Price Discovery in Opaque Markets

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Abstract

This paper examines the share price revaluations of banks from bank-specific events. Results show that in the period 2000 through 2006, merger announcements convey information to the market about the value of non-merging industry banks. There is an upward revision in the total market value of banks and the magnitudes of the revaluation are higher for industry banks with larger investments in opaque assets. The findings are robust to the inclusion of competitive and spillover effects that may be associated with heightened competition or likelihood of takeover. In addition, we assess the influence of opacity on the declines in bank values in the post sample period January 2007 through June 2008. We find that industry banks which benefited the most from merger activities in 2000-2006 also experienced the largest losses from the credit crisis that followed. Our results show that contagion is a characteristic of opaque markets. The price volatility engendered by opacity contributes to financial fragility.

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1.0 Introduction

The credit crisis in financial markets that began in the latter half of 2007 is a reminder that banks are opaque entities. Precipitated by a pricing correction in housing, banks were forced to write off billions of dollars of mortgage loans, primarily to subprime borrowers, as defaults rose and the quality of existing loan portfolios deteriorated. The tightening of lending standards as banks deleveraged and contracted resulted in a significant constriction of credit. In response to the turmoil, the Federal Reserve, on more than one occasion, reduced the federal funds as well as discount window rates and injected several billion dollars of liquidity into financial markets through open market operations. In addition, the Fed took the unprecedented step of extending its discount window lending facility to investment banks and intervened to prevent systemic failure from an insolvency of then 5th largest U.S. investment bank, Bear Stearns.

As Morgan (2002) observes:

> "Banks are black boxes. Money goes in, and money goes out, but the risks taken in the process of intermediation are hard to observe from outside the bank." (p.874)

Precise valuation is challenging for investors because imprecise knowledge about the underlying profitability and risks of the firm and/or the enigmatic quality and credibility of a firm's information disclosures creates information uncertainty.[1,2] The mispricing that is a consequence of opacity accentuates the contagion effects of firm-specific news events, making opaque industries especially susceptible to intra-industry information transfers. An information event about the value of one "black box" is used by the market to assess the value of others. The

[1]See Hirshsheifer (2001); Duffie and Lando (2001). Easley, Hvidkjaer, and O'Hara (2002) and Easley and O'Hara (2004) show that information risk affects asset returns and the cost of capital.

[2]Fair value accounting guidelines were instituted with the intention of creating greater transparency. In practice, implementation was problematic. For illiquid or non-traded assets, model driven prices can be poor substitutes for intrinsic values (Hughes and Tett, 2008), and for assets traded infrequently or in thin markets, prices can deviate substantially from intrinsic values.

ensuing price volatility, which can lead to speculative bubbles and liquidity induced credit crises, contributes to the fragility of the financial system.[3] Because of the critical role banks assume in overall economic activity (Bernanke, 1983), opaqueness is a reason for regulating banks (Flannery, 1998).

In this paper we examine if the opaqueness of a bank has an impact on its share price revaluation around firm-specific news about other banks. The primary event we examine is the announcement of a bank merger. We find that, on average, merger announcements convey positive information about the values of other banks. More importantly, following merger announcements, the cumulative abnormal returns (CAR) of banks not involved in mergers are higher for banks with larger investments in opaque assets. The finding is robust to adjustments for competitive effects from the possibility of heightened competition and spillover effects associated a higher probability of takeover. In addition, we show that banks which benefitted the most from revaluations due to merger activity in 2000-2006 also experienced the largest share price declines created by the subprime mortgage and credit crises in 2007. Opacity can contribute to volatility and financial fragility.

The remaining sections of the paper are organized as follows. Section 2 provides a summary of prior literature related to the opacity and market discipline of banks, as well as banking literature related to intra-industry information transfers. Section 3 discusses the research design and the data used in the study. Empirical results are reported in Section 4, and Section 5 concludes.

2.0 Literature Review

Early papers on intra-industry information transfers in banking are silent on the impact of opaqueness on cross-sectional differences in the magnitude of share price revaluations. Aharony and Swary (1983) show that the contagion effects surrounding bank failures are correlated with

[3]Pastor and Stambaugh (2003) show that liquidity risk is a priced factor.

activities in which the failed bank is concentrated. In a sample of bank merger announcements from 1983-1996, Akhigbe and Madura (1999) find a positive revaluation effect for "rival" banks located in the same state as the target.[4] The revaluations, which are higher when the performance of the target bank is better, are inconsistent with heightened competition from merged banks that are financially stronger entities. Rather, the revaluations, which are higher for rival banks that are smaller and have poorer performance, appear to reflect an increased probability of takeover. Revaluations are also higher for rival banks that were subsequently acquired in the next two years.

Prior research that addresses bank opacity falls into two broad categories: asset composition as sources of bank opacity and the ability of the market to discipline the risk taking behavior of banks.

2.1 Asset Composition as Sources of Bank Opacity

In their function as financial intermediaries, banks have relatively small investments in physical assets. Loans are the primary assets for most banks and these assets are inherently opaque (Campbell and Kracaw, 1980; Berlin and Loeys, 1988). As privately negotiated transactions between a bank and borrower, banks have privileged information regarding the characteristics of the loan contract and the creditworthiness of its borrowers. This informational asymmetry between borrowers and lenders is, Leland and Pyle (1977) note, a primary reason for the existence of financial intermediaries.

Trading assets, which consist mostly of securities and derivative instruments that a bank intends to buy or sell on an ongoing basis, are another source of opacity. Like loans, trading assets are held almost exclusively by banks, though concentrated primarily at the largest banks. But unlike loans, the source of opacity in trading assets differs. Loans are typically held-to-

[4]The competitive environment for banks changed dramatically with the passage of the Riegle-Neal Act in 1994, which eliminated virtually all restrictions on interstate banking.

maturity investments and the source of opacity is unknown credit risk – the ability and willingness of the borrower to repay. In contrast, trading assets are typically very short-term investments, and consequently, liquidity risk rather than unknown credit risk is more of a concern for the market.

The liquidity risk associated with trading assets can take two forms. When markets are functioning properly, trading assets are generally quite liquid. However, because the composition of trading assets can change very quickly between quarterly reporting dates, it can be difficult to tell what trading activity occurs throughout a given quarter – a characteristic that Morgan (2002) calls "slippery". For financial institutions, Myers and Rajan (1998) argue that the unusually liquid nature of trading securities can produce unintended consequences because it does not force the management of the institution to make credible commitments to investment strategies that protect investors.

A second form of liquidity risk can arise when markets cease to function properly. In this situation, trading assets can become very *illiquid*. Accounting rules require that trading assets are marked-to-market on the balance sheet, and this market value is usually determined by market transactions involving similar securities.[5] When markets for trading assets cease to function and "dry up", as it did with mortgage backed securities, it becomes difficult to ascertain the true intrinsic value of these securities based on observed market prices. As a result, banks are forced to model-driven methods for estimating "market" value.[6] In such an environment, accountants and auditors typically push for very conservative estimates of market value, which can result in large losses for banks.

The assets of a bank, loans and trading assets in particular, are the primary sources of opacity. The information uncertainty related to the liabilities of a bank is insignificant. Unless

[5]See FASB Statement 157 *Fair Value Measurements.*

[6]In an address to the Economic Club of New York on October 15, 2007, Federal Reserve Chairman Ben Bernanke responded to a question of what information he would like to have but does not possess with "I'd like to know what those damn things are worth," in reference to repackaged debt securities.

the bank fraudulently misreports the level of deposits, investors know the amount with certainty. Moreover, the cash outflows associated with deposits consist of interest payments and withdrawals. The variability in interest payments is due to changes in interest rates but this risk is common across all banks. A bank run can also contribute to risk but provided the bank is not on the verge of failure, the probability of large withdrawals is low given federal deposit insurance.

2.2. Bank Opacity and Market Discipline

The opacity of banks *relative* to non-banks and the effectiveness of market discipline as a substitute for regulation are matters of empirical dispute.

Bank Opacity

Analyzing the ratings assigned to new bond issues by the two major rating agencies, Moody's and Standard and Poor's (S&P), Morgan (2002) finds that Moody's and S&P disagree more frequently and there is a wider rating divergence on new bonds issued by banks than non-banks. The greater likelihood for "split" ratings in the bank than a matched non-bank sample and the positive relation between the incidence of and divergence in split ratings and the amount of loans and trading assets that banks hold is evidence that banks are more opaque than non-banks.

Flannery, Kwan, and Nimalendran (2004) ("FKN") investigate opacity through differences in market microstructure characteristics between banks and a matched sample of non-banks. The size of the adverse selection component of the bid-ask spread, trading volume, and standard deviation of equity returns as well as the accuracy and dispersion of earnings forecasts are used as proxies for opacity. If banks are more opaque, FKN argue that banks will have larger bid-ask spreads, unusually high or low trading volume, larger standard deviations of equity returns, and earnings forecasts that are less accurate and more widely dispersed.

For banks listed on the New York Stock Exchange (NYSE), FKN find that the bid-ask

spread and trading volume for banks are similar to the non-bank matched sample. For NASDAQ listed banks, the bid-ask spreads are similar to the non-bank matched sample, but the trading volume is much lower for banks. For both NYSE and NASDAQ listed banks and their corresponding matched sample of non-banks, the standard deviation of equity returns is lower for banks than non-banks, which suggests that banks are actually less opaque. The accuracy and dispersion of earnings forecasts for NYSE listed banks are essentially the same as the non-bank matched sample. For smaller NASDAQ listed banks, however, earnings forecasts are less dispersed and more accurate for banks than non-banks. FKN (2004) conclude that "banking assets are not unusually opaque, they are simply boring" (p. 419).

