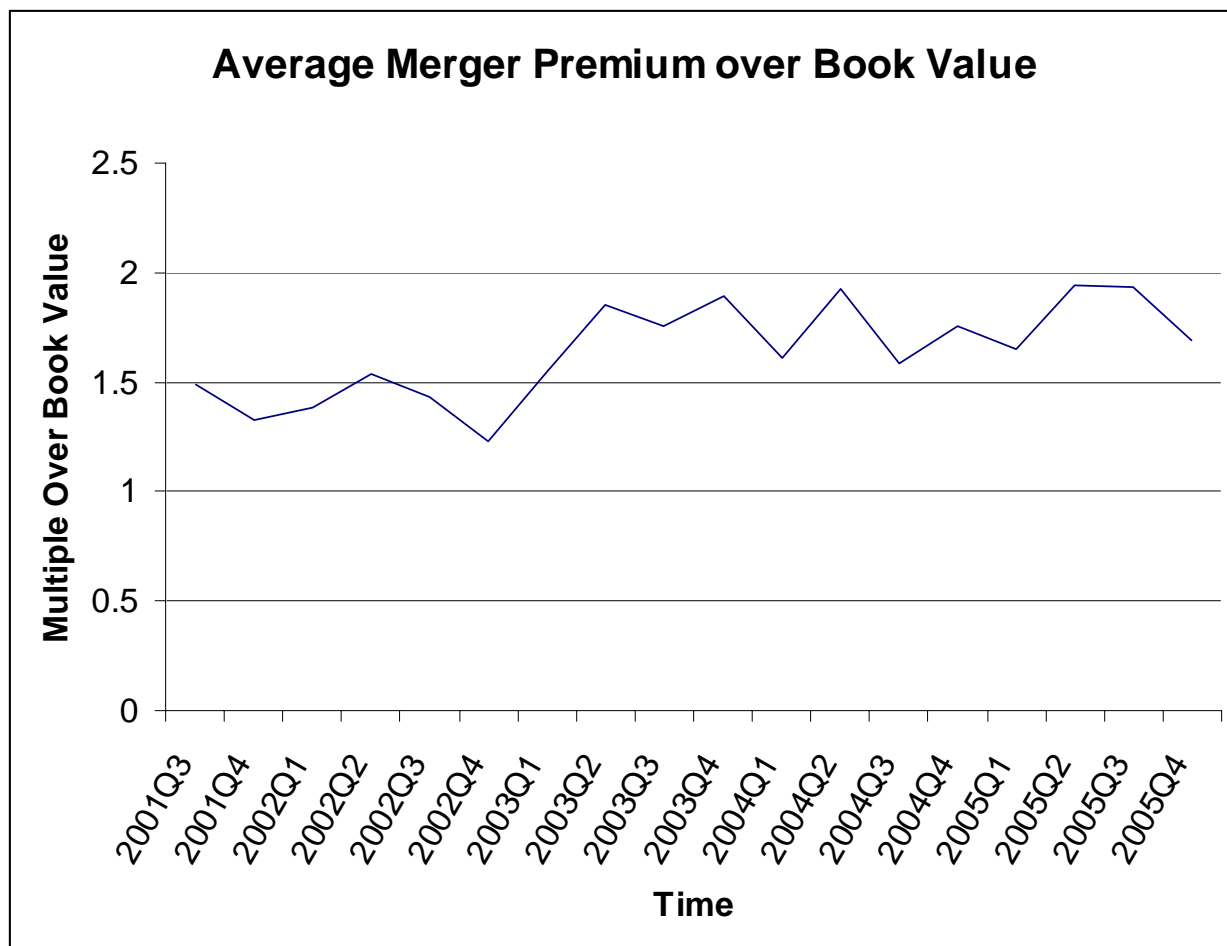*,**,*** = significant at the ten-, five-, and one-percent level respectively.

Figure 1
The multiple over book value is (Target Book Value + Premium over Book
Value)/Target Book Value with the values representing quarterly averages.