FKN (2004) also examine the relationship between their proxies for opacity and the financial characteristics of the bank, controlling for other microstructure variables. Like Morgan (2002), they find some evidence that loans are a contributing factor to bank opacity, especially in the NASDAQ sample. But trading assets do not appear to be particularly relevant. In different regression specifications, the coefficient for trading assets is often the wrong (negative) sign, which implies trading assets are a source of *transparency*. Any relation between banks' financial characteristics and market microstructure measures of opacity is weak at best, and the explanatory power that financial characteristics add to the regression models is small.

In an approach similar to Morgan (2002), Livingston, Naranjo and Zhou (2007) analyze the relationship between the split bond ratings of non-financial firms and seven different proxies for opacity that includes the adverse selection component of the bid-ask spread used by (FKN, 2004). They find that the incidence of a split rating is positively related to all proxies of opacity *except* the bid-ask spread. A possible interpretation is simply that the adverse selection component of the bid-ask spread is not a useful proxy for opacity and may explain why FKN (2004) fail to establish a strong connection between the adverse selection components of the bid-ask spread and a bank's asset composition.

Market Discipline

Regulation mitigates the moral hazard problem created by deposit insurance (Grossman, 1992; Wheelock and Kumbhakar, 1995). But markets can also serve the same function. Restrictive bond covenants can be used by investors to limit bank risk taking (Goyal, 2005). Further, the valuation discipline imposed by markets can constrain risk taking behavior especially for large financial firms (Flannery, 1998).

Flannery and Sorescu (1996) show that yields on subordinated notes and debentures (SND) are positively correlated with bank-specific measures of risk, such as credit quality and leverage. The degree of correlation strengthened during the late 1980s and early 1990s, as regulators became more willing to allow holders of SNDs to absorb losses. The market appears able to recognize increases in bank risk and penalize debt prices accordingly.

Morgan and Stiroh (2001) find similar results. Trading activities, credit card lending, as well as commercial and industrial lending, all tend to increase the spreads on new issues of SNDs. Moreover, spreads on new issues of SNDs are impacted most by temporal changes in the asset composition of issuing banks. But surprisingly, SND issue spreads do not appear to be explained by differences in the asset structures *across* banks.

Bliss and Flannery (2002) examine whether price changes from equity and bond markets have the ability to influence the behavior of managers. Specifically, they model the relationship of past security returns with changes in discretionary managerial decisions and search for evidence that poor security returns encourage managers to undertake positive changes. The evidence supports the premise that equity and bond markets are reasonably successful in *monitoring* the behavior of banks, but neither is particularly effective at *influencing* subsequent managerial behavior. Based on these findings, Bliss and Flannery (2002) conclude that market forces alone are incapable of effectively disciplining banks. Regulation is still necessary to dissuade excessive risk-taking by bank managers.

3.0 Research Design

3.1 Industry Bank Sample

Our sample consists of publicly traded domestic banks or financial holding companies in the Center for Research in Security Prices (CRSP) SIC 6020-6030, 6712, or 6719 classification for which FR Y-9C data were available for the years ended 1999 through 2006.[7] Stock price data for periods up to 2007 were obtained from CRSP, and from Yahoo! Finance, for the period January 2008 through June 2008. Because the reporting threshold for the FR Y-9C was raised from $150 million to $500 million in 2006, we excluded banks with inflation-adjusted assets less than $500 million to ensure consistency.[8] Further, banks that did not have positive trading volume in at least 85% of the days for which data were available from CRSP were also purged.

3.2 Merger Bank Sample

We identified announcements of successfully completed domestic mergers and acquisitions involving publicly traded banks over the period 2000 through 2006 from the Thomson Financial SDC Platinum Mergers and Acquisitions Database (SDC).[9,10] From this initial list, data from CRSP and FR Y-9C for the target and acquirer banks were available for 94 announcements. We excluded: 2 transactions that were flagged as a "rumored" deal prior to the actual announcement; 4 small mergers where the inflation-adjusted asset size of the target was below $500 million; and 4 where the target did not have CRSP or FR Y-9C data at least one year prior to the merger announcement. In addition, there were 4 situations where two mergers were announced on the same day. In these cases, we retained the merger transaction that involved the larger target bank resulting in a final sample of 80 merger announcements.

3.3 Descriptive Statistics

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[7] The National Information Center (NIC) website was used to match the CRSP and FR Y-9C data.

[8] We use December 31, 2006 as the base period and the GDP deflator as the rate of inflation.

[9] We start with target SIC codes in SDC that might reasonably indicate a BHC or FHC: 6021, 6022, 6029, 6712, and 6719. A few BHC targets (four) were also discovered in SDC under SIC code 6036.

[10] We excluded any transaction where the acquirer did not have majority control (>50%). For all mergers in the sample, the acquirer achieved complete control (100% ownership) of the target.

Figure 1 describes the primary bank variables used in the study. Balance sheet variables are quarter end prior to the merger announcements, and similarly for income variables, as annualized quarterly amounts. Appendix A provides a detailed description of how the variables are constructed.

Variables	Description
REALLOAN	Commercial and residential real estate loans, net
OTHLOAN	All other loans, net
OTHOPAQ	All other opaque assets: trading assets[11], fixed assets, intangible assets, other assets, investment in unconsolidated subsidiary, other real estate owned, and opaque available-for-sale and held-to-maturity securities[12]
TRANSP	All transparent assets: cash, federal funds sold, securities purchased under agreements to resell, available-for-sale and held-to-maturity securities not defined as opaque
EBT	Earnings before taxes and extraordinary items
NPL	Non-performing loans: those which are not accruing or more than 90 days past due
DEP	Core deposits
NONINT	Noninterest income, excluding trading revenue
MVBVEQ	Market-to-book value of equity

Figure 1

The target and bidder banks are collectively referred to as the "merger" banks. All other banks are considered "industry" banks, with three exceptions. First, bidder banks are not categorized as industry banks over a +/- 30 calendar day window around the date the acquisition is announced. Second, target banks are excluded as industry banks 30 calendar days prior to the merger announcement and thereafter. Third, a bank must have continuously traded one year prior to the merger announcement to be included. This restriction ensures that the number of trading days is sufficient to accurately compute an abnormal return over the event window.

[11]The reader may note that trading assets are not treated as a separate category but included in OTHOPAQ instead. The reason for this treatment is that the majority of target banks hold no trading assets and it is unlikely that their acquisition provides much information to the market about the value of trading assets.

[12]Opaque securities are securities that do not have an explicit or implicit guarantee from a federal government-related entity.

Comparing Industry Banks to Merger Banks

The industry banks are compared to merger banks in Table 1. There are a total of 19,673 firm-quarter observations in the industry bank sample, with an average of 246 firm-quarter observations at each merger announcement. The minimum (maximum) number of industry banks is 230 (258) involving 357 unique banks across all 80 merger announcements.

Insert Table 1 here.

For the sample of merger banks there are 160 firm-quarter observations across 80 merger announcements that involve 49 unique acquiring banks because some banks were multiple acquirers. Since a bank can only be a target once, there are of course 80 unique target banks.

Merger banks do not appear to differ significantly from industry banks, with two exceptions. The first is size. In terms of assets, merger banks are, on average, roughly two times larger than industry banks. This size difference is driven primarily by acquirers rather than targets. The significantly skewed distribution of assets across merger as well as industry banks confirms a well-known fact – there are a few very large banks and numerous small banks. The second is *OTHOPAQ*. Merger banks hold significantly more of this asset. Core deposits and noninterest income are also slightly lower and higher respectively for merger banks.

ASSETDIV, computed as a risk-weighted average investment in opaque assets, is a composite measure of asset diversity. Bank equity betas are decomposed across the four asset categories, creating a proxy for the average risk associated with investments in each asset category. The average asset betas for the three categories of opaque assets are used as the risk weights, with higher (lower) asset betas assigning more (less) weight. Higher values of the index indicate a greater degree of opacity. Merger banks are significantly more opaque than industry banks.

Comparing Acquirers to Targets

From Table 2, there are significant differences between bidders and targets. Bidder banks

are significantly larger than target banks and have higher market-to-book equity (*MVBVEQ*) multiples. Bidder banks also hold less real estate loans *(REALLOAN*), and more other loans (*OTHLOAN*) and other opaque assets (*OTHOPAQ*). In contrast, targets hold slightly more transparent assets although the difference is not statistically significant. The differences in asset composition are not surprising and likely driven by the difference in size between bidders and targets. Larger banks are more likely to be involved in credit card lending (included in *OTHLOAN*) and trading activities (included in *OTHOPAQ*). The relative propensity for large banks to be involved in such activities reduces the amount of real estate lending. Overall, bidders are significantly more opaque than targets.

Insert Table 2 here.

In addition to differences in asset composition, note also bidder banks are more profitable and have higher amounts of noninterest income. Target banks, in contrast, have significantly more core deposits than bidder banks. Access to valuable core deposits of targets may be a possible motivation for acquisition.

Merger Deal Characteristics

Descriptive statistics are presented at the bottom of Table 2. The premium paid to the target shareholders (*PREM28*) is calculated as follows:

$$PREM\,28 = \frac{P^* - P_{-28}}{P_{-28}} \tag{1}$$

where P^* is the share price paid to target bank shareholders and P_{-28} is the target bank share price 28 calendar days prior to the announcement date.[13] The mean (median) premium is 33.03% (27.91%). Shareholders of target banks receive a substantial takeover premium.

We calculate the CAR for both the target (*TARCAR*) and bidder (*ACQCAR*) banks around

[13]The stock price 28 days prior to the announcement date is obtained from SDC and verified in CRSP.

the merger announcement. The combined announcement return (*COMBCAR*) is a weighted CAR based on the market values of equity at quarter end prior to the announcement. The returns generating model to compute abnormal returns for targets and bidders utilizes the three Fama-French (1992) factors and the Pastor-Stambaugh (2003) liquidity innovation factor as risk proxies and is estimated over trading days -312 to -60 (a period of approximately one year) prior to the merger announcement date.[14] The event window is an 11-day period defined by +/-5 trading days around the merger announcement date. Daily abnormal returns are computed and summed over the event period to determine the CAR.

Consistent with prior research on the announcement period returns of bank mergers (Houston and Ryngaert, 1994; Delong, 2001): the mean (median) cumulative abnormal return of targets, *TARCAR*, of 22.29% (18.41%) are significantly positive at the 1% level; but the mean (median) cumulative abnormal return of acquirers, *ACQCAR*, of -0.95% (-0.73%) are not significantly different from zero. The significantly positive mean (median) combined announcement return, (*COMBCAR*), of 1.64% (1.23) is consistent with shareholder value creation.[15]

Lastly, Table 2 also shows that bank mergers are predominantly "friendly" – only 1 of 80 mergers was through a tender offer.[16] Moreover, in 10% of the mergers, the method of payment is at least 75% in cash.

4.0 Empirical Results

4.1 Industry Price Revaluation

The industry revaluation associated with merger announcements is the cross-sectional sum of cumulative abnormal returns across industry banks. Estimating the cumulative abnormal

[14]Because the Pastor-Stambaugh liquidity innovation variable is only available as a monthly variable from CRSP, the variable takes on the same value each day in a given month.

[15]A majority of the mergers in the sample are geographic focused, which Delong (2001) suggests increases the potential for value creation.

[16]Since only one merger in the sample is consummated via tender offer, this variable is not considered to be a relevant factor in further analysis.

return for each industry bank associated with all the merger announcements over the entire sample period using a traditional event study approach that divides returns into an estimation period and event window for each merger announcement is problematic because merger announcements over the entire sample period overlap. Instead, we estimate a single daily returns regression for each bank over the period 1999 to 2006 with daily dummy variables to capture the abnormal returns around an 11-day event window defined by +/-5 trading days around each merger announcement date.[17] The three Fama-French (1992) and Pastor and Stambaugh (2003) liquidity innovation factors are used as risk proxies. The time-series model is:

$$r_t = \alpha + \beta_1 MKT_t + \beta_2 SMB_t + \beta_3 HML_t + \beta_4 LIQ_t + \beta_5 EVENT_t + \varepsilon_t \quad (2)$$

where *MKT* is the daily equal-weighted CRSP index[18] minus the risk free rate, *SMB* is the Fama-French daily size factor, *HML* is the Fama-French daily value factor, *LIQ* is the Pastor-Stambaugh liquidity innovation factor[19], and *EVENT* is a vector of daily dummy variables that takes on a value of 1 if day *t* is within +/- 5 trading days of a merger announcement. The estimated coefficients for *EVENT* capture the daily abnormal returns associated with merger announcements.

For an industry bank that does not trade over the entire eight year period, the estimation period is reduced to the actual number of days available. A bank must trade continuously at least one year prior to a merger announcement to compute an abnormal return associated with that event. If a particular day falls within more than one merger announcement event window, then the estimated coefficient of *EVENT* is allocated equally across the merger event windows on that day to avoid "double-counting" the abnormal return.[20] The CAR for each industry bank around

[17] An alterative event window of +/-3 trading days produces similar results.

[18] Fama-French (1992) use a value-weighted index as a proxy for the market. We choose the equal-weighted index in place of the value-weighted index since the banking industry was becoming an increasingly larger part of the value-weighted index during this time period.

[19] The Pastor-Stambaugh liquidity innovation variable is only available as a monthly variable and is obtained from CRSP. The variable takes the same value in the model for each day of a given month.

[20] Alternative methods of allocating the daily abnormal return for overlapping events were considered, such as the

merger announcements is computed as the sum of the (allocated) daily abnormal returns over 11-day event windows.

Insert Table 3 here.

Summary statistics for the industry revaluation associated with merger announcements are presented in Table 3 over the entire sample period and two equal length sub-periods as well as by calendar year. The results reported in Table 3 are Winsorized using 1% and 99% levels of raw industry CARs at each merger announcement. The CARs over 11-day event windows are expressed in percentage points. The mean, percentiles, and standard deviation of industry revaluations across all merger announcements are presented for both raw CAR and precision-adjusted CAR. Precision-adjusted CAR is computed as raw CAR divided by the average standard error of the daily event dummies from the 4-factor returns generating model used to compute the abnormal returns for each industry bank. The last three columns report the average values of an equal-weighted, value-weighted, and precision-weighted CAR.

Across all events, the overall (raw) industry revaluation is positive with a mean (median) of 0.843% (0.433%), both of which are significantly different from zero at the 1% level. The magnitudes of industry revaluations are time-variant. Industry revaluations in the first half of the sample period are much higher than in the second half of the sample period, driven primarily by the years 2000 and 2002. Moreover, although industry revaluations in the latter half of the sample period appear to be much lower, 2006 has the second largest industry revaluation. The precision-adjusted CAR, though smaller in magnitude, demonstrates patterns similar to raw CARs.

Insert Figure 2 here.

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size of the target, the distance (number of days) from the actual merger announcement, or the combined announcement return of the target and acquirer. *A priori*, however, it is difficult to justify any particular one method of allocation over another, therefore we undertake a naïve approach by using an equal allocation.

The magnitude and spacing of the merger announcements is shown in Figure 2. Rectangular flags represent the median (raw) industry revaluation and bar heights reflect the difference between the 75th and 25th percentiles. Merger announcements occur in clusters and this is especially true in the latter part of 2003 through the early part of 2004. A majority of the median values are positive, but it is important to note that not all merger announcements are associated with a positive industry revaluation effect.

Lastly, Figures 2A and 2B graph the distribution of industry revaluation across all merger announcements over the entire sample period based on raw CAR and precision-adjusted CAR respectively. The curves represent normal distributions with mean zero and a standard deviation equal to the overall standard deviation. Both histograms show a distinct right skew. Consistent with the findings of Akhigbe and Madura (1999), there is overall positive industry revaluation surrounding the announcement of a bank merger.

Insert Figure 2A and 2B here.

4.2 Industry Revaluation and Opacity

The previous section shows that, on average, a bank merger announcement creates a positive industry revaluation. This section examines the relationship between the asset composition of industry banks and the magnitudes of their revaluations. We rank the industry banks both into deciles and quartiles based on the percent of transparent assets (*TRANSP*) held by the bank. The ranking procedure is implemented at each merger announcement. The mean, median, and standard deviation of the industry bank CAR are computed for each asset category.

Insert Table 4 here.

The results are presented in Panel A of Table 4. The industry bank decile with the most opaque (fewest transparent) assets has a mean (median) industry revaluation of 1.007 (0.513) compared to 0.409 (0.311) respectively for the least opaque industry bank decile. The mean (median) differences are significant at the 1% level. A similar pattern emerges for quartile

rankings. The most opaque quartile has a mean (median) industry revaluation effect of 1.000 (0.523). This is higher than for the least opaque quartile with a mean (median) industry revaluation of 0.727 (0.361). The mean (median) differences are statistically significant at the 1% level. The mean (median) differences between the extreme deciles and quartiles are also economically significant. The decile (quartile) mean difference of 0.409 (0.272) over an 11-day window translates into an annualized return of roughly 9.37% (6.21%).

We examine next the cumulative effect of industry revaluations across all merger announcements. Results are presented in Panel B of Table 4 over the entire sample period (2000-2006) as well as for the first and second halves of the sample period, January 2000 – June 2003 and July 2003 – December 2006 respectively. To qualify for inclusion, a bank must be an industry bank throughout all the merger announcements over the relevant time periods. The number of industry banks is reduced by roughly half for the full period and by one-third in the two sub-periods as a result of this restriction.

Due to the limited number of observations, the cumulative industry revaluations are presented only in quartiles. For all three time periods, the cumulative industry revaluations are highest among the quartile of the most opaque banks, and lowest among the quartile of the least opaque banks. There is a notable difference in the magnitude of the revaluation between the two subsample periods – the cumulative industry revaluation is clearly larger in the first half of the sample period, consistent with Table 3. The results are also quite economically significant. For example, the quartile difference in cumulative mean (median) across all merger announcements is 27.63% (44.55%) over the entire sample period.

4.3 Control Variables

The results in Table 4 is compelling initial evidence that industry revaluations are positively related to a bank's investments in opaque assets. The univariate results do not, however, control for characteristics other than opacity that also may influence revaluation – in

particular, merger-specific characteristics; heightened competition; and spillover associated with an increased probability of takeover.

Merger-Specific Characteristics

We will sequentially consider the method of payment, the size of the premium paid to target banks, and the CARs of the target and bidder as possible relevant factors.

Loughran and Vijh (1997) find that when an acquirer pays with cash, its abnormal returns around the announcement are higher. Stock payments can signal to the market that the acquirer believes its shares are overvalued, and thereby, that other banks in the industry can also be overvalued. We expect cash deals will create more positive revaluations than non-cash deals.

Insert Table 5 here.

Panel A of Table 5 divides the sample of 80 merger announcements into deals where the payment is greater than 75% in cash and those where it was less that 75% in cash. Based on this categorization, there were 8 cash deals and 72 non-cash deals. As expected, the revaluation is slightly higher for the cash deals. The difference in means of 0.171 is statistically significant.

In most situations, an acquiring firm is forced to pay a premium above current market price in order to gain control of the target. Akhigbe and Madura (1999) find that the degree of revaluation in the banking industry is positively related to the CAR of the target bank. The CAR of the target bank can reflect new information not only about its own intrinsic value but also about the intrinsic values of other banks.[21] We expect the industry revaluation to be positively related to the size of the premium paid to the target bank.

Panel B of Table 5 ranks the merger sample into two equal-sized groups based on the median value of *PREM28*. As expected, the revaluation is more positive when the takeover premium is higher. The mean and median differences between the high and low groups are

[21]The spillover associated with an increased probability of takeover might also be influenced by the size of the premium. Our categorization of the premium as a merger specific characteristic, however, is consistent with Akhigbe and Madura (1999).

significant at the 1% level.

Lastly, we consider the abnormal returns to bidder and target firms around the merger announcement. The mergers are ranked into two equal-sized groups based on three different criteria: the target CAR, the bidder CAR, and the combined CAR. The combined CAR is a capitalization weighted average of target and acquirer CAR based on their equity market values at quarter end prior to the announcement.

The results are reported in Panel C of Table 5. For all three abnormal return measures (target, acquirer, and combined), a higher CAR translate into higher industry revaluations. The mean and median differences are significantly higher at the 1% level across all three measures of abnormal return. The broader market does not appear to distinguish between good and bad mergers. Industry revaluation is higher when the bidder and target firms involved in the merger have higher abnormal returns.

In the multivariate analysis in later sections, we will control for two other characteristics of merger banks that can influence the magnitude of industry revaluations – prior performance and size. The quality of the information signal can depend on the performance of the acquiring bank. Houston and Ryngaert (1994) show that the announcement returns of bidder banks are positively related to profitability. A similar argument can be made about target banks. The industry revaluation from the acquisition of a poorly performing target bank can be different. Accounting (*EBT*) and market-based (*MVBVEQ*) measures from the quarter end immediately prior to the merger announcement proxy for prior performance. The variables are *TEBT* (*AEBT*) and *TMVBVEQ* (*AMVBVEQ*) for the target (bidder) respectively.

A second factor is the size of bidder and target banks involved in the merger. New information about the intrinsic values of target banks and thereby, the intrinsic values of other banks may be proportional to the size of target banks. Further, the size of the target bank relative to the bidder bank can be a useful proxy for the anticipated success of the merger. Loughran and

Vijh (1997) find that as the size of the target increases relative to the acquirer, mergers tend to generate less value.

Competitive Effects: Geographic and Product Focus

Delong (2001) finds that focusing mergers create more value for shareholders of the merged bank. To the extent geographically and/or product focused mergers enhance the performance of merged banks, the possibility of increased competition can adversely impact industry banks. A negative industry revaluation that results from the announcement of a merger reflects the competitive effect.

Table 6 categorizes industry revaluation based on the geographic and product focus of the merger. Geographic focus is determined by the Federal Reserve districts of bidder and target banks. A merger is geographically focused if the bidder and target are in the same Federal Reserve districts, and diversifying, otherwise.[22] Product focus is determined by differences in asset composition between bidder and target. A Herfindahl index – namely, the sum of the squared differences in asset composition between bidder and target banks is used as a proxy. A lower (higher) value indicates that the asset composition between bidder and target is more (less) similar. The median values of the geographic and product focus proxies are then used to categorize mergers.

Insert Table 6 here.

As shown in Table 6, 46 of the 80 mergers are geographically focused. As expected, the industry revaluation is lower when a merger is geographically focused. The differences in the mean (median) values of -0.350 (-0.232) are both significant at the 1% level. Moreover, the industry revaluation appears to be even lower when the merger is both geographic and product focused. The mean (median) revaluation for geography focus/product focus mergers is 0.605 (0.414) *lower* compared to geography focus/product diversifying mergers. These findings are

[22] Similar results are found of geography focus is defined by states instead of districts.

consistent with a competitive effect. When a merger is both geographically and product focused, it creates a more competitive environment for other banks that reduces the extent of industry revaluation.[23]

For the geographically diversifying mergers, the findings are the opposite. Product focused mergers are associated with higher industry revaluation compared to product diversifying mergers. This is consistent with economies of scope in product focus. The competitive effect from product focus is, however, mitigated by geographic diversification.

Spillover Effects: The Probability of Takeover

Industry revaluation can also result from an increased probability of takeover. We assess this likelihood based on the value of industry banks relative to target banks controlling for size and geographic focus. The logistic function is used to transform the market-to-book value of the industry banks into a probability measure.

$$LOGMV = 2 \cdot \frac{1}{1 + e^{-\frac{x}{\sigma}}} - 1 \qquad (3)$$

where x is the *MVBVEQ* of the industry bank and σ is the cross-sectional standard deviation at each merger event.[24] The value of *LOGMV* for industry banks is subtracted from the value of the target banks at each merger event for industry banks that are in the same asset size quartile as the target bank. The difference captures the degree to which industry banks are overvalued or undervalued relative to the target bank. The industry CAR is categorized in Table 7 based on whether the value of *LOGMV* for the industry bank is above or below the value of the target bank. Results by whether the industry banks are inside or outside the Federal Reserve districts of

[23]In addition to the dimensions of geography and product focus, We also considered a third dimension: whether or not the industry bank was in the same district as the target being acquired. No significant differences were detected between subgroups based on same or different districts, so the results are not reported.

[24]Multiplication by 2 and subtracting one converts the transformed variables to a scale from 0 to 1. The standard form of the logistic function allows for negative values. This modification is performed since *MVBVEQ* is bounded below by 0.

the target banks are shown separately in Panels A and B respectively.

Insert Table 7 here.

As expected, industry revaluation is higher (though not statistically significant) when the *MVBVEQ* is lower, consistent with a spillover effect related to increased probability of takeover. The revaluation is higher for industry banks with lower valuations. Note also that revaluation is higher for out-of-district industry banks compared to in-district industry banks. For in-district mergers, the competitive effect is offset by the spillover effect associated with increased probability of takeover.

4.4 Asset Composition and Industry Revaluation

The multivariate analysis described in this section evaluates the impact of asset composition on the magnitude of revaluation controlling for exogenous factors. The industry bank CARs surrounding each merger announcement are regressed on the asset composition of the industry banks and control variables. The regression uses weighted least squares (WLS), where the inverse of the average standard error for the bank from the 4-factor returns generating model is used as the weight.[25]

Model 1 includes the asset composition of the industry banks and all control variables. Model 2 adds year dummies to Model 1. As a robustness check, Model 3 includes only the asset composition of industry banks and controls for differences across merger announcements by using dummy variables for each merger (not reported). The results of these cross-sectional regressions are presented in Table 8.

Insert Table 8 here.

In all models, the opaque asset variables have the expected positive signs and all are statistically significant. The signs of the coefficients are consistent with the univariate results in

[25] Using OLS or WLS with the log of assets as the weight produces qualitatively similar results to those presented in Table 8.

Table 4. Revaluation is positively related to investments in opaque assets. If opaque asset variables are all replaced by transparent assets (results not reported), the sign of *TRANSP* is significantly negative.

To assess economic significance, note that the standardized coefficient of 1.001 for *REALLOAN* in Model 1 suggests that if an industry bank had 1% more in real estate loans, average revaluation will increase by 0.0001 percentage points – approximately 1 basis point over an 11-day event window. On an annualized basis this translates into roughly a 23 basis point difference.

Control variables in the regressions have the anticipated signs and most are statistically different from zero. Among the merger-specific characteristics, the coefficients of *PREM28* and *COMBCAR* are positive and significant in Model 1, as expected from the univariate results in Table 5. The variable *TWOMERG* is a dummy variable that controls for the four cases in which a merger is announced on exactly the same day. The signs and significance of the merger bank performance variables suggest that industry revaluation is greater when the target is low performing or the bidder is high performing. The size of the merger banks also appears to matter. As expected, larger target banks induce more revaluation, but the negative sign of *TSQASSETS* suggests there is a diminishing effect. Moreover, when the bidder is large, the revaluation is less. Finally, the coefficient of *RELSIZE*, the relative total assets size of the target to bidder bank, is negative and statistically significant in both models. Industry revaluation is lower when the target bank is larger relative to the bidder.

Competitive effects are captured by the interaction of geography and product focus dummy variables. The statistically significant negative sign for *GFOCPFOC*, which is equal to 1 if the merger is both geographically and product focused and 0 otherwise, is consistent with a competitive effect. Similarly, the statistically significant positive sign for *GDIVPFOC*, which takes a value of 1 if the merger is geographically diversifying but product focused, is consistent

with Table 6. The significance disappears, however, with the addition of year dummies in Model 2.

Spillover effects associated with the probability of takeover are captured using three characteristics of industry banks. *LOGMVDIFF* is the equal to *LOGMV* of the target minus *LOGMV* of the industry bank. *TSAMESIZE* and *TSAMEDIST* are dummy variables equal to 1 if the industry bank is in the same asset quartile or in the same Federal Reserve district as the target bank respectively, and 0 otherwise. The interaction of these three variables is captured by *MVSIZEINDIST* and *MVSIZEOUTDIST*. The former captures the in-district spillover effects, and the latter, the out-of-district spillover effects. By themselves, each variable has little effect on the magnitude of revaluations. However, the interaction is significant. The positive signs of interaction of *MVSIZEINDIST* and *MVSIZEOUTDIST* imply that when an industry bank has a lower valuation and is in the same size quartile as the target bank, the revaluation is higher regardless of whether the industry banks are inside or outside the Federal district of the target bank.

4.5 The Dark Side of Opacity

Merger announcements have, on average, a positive effect on the values of other banks. More importantly, this positive revaluation effect is larger for banks with higher investments in opaque assets. But does opacity also increase the magnitude of share price declines when there is bad news?

We utilize the 4-factor returns generating model estimated over the period 1999 to 2006 to compute out-of-sample daily abnormal returns over the period January 2007 through June 2008 with two minor modifications. Because the Pastor-Stambaugh liquidity innovation factor is not available past 2006, we only employ the three Fama-French market factors. Additionally, because CRSP data is not available past 2007, we use the CRSP value-weighted index as the

proxy for the Fama-French market factor.[26] The cumulative daily abnormal returns capture the share price reversals.

Insert Table 9 here.

The results are presented in Table 9 for the industry banks in Table 4 that remain operating entities as of June 30, 2008. Panel A are for non-merger banks that were industry banks throughout the entire sample period, and Panels B and C, for non-merger banks that were industry banks in the first and second halves of the sample period respectively. The categories are based on quartile rankings in Panel B of Table 4. For comparative purposes, the cumulative revaluations around merger announcements for these industry banks are also presented.

The pattern shown in all three panels is clear. The quartile with the most opaque banks realized the highest positive revaluation around merger announcements but also suffered the largest price reversals in the post sample period. The differences between the most and least opaque quartiles are statistically significant in all three panels. For adverse events, the magnitude of the negative abnormal returns is directly related to a bank's investments in opaque assets. Opacity can create volatility that contributes to financial fragility.

Table 10 presents the results of weighted least squares (WLS) regressions of cumulative abnormal returns against asset composition and control variables. The weight used is the inverse of the average standard error from the 4-factor returns generating model estimated over the period 1999 to 2006. Financial variables are quarter end December 31, 2006. Note that all the opaque asset composition coefficients have the expected negative signs and the coefficient for *REALLOAN* is the most significant in all three regressions. Banks' holding of real estate loans is the primary source of share price declines.

Insert Table 10 here.

[26]Data was obtained from the Kenneth French online data library.

Control variables have the expected signs. Non-performing loans (*NPL*) contribute to larger share price declines. Core deposits (*DEP*) and *NONINT* mitigate the extent of share price declines.

4.6 Robustness: Split Bond Ratings

Split bond ratings reflect disagreements among major bond rating agencies about the true risk of a firm. Morgan (2002) examines the impact of asset composition on the likelihood of split bond ratings on new bank debt. He finds that investments in opaque assets lead to a higher occurrence of split ratings. As a robustness check, we replicate Morgan's study.

We obtain an initial sample of new subordinated debt (excluding mortgage debt) issues by banks or financial holding companies over the period 2000-2006 from Thomson Financial (SDC) for the broadest range of financial companies.[27] Issuers are matched to our sample of banks using the first six digits of the CUSIP identifier and issues not rated by both Moody's and S&P were excluded. The result is a final sample of 1,339 new debt issues by 39 banks.

Descriptive statistics are presented in Table 11. Split ratings are common for bank debt. Of the 1,339 new issues, 1,118 have split ratings (83.5%). Converting letter ratings to a numerical scale (1,2,3…) with lower numbers corresponding to higher quality bonds, the most frequent magnitude (gap) for split rated issues is 2 rating notches (48.5%), followed closely by gaps of 1 notch (48.1%). Very few split rated issues have gaps larger than 2.

Insert Table 11 here.

As expected, asset compositions differ between banks with split ratings and those with agreed ratings. Banks with split ratings have significantly more real estate loans *REALLOAN* and less transparent assets *TRANSP*. Holdings of *OTHLOAN* and *OTHOPAQ* are smaller as well

[27]The initial data extraction includes all public and non-public borrowers with SIC codes of 6000, 6021-22, 6029, 6035-36, and 6712, as specified by SDC. The initial extraction produces 18,299 new issues, many of which are for non-public firms, non-banks, or are not rated by either or both of the major rating agencies (Moody's and S&P).

but less significant.

Additionally, banks with split rating issues are slightly better capitalized and larger in size. As the average of the numerical ratings for Moody's and S&P (*AVGRAT*) indicates, split rated bonds are higher quality compared to bonds with agreed ratings, with a mean (median) average rating of 4.66 (4.50) vs. 4.46 (5.00) respectively. Split rated bonds are also longer in maturity and larger issue size.

We replicate Morgan's (2002) ordered probit and logit cross-sectional regressions of absolute value of rating gaps against asset composition, capital level, and bank size, as well as basic characteristics of the bond issue and year dummies.[28] Table 12 presents the results with and without fixed effects for each bank.

Insert Table 12 here.

The results are qualitatively similar. Investments in *REALLOAN* and *OTHLOAN* increase the probability of a split rating. *CAPITAL* is also positive and significant. Morgan argues that higher capital levels should reduce uncertainty, and thereby, lower the propensity for split ratings. But higher capital levels may reflect the response of banks to regulatory standards that require more capital to be held against more risky types of assets.

Like Morgan (2002), the alternating signs of *ASSETS* and *SQASSETS* indicate that bank size initially reduces the likelihood of split ratings but increases likelihood as banks get too large. As *AVGRAT* suggests, split ratings are more frequent when the bonds are of higher quality. Lastly, issue maturity (*MATURITY*) is unimportant but smaller issue sizes (*PRINCIPAL*) raise the likelihood of split ratings significantly.

Controlling for fixed effects improves the explanatory power of the model. All asset composition variables have the expected positive sign. *REALLOAN* and *OTHOPAQ* are positive and significant in the probit regression, and *REALLOAN*, in the logit regression. Investments in

[28] See Table 5 (page 884) of Morgan (2002).

opaque assets, particularly real estate loans, raise the likelihood of split ratings. Though not reported, the negative and significant intercepts in all four models are consistent with mitigating effect of transparent asset holdings on the likelihood split ratings.

To the extent that split ratings occur as a consequence of opacity, the frequency of split ratings for a bank should be positively related to the industry revaluation it experiences around mergers. We replicate our cross-sectional procedures in Table 8 and include the percent of split rated relative to total issues (*AVGSPLIT*) for the industry banks as an explanatory variable. If an industry bank does not issue any debt over the sample period, then *AVGSPLIT* is given a value of zero. Table 13 contains the results.

Insert Table 13 here.

Panel A divides the 39 industry banks that issued new debt by the median value of *AVGSPLIT* and compares the average industry revaluation across the merger announcements. Banks with more split ratings have higher industry revaluation. The cross-sectional results in Panel B confirm the univariate finding, as *AVGSPLIT* is positive and significant in all models. Exclusion of the asset composition variables in Model 2 increases the magnitude of the coefficient for *AVGSPLIT*. Industry revaluation around merger announcements is higher for more opaque banks.

5.0 Conclusion

This paper examines the impact of bank merger announcements in the period 2000-2006 on the valuation of industry banks that were not involved in mergers. We find an overall upward revision in the total market value of industry banks. More importantly, revaluation is higher for industry banks that have larger investments in opaque assets. The findings are robust to controls for the effects related to the possibility of heightened competition and probability of takeover from bank mergers. In addition, we look at the influence of opacity on bank share price declines in the post sample period January 2007 through June 2008. We find that industry banks which

benefited most from merger activity in 2000-2006 also experienced the largest losses from the credit crisis that followed.

Contagion is characteristic of the price discovery process in opaque industries. Pricing is inefficient because opacity prevents investors from accurately assessing bank-specific risks. Industry-wide market reaction to bank-specific news creates price volatility that contributes to financial fragility because valuation fails to constrain and can encourage risk-taking. Given the critical role banks play in economic activity, effective regulatory oversight is both necessary and important.

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Appendix A: Financial Variable Definitions

The financial variables used in this study taken from the FR Y-9C call reports are defined below. Balance sheet items are the end of quarter values. Income statement items are annualized quarterly values. All variables scaled by total assets unless otherwise specified. Items with an * indicates that these values were reduced by an estimated allowance for losses (BHCK3123) based on the amount of loans outstanding.

ASSETS	Total inflation-adjusted assets	BHCK2170
REALLOAN*	Commercial and residential real estate loans and leases, net	BHDM1415 + BHDM1420 + BHDM1460 + BHDM1480+ BHDM1797 + BHDM5367 + BHDM5368
OTHLOAN*	All other loans, net	BHCK2122 – REALLOAN
OTHOPAQ	Mortgage-backed or asset-backed securities classified as available-for-sale (AFS) or held-to-maturity (HTM) that are not explicitly or implicitly guaranteed by a federal government-related entity as well as other opaque assets that include trading assets, fixed assets, intangible assets, other assets, investment in unconsolidated subsidiary, and other real estate owned.	ASSETS – REALLOAN – OTHLOAN – TRANSP
TRANSP	All transparent assets: cash, federal funds sold, securities purchased under agreements to resell, guaranteed AFS and HTM securities.	BHCK0081 + BHCK0395 + BHCK0397 + BHCK1350 + BHDMB987 + BHCKB989 + BHCK1754 + BHCK1733 – BHCK1709 – BHCK1713 – BHCK1733 – BHCK1736 – BHCKC026 – BHCKC027
EBT	Earnings before taxes and extraordinary items	BHCK4301
NONINT	Noninterest (fee) income, excluding trading revenue,	BHCK4079 – BHCKA220
NPL	Nonperforming loans, defined as non-accruing loans or those greater than 90 days past due	BHCK5525 + BHCK5526
DEP	Core deposits	BHCB2210 + BHCB3187 + BHCB2389 + BHCB6648 + BHOD3189 + BHOD3187 + BHOD2389 + BHOD6648 – BHDMA243 – BHDMA164
BVEQ	Book value of common equity.	BHCK3230 + BHCK3240 + BHCK3247 + BHCKB530
MVBVEQ	Ratio of MVEQ to BVEQ. Market value of common equity (shares outstanding x price) is computed as SHROUT x |PRC| from CRSP.	MVEQ/BVEQ

Appendix B: Control Variable Definitions

The variables defined below are those used as control variables in the study.

Variable	Description
PAYDUM	A dummy variable equal to one if the payment to target shareholders consists of at least 75% cash.
PREM28	The premium paid to the target, expressed as a percentage, based on the price paid and the stock price of the target 28 calendar days prior to the announcement.
TARCAR	The cumulative abnormal return of the target bank over a +/- 5 day event window.
ACQCAR	The cumulative abnormal return of the acquirer bank over a +/- 5 day event window.
COMBCAR	The combined announcement CAR of the target and acquirer based on the relative total market value of equity as of the quarter ended prior to the announcement.
TWOMERG	A dummy variable equal to one if there are two mergers announced on exactly the same day. The larger of the two mergers, based on the asset size of the target, is retained in the sample.
TEBT	Earnings before taxes and extraordinary items of the target.
TMVBVEQ	Market-to-book value of equity for the target.
AEBT	Earnings before taxes and extraordinary items of the acquirer.
AMVBVEQ	Market-to-book value of equity for the acquirer.
TASSETS	Target inflation-adjusted assets.
TSQASSETS	Target inflation-adjusted assets, squared.
AASSETS	Acquirer inflation-adjusted assets.
ASQASSETS	Acquirer inflation-adjusted assets, squared.
RELSIZE	Relative size of the target to the acquirer, computed as target assets divided by acquirer assets.
GFOCPFOC	A dummy variable equal to one if the merger is considered geographically focusing and product focusing, as described in Table 6.
GDIVPFOC	A dummy variable equal to one if the merger is considered geographically diversifying and product focusing, as described in Table 6.
LOGMV	The logistic-transformed market-to-book value of equity.
LOGMVDIFF	The industry bank LOGMV subtracted from LOGMV of the target.
TSAMESIZE	A dummy variable equal to one if the industry bank is in the same asset quartile as the target.
TSAMEDIST	A dummy variable equal to one if the industry bank is in the same Federal Reserve district as the target.
MVSIZEINDIST	The interaction of LOGMVDIFF*TSAMESIZE*TSAMEDIST
MVSIZEOUTDIST	The interaction of LOGMVDIFF*TSAMESIZE*|TSAMEDIST – 1|

Table 1 - Descriptive Statistics of Industry Banks Compared to Merger Banks

This table compares industry banks to those involved in mergers in terms of asset composition and other operating characteristics. The sample includes only banks with inflation adjusted assets (ASSETS) greater than $500 million as of December 2006. The sample of industry banks is gathered in terms of event-time relative to the 80 merger announcements. A bank that becomes an acquiring bank is excluded from the industry sample for +/- 30 calendar days relative to the day it is announced as an acquirer. A bank that becomes a target bank is excluded permanently from the industry sample from the point 30 days before its announcement as a target. All variables are as of the quarter ended immediately prior to the merger announcement.

Financial variables are presented as a percent of total assets. MVBVEQ is the market-to-book value of equity. ASSETDIV is a composite measure of opacity constructed by allocating the market beta of the bank across the categories of assets and using the opaque asset betas to compute a weighted average opacity score. Higher (lower) values are an indication of more (less) opacity. REALLOAN is commercial and residential real estate loans, OTHLOAN is all other loans, OTHOPAQ is all other opaque assets, and TRANSP is all transparent assets. EBT is annualized quarterly earnings before taxes and extraordinary items, NPL is non-performing loans, DEP is core deposits, and NONINT is non-interest income, excluding trading revenue. ***, **, * denotes statistical significance at the 0.01, 0.05, and 0.10 levels, respectively.

				Asset Composition (% of Total Assets)				Other Variables (% of Total Assets)			
	ASSETS ($ millions)	MVBVEQ	ASSETDIV	REALLOAN	OTHLOAN	OTHOPAQ	TRANSP	EBT	NPL	DEP	NONINT
Industry Banks											
Mean	25,555	1.88	12.34	44.45	20.40	8.03	27.11	1.75	0.49	61.03	1.48
Percentiles 5th	653	0.89	6.41	21.90	4.64	3.17	11.70	0.48	0.05	40.83	0.32
Percentiles 25th	1,165	1.40	9.47	35.46	12.78	4.91	19.66	1.38	0.22	54.22	0.80
Percentiles Median	2,349	1.79	11.64	44.74	19.77	6.68	25.86	1.77	0.39	61.72	1.16
Percentiles 75th	7,294	2.22	13.95	53.99	26.88	8.98	32.66	2.18	0.63	69.67	1.68
Percentiles 95th	81,947	3.16	21.24	67.88	38.57	18.83	47.60	3.01	1.20	78.25	3.51
Std	119,398	0.81	4.72	14.45	10.32	5.44	11.14	12.94	0.42	12.39	1.48
Firm-quarters	19,673										
Merger Banks											
Mean	48,531	1.92	13.39	43.01	21.46	9.18	26.34	1.80	0.48	59.46	1.63
Percentiles 5th	584	1.02	6.84	21.23	6.42	3.29	11.87	0.67	0.06	40.43	0.38
Percentiles 25th	1,338	1.52	10.30	24.54	15.93	5.28	20.28	1.38	0.28	52.34	0.85
Percentiles Median	4,927	1.84	12.57	44.66	20.08	7.64	25.68	1.87	0.43	59.52	1.26
Percentiles 75th	27,821	2.20	15.07	51.73	27.15	11.19	31.47	2.23	0.59	68.65	1.89
Percentiles 95th	259,119	2.87	22.65	63.71	39.77	21.28	44.63	2.91	0.99	76.16	4.24
Std	147,055	0.70	5.07	13.22	10.10	5.96	9.21	0.71	0.31	11.56	1.44
Firm-quarters	160										
Difference											
Mean	22,976 **	0.04 **	1.05 ***	-1.44	1.06	1.15 ***	-0.77	0.05	-0.01	-1.57	0.15
Median	2,578 ***	0.05 ***	0.93 ***	-0.08	0.31	0.96 ***	-0.18	0.10	0.04	-2.20 *	0.10 *

Table 2 - Descriptive Statistics of Acquirers Compared to Targets and Deal Characteristics

This table compares the acquirers and targets involved in merger events for the year 2000-2006. Summary statistics for the deal characterisitcs are presented at the bottom of the table. The sample includes only merger banks with inflation adjusted assets greater than $500 million as of December 2006. All variables are as of the quarter ended immediately prior to the merger announcement. Financial variables are presented as a percent of total assets. MVBVEQ is the market-to-book value of equity. ASSETDIV is a composite measure of opacity constructed by allocating the market beta of the bank across the categories of assets and using the opaque asset betas to compute a weighted average opacity score. Higher (lower) values are an indication of more (less) opacity. REALLOAN is commercial and residential real estate loans, OTHLOAN is all other loans, OTHOPAQ is all other opaque assets, and TRANSP is all transparent assets. EBT is annualized quarterly earnings before taxes and extraordinary items, NPL is non-performing loans, DEP is core deposits, and NONINT is non-interest income, excluding trading revenue.

The premium paid is calculated as of the target stock price 28 calendar days prior to the announcement date. The CAR of the target and acquirer is calculated using daily returns and an estimation period of trading days -312 to -60 relative to the announcement and an event period of +/- 5 days. The returns generating model is the Fama-French (1992) three factor model that includes the Pastor-Stambaugh (2003) liquidity innovation factor. The CRSP equal weighted index (less the risk free rate) is used as the proxy for the market return. The combined CAR of the target and acquirer is the weighted average announcement CAR of the target and acquirer based on their relative market values. ***, **, * denotes statistical significance at the 0.01, 0.05, and 0.10 levels, respectively.

		ASSETS ($ millions)	MVBVEQ	ASSETDIV	Asset Composition (% of Total Assets) REALLOAN	OTHLOAN	OTHOPAQ	TRANSP	Other Variables (% of Total Assets) EBT	NPL	DEP	NONINT
Acquirers												
	Mean	84,160	2.11	14.78	40.97	23.17	10.58	25.27	2.09	0.45	56.97	1.94
Percentiles	5th	1,965	1.25	9.84	24.03	10.75	4.46	9.66	1.04	0.07	41.40	0.49
	25th	5,940	1.68	11.80	34.39	19.00	7.04	20.17	1.75	0.32	50.88	1.14
	Median	21,380	1.97	13.38	42.76	21.52	9.11	24.55	2.09	0.41	55.53	1.49
	75th	67,021	2.29	16.22	48.56	26.75	11.74	28.58	2.40	0.58	64.72	2.24
	95th	364,964	3.21	25.65	56.67	38.31	26.66	44.63	3.14	0.97	74.77	4.50
	Std	196,830	0.76	4.98	10.82	8.77	6.53	9.12	3.81	0.25	10.84	1.40
	Firm-quarters	80										
Targets												
	Mean	12,901	1.73	12.01	45.06	19.75	7.78	27.41	1.51	0.50	61.95	1.32
Percentiles	5th	548	0.88	6.05	18.40	5.42	2.75	14.16	0.49	0.05	35.12	0.27
	25th	844	1.38	8.98	34.70	11.76	4.73	20.33	1.17	0.25	56.09	0.67
	Median	1,442	1.67	10.97	46.21	18.10	6.58	26.03	1.53	0.45	63.56	1.01
	75th	3,297	2.00	14.08	53.29	27.66	11.74	33.90	1.94	0.64	71.28	1.48
	95th	58,126	2.68	20.62	69.53	39.77	25.66	44.83	2.38	1.17	77.22	2.89
	Std	47,020	0.58	4.81	86.43	56.25	45.31	9.24	0.68	0.36	11.77	1.41
	Firm-quarters	80										
Difference												
	Mean	-71,259 ***	-0.38 ***	-2.78 ***	4.09 **	-3.43 **	-2.81 ***	2.14	-0.58 ***	0.04	4.99 ***	-0.63 ***
	Median	-19,938 ***	-0.29 ***	-2.41 ***	3.46 **	-3.41 ***	-2.54 ***	1.48	-0.57 ***	0.04	8.03 ***	-0.48 ***

Deal Characteristics	Mean	Percentiles 5th	25th	Median	75th	95th	Std
Premium paid (%)	33.03	4.36	17.05	27.91	41.13	75.70	23.43
Target CAR (%)	22.29	0.89	12.39	18.41 ***	29.82	49.44	16.52
Acquirer CAR (%)	-0.95	-9.16	-4.58	-0.73	2.94	7.91	5.54
Combined CAR (%)	1.64	-5.28	-1.55	1.23 ***	4.25	11.31	4.82
% where CASH>75%	10.00						
% tender offers	1.25						

Table 3 - Industry Revaluation Surrounding Bank Merger Announcements

This table summarizes the degree of industry revaluation surrounding the merger announcements that occur in 2000-2006. The model used to compute the abnormal returns is the Fama-French (1992) 3 factor model that also includes the Pastor Stambaugh (2003) liquidity innovation factor. The equal-weighted CRSP index is used as the market proxy instead of the value-weighted CRSP index. This four-factor model is estimated over the period 1999-2006 using daily returns for each bank in the sample. The event window is +/- 5 trading days in relation to the announcement date. Daily dummy variables are used to capture the daily abnormal return for any day that falls inside a merger announcement event window. If a given day is part of more than one event window, the abnormal return for that day is allocated equally among the number of event windows that are present on that day. The cumulative abnormal return (CAR) for the industry banks is computed as the sum of the daily abnormal returns over the eleven day event period.

The results presented are after Winsorizing at the 1% and 99% levels at each merger announcement event based on the raw CAR. The precision-adjusted amounts are computed by dividing the raw CAR by the average standard error for the bank from the 4-factor model. Average industry repricing across the 80 events is presented as equal-weighted, value-weighted based on total assets, and precision-weighted based on the inverse of the average standard error of the daily dummy variables for each bank in the 4-factor returns generating model. ***, **, * denotes statistical significance at the 0.01, 0.05, and 0.10 levels, respectively.

	Observations		Raw Industry Bank CAR					Precision-Adjusted Industry Bank CAR					Average Repricing Across Deals		
	Total Mergers	Total Industry Banks	Mean	25th	Median	75th	Std	Mean	25th	Median	75th	Std	Equal-Weight	Value-Weight	Precision-Weight
Total	80	19,193	0.843 ***	-1.396	0.433 ***	2.800	4.059	0.471 ***	-0.735	0.227 ***	1.515	2.250	0.838	0.967	0.844
Two Periods															
Jan 00 - Jun 03	39	9,552	1.354 ***	-1.612	0.891 ***	4.026	4.975	0.759 ***	-0.816	0.466 ***	2.187	2.754	1.357	1.763	1.379
Jul 03 - Dec 06	41	9,641	0.337 ***	-1.250	0.194 ***	1.824	2.786	0.185 ***	-0.667	0.104 ***	0.992	1.549	0.345	0.209	0.335
By Year															
2000	16	3,912	1.433 ***	-2.210	0.915 ***	4.898	5.867	0.814 ***	-1.100	0.476 ***	2.650	3.268	1.444	2.939	1.493
2001	12	2,957	0.574 ***	-1.584	0.275 ***	2.684	3.782	0.310 ***	-0.809	0.163 ***	1.463	2.061	0.571	0.016	0.554
2002	7	1,713	3.190 ***	0.120	2.941 ***	6.351	4.870	1.798 ***	0.061	1.588 ***	3.387	2.675	3.184	3.227	3.247
2003	15	3,627	0.140 ***	-1.302	0.039	1.461	2.458	0.065 ***	-0.691	0.021	0.788	1.330	0.141	-0.307	0.119
2004	14	3,332	0.216 ***	-1.265	0.053 *	1.601	2.836	0.122 ***	-0.666	0.028 *	0.850	1.593	0.223	0.089	0.223
2005	11	2,505	0.109 *	-1.588	0.190 ***	1.826	2.908	0.050	-0.879	0.106 ***	1.021	1.613	0.113	0.195	0.093
2006	5	1,147	1.663 ***	-0.577	1.600 ***	3.734	3.320	0.947 ***	-0.322	0.881 ***	2.150	1.854	1.664	1.748	1.670

Table 4 - Opacity and Industry Revaluation

This table considers the impact of bank opacity on the magnitude of the industry revaluation. Panel A presents the revaluation for all industry banks ranked into both deciles and quartiles at each announcement based on the percentage of transparent assets held by the industry banks. Panel B contains the cumulative revaluation for those banks that exist at the time of every merger announcement and are not a target or acquirer. The cumulative revaluation is presented for the entire sample period (2000-2006), the first half of the sample period (Jan 2000 - Jun 2003) and the second half of the sample period (Jul 2003 - Dec 2006). The quartiles for the cumulative industry revaluation are based on the average quartile ranking over the specified time period. ***, **, * denotes statistical significance at the 0.01, 0.05, and 0.10 levels, respectively, based on a standard t-test of the differences in means and a Wilcoxon test of difference in the medians.

Panel A: Average Industry Revaluation Ranked by Opacity

By Opacity Deciles	Decile	# Industry Banks	Mean	Median	Std Dev
Most Opaque	1	1,881	1.007	0.513	4.030
	2	1,927	1.036	0.538	4.125
	3	1,924	0.977	0.556	4.114
	4	1,925	0.931	0.558	3.994
	5	1,920	0.796	0.362	4.008
	6	1,951	0.669	0.337	4.078
	7	1,928	0.758	0.315	4.032
	8	1,928	0.881	0.447	4.113
	9	1,928	0.776	0.447	4.130
Least Opaque	10	1,881	0.599	0.202	3.948
Most Opaque - Least Opaque			**0.409** ***	**0.311** ***	
By Opacity Quartiles	**Quartile**				
Most Opaque	1	4,776	1.000	0.523	4.078
	2	4,801	0.899	0.490	4.031
	3	4,836	0.747	0.348	4.060
Least Opaque	4	4,780	0.727	0.361	4.064
Most Opaque - Least Opaque			**0.272** ***	**0.162** ***	

Panel B: Cumulative Industry Revaluation by Opacity Quartile

All Events	Quartile	Industry Banks	Mean	Median	Std Dev
Most Opaque	1	31	82.03	93.41	53.19
	2	33	74.47	82.78	42.94
	3	31	61.51	67.65	51.69
Least Opaque	4	31	54.40	48.85	49.42
Most Opaque-Least Opaque			**27.63** **	**44.55** **	
First Half (Jan 2000-Jun 2003)					
Most Opaque	1	43	67.37	76.42	37.64
	2	44	54.49	58.52	35.43
	3	45	56.71	66.07	37.40
Least Opaque	4	44	42.69	42.15	33.62
Most Opaque-Least Opaque			**24.68** ***	**34.28** ***	
Second Half (Jul 2003-Dec 2006)					
Most Opaque	1	43	22.21	22.86	22.29
	2	43	16.00	19.10	27.28
	3	43	14.02	13.63	24.17
Least Opaque	4	43	8.95	10.32	24.12
Most Opaque-Least Opaque			**13.26** ***	**12.55** **	

Table 5 - Merger-Specific Characteristics

This table divides the industry revaluation into groups based on merger-specific characteristics. Panel A divides based on the percentage of the total deal price paid to target shareholders in cash. Panel B categorizes the industry revaluation based on whether the premium, as calculated relative to the stock price of the target 28 calendar days prior to the announcement, is above or below the sample median. Panel C divides the industry revaluation based on the CAR of the target, the CAR of the acquirer, and the combined announcement return of the acquiring and target firms, which is computed as the weighted average CAR based on the relative market values of the target and acquirer in the quarter preceding the merger announcement. ***, **, * denotes statistical significance at the 0.01, 0.05, and 0.10 levels, respectively, based on a standard t-test of the differences in means and a Wilcoxon test of difference in the medians.

Panel A: Method of Payment

	# Mergers	# Industry Banks	Mean	Median	Std Dev
> 75% Cash Payment	8	1,941	0.997	0.486	3.970
< 75% Cash Payment	72	17,252	0.826	0.427	4.060
Difference			**0.171** *	**0.059**	

Panel B: Size of Premium Paid to Target

	# Mergers	N	Mean	Median	Std Dev
Above median	40	9,674	0.925	0.534	4.302
Below median	40	9,519	0.760	0.350	3.795
Difference			**0.165** ***	**0.184** ***	

Panel C: Announcement CAR for Merger Banks

	# Mergers	N	Mean	Median	Std Dev
Target CAR					
Above median	40	9,670	1.297	0.868	1.646
Below median	40	9,523	0.382	0.128	3.297
Difference			**0.916** ***	**0.740** ***	
Acquirer CAR					
Above median	40	9,646	1.219	0.554	4.095
Below median	40	9,547	0.463	0.307	3.987
Difference			**0.756** ***	**0.247** ***	
Combined CAR					
Above median	40	9,651	1.334	0.693	4.197
Below median	40	9,542	0.347	0.174	3.852
Difference			**0.987** ***	**0.519** ***	

Table 6 -Competitive Effects: Geography and Product Focus

This table considers the impact of geography and product focus on the degree of industry revaluation surrounding the merger announcement. Geography is defined in terms of the Federal Reserve districts in which the banks are located. An intra-district merger is considered geographically focusing, while an inter-district merger is considered geographically diversifying. Product focus is defined based on the difference in asset composition between the acquirer and target, and is quantified using a Herfindahl-type index: the differences for each of the four asset categories (REALLOAN, OTHLOAN, OTHOPAQ, TRANSP) are squared, and the results are summed. A lower (higher) value of this measure indicates more (less) similar asset composition between the target and acquirer.

The degree of product focus is categorized as below median (product focusing) and above median (product diversifying) separately within each category of geographic focusing and geographic diversifying. ***, **, * denotes statistical significance at the 0.01, 0.05, and 0.10 levels, respectively, based on a standard t-test of the differences in means and a Wilcoxon test of difference in the medians.

	# Mergers	# Industry Banks	Mean	Median	Std Dev
GEOGRAPHIC FOCUS	46	11,060	0.695	0.321	4.327
Same district - different district			**0.042**	**-0.211**	
Same district - different district			**0.081**	**-0.003**	
Product focusing - product diversifying			**-0.605** ***	**-0.414** ***	
GEOGRAPHIC DIVERSIFYING	34	8,133	1.044	0.553	3.655
Same district-different district			**0.262**	**0.093**	
Same district - different district			**-0.084**	**-0.066**	
Product focusing - product diversifying			**0.922** ***	**0.638** ***	
GEOGRAPHIC FOCUS - GEOGRAPHIC DIVERSIFYING			**-0.350** ***	**-0.232** ***	

Table 7 - Spillover Effects: Probability of Takeover

The purpose of this table is to investigate the impact of spillover effects related to the probability of takover on the revaluation of industry banks. Three factors are considered as influential characteristics: valuation, size and geography. The MVBVEQ of the industry banks is compared to that of the target by transforming the values of the standardized market-to-book values into a logistic function that reflect probabilities. The transformed value of the industry bank is subtracted from the value of the target for those banks that are in the same asset quartile as the target. Separate results are presented based on whether the industry bank is in the same district or different district as the target. ***, **, * denotes statistical significance at the 0.01, 0.05, and 0.10 levels, respectively, based on a standard t-test of the differences in means and a Wilcoxon test of difference in the medians.

Panel A: Similar Size Industry Banks in Same District as Targets

	# Industry Banks	Mean	Median	Std Dev
Below target valuation	260	0.625	0.352	4.112
Above target valuation	227	0.438	-0.157	3.638
Difference		**0.187**	**0.509**	

Panel B: Similar Size Industry Banks in Different District as Targets

	# Industry Banks	Mean	Median	Std Dev
Below target valuation	1,935	0.884	0.534	4.033
Above target valuation	2,295	0.694	0.401	3.934
Difference		**0.191**	**0.133** *	

Table 8 - Asset Composition and Industry Revaluation

This table presents the results of pooled weighted least squares (WLS) regressions of the industry bank CAR on asset composition and the control variables. The weight used in the WLS estimation is the inverse of the average standard error for the industry banks from the 4-factor returns generating model used to compute the industry CAR. Three models are presented, and all variables are defined in Appendix A and Appendix B. Model 1 includes the industry bank asset composition, merger-specific characteristics, and controls for competitive and spillover effects. Model 2 adds year time dummies to the variables in Model 1. Model 3 includes the industry asset composition and controls for the various merger announcements using only deal dummy variables (not reported). ***, **, * denotes statistical significance at the 0.01, 0.05, and 0.10 levels, respectively.

	Mode1 1		Model 2		Model 3 (With Deal Dummies)	
	Coef	**t-stat**	**Coef**	**t-stat**	**Coef**	**t-stat**
Intercept	-0.097	-0.39	0.324	1.25	1.498 ***	5.31
Industry Bank Asset Composition						
REALLOAN	1.001 ***	3.86	0.818 ***	3.21	0.697 ***	3.02
OTHLOAN	1.671 ***	5.03	1.305 ***	4.00	1.262 ***	4.30
OTHOPAQ	1.431 ***	2.60	1.141 **	2.10	1.225 **	2.50
Merger-Specific Characteristics						
PAYDUM	0.107	1.07	-0.120	-1.19		
PREM28	0.387 ***	2.78	0.166	1.16		
COMBCAR	15.139 ***	23.93	15.409 ***	23.40		
TWOMERG	0.470 ***	3.40	0.344 **	2.21		
TEBT	19.350 ***	-3.91	-57.781 ***	-10.99		
TMVBVEQ	-0.543 ***	-7.71	-0.193 **	-2.40		
AEBT	3.190	0.58	-3.177	-0.56		
AMVBVEQ	0.590 ***	12.53	0.546 ***	11.20		
TASSETS x 10^{-8}	4.921 ***	13.89	5.735 ***	15.35		
TSQASSETS x 10^{-16}	-1.345 ***	-15.12	-1.555 ***	-16.90		
AASSETS x 10^{-9}	-5.520 ***	-8.14	-3.093 ***	-4.38		
ASQASSETS x 10^{-19}	0.270 ***	5.37	2.271	0.43		
RELSIZE	-1.897 ***	-10.50	-1.508 ***	-8.28		
Competitive Effects						
GFOCPFOC	-0.440 ***	-6.08	0.516 ***	-6.99		
GDIVPFOC	0.360 ***	4.58	0.061	0.75		
Spillover Effects						
LOGMVDIFF	-0.180	-0.78	-0.575 **	-2.51		
TSAMESIZE	-0.046	-0.69	-0.033	-0.51		
TSAMEDIST	0.072	0.76	0.079	0.85		
MVSIZEINDIST	3.028 **	2.19	2.202	1.63		
MVSIZEOUTDIST	1.515 ***	3.49	1.344 ***	3.17		
Time						
YEAR01			-0.107	-1.03		
YEAR02			2.515 ***	20.85		
YEAR03			-0.542 ***	-5.26		
YEAR04			-1.088 ***	-9.32		
YEAR05			-0.287 **	-2.36		
YEAR06			0.474 ***	2.76		
F-Value	62.74 ***		84.45 ***		89.34 ***	
Adjusted R-square	0.0689		0.1120		0.2740	
N	19,193		19,193		19,193	

Table 9 - The Dark Side of Opacity

This table examines the relationship between the cumulative industry revaluation surrounding the merger announcements and the degree of reversal experienced in the period January 2007 through June 2008 (the "post event period") ranked by opacity quartiles using the level of transparent assets. The degree of reversal is captured as the sum of the daily abnormal returns for each bank during the post event period. The daily abnormal return is calculated by applying the beta coefficients from the 4-factor model used to compute the industry bank CARs in Table 3. The Pastor-Stambaugh factor is not available after 2006, so this varaible is excluded from the computation. Data for 2008 is collected from Yahoo! finance, and the market factor used during 2008 is the Fama-French calculated value-weighted index (from the Kenneth French data library), since the CRSP equal-weighted index is not available past 2007.

Only banks that continue to be listed on a public stock exchange as of June 30, 2008 are included in these results. A bank is put into the same quartile in which it was located in Table 4, thus the size of the quartiles in this table vary slightly due to banks that no longer exist on June 30, 2008. Panel A presents results for the industry banks that exist at each merger announcement during the entire sample period and are never a target or acquirer. Panel B (Panel C) presents results for industry banks that exist at each merger during the first (second) half of the sample period and are never a target or acquirer. ***, **, * denotes statistical significance at the 0.01, 0.05, and 0.10 levels, respectively, based on a standard t-test of the differences in means and a Wilcoxon test of difference in the medians.

Panel A: Banks Present During the Full Merger Sample Period

			Cumulative Merger Announcement CAR		Post Period CAR (Jan 2007 - Jun 2008)	
By Table 4 Quartile Rank		**N**	**Mean**	**Median**	**Mean**	**Median**
Most Opaque	1	27	85.51	93.41	-50.17	-46.50
	2	24	71.05	74.53	-27.48	-20.63
	3	26	65.82	81.75	-13.85	2.06
Least Opaque	4	27	51.01	48.85	-0.94	15.10
Most Opaque - Least Opaque			**34.50** **	**44.55** ***	**-49.23** ***	**-61.60** ***

Panel B: Banks Present During the First Half of Merger Sample Period

			Cumulative Merger Announcement CAR		Post Period CAR (Jan 2007 - Jun 2008)	
By Table 4 Quartile Rank		**N**	**Mean**	**Median**	**Mean**	**Median**
Most Opaque	1	29	71.06	76.42	-45.80	-41.69
	2	24	55.04	55.69	-21.21	0.61
	3	34	54.89	65.88	-20.02	-12.44
Least Opaque	4	31	41.81	47.85	-3.53	0.87
Most Opaque - Least Opaque			**29.26** ***	**28.57** ***	**-42.27** ***	**-42.56** **

Panel C: Banks Present During the Second Half of Merger Sample Period

			Cumulative Merger Announcement CAR		Post Period CAR (Jan 2007 - Jun 2008)	
By Table 4 Quartile Rank		**N**	**Mean**	**Median**	**Mean**	**Median**
Most Opaque	1	38	21.57	20.53	-61.73	-61.76
	2	34	16.85	22.46	-40.21	-32.38
	3	40	12.55	10.79	-19.54	-10.45
Least Opaque	4	34	6.57	9.26	3.09	15.92
Most Opaque - Least Opaque			**15.01** ***	**11.27** **	**-64.82** ***	**-77.68** ***

Table 10 - Asset Composition and the Decline in Bank Values

This table investigates how opacity is related to the degree of reversal that occurs during the post event period (Jan 2007 - Jun 2008). The results presented in this table are from regressing the post event period CAR on asset composition and other bank-specific operating characteristics as of December 31, 2006. The regressions use weighted least squares (WLS) with the inverse of the average standard error for the daily abnormal return in the merger event period used as the weight. The computation of the post event period CAR is described in Table 9, and all independent variables are described in Appendix A. Results are presented for three sets of banks that still exist as of June 30, 2008: 1) those that are present for the full merger sample period, 2) those that exist over the first half of the merger sample period, and 3) those that exist over the second half of the merger sample period. Standardized regression coefficients reflect the impact of a normalized standard deviation change in the explanatory variable. ***, **, * denotes statistical significance at the 0.01, 0.05, and 0.10 levels, respectively.

	Banks From Entire Sample			**Banks From First Half of Sample**			**Banks From Second Half of Sample**		
	Coef	**t-stat**	**Std. Coef**	**Coef**	**t-stat**	**Std. Coef**	**Coef**	**t-stat**	**Std. Coef**
Intercept	22.80	0.53		47.99	1.23		37.91	1.04	
REALLOAN	-179.13 ***	-4.29	-0.467	-175.22 ***	-4.32	-0.458	-231.06 ***	-6.54	-0.574
OTHLOAN	-75.57	-1.16	-0.118	-63.10	-0.99	-0.097	-127.19 **	-2.45	-0.203
OTHOPAQ	-210.21	-1.52	-0.193	-154.85	-1.50	-0.188	-196.42 *	-1.71	-0.163
EBT	117.00	0.19	0.017	-109.34	-0.19	-0.016	6.09	0.01	0.001
NPL	-4,328.12 ***	-2.76	-0.250	-5,683.03 ***	-3.87	-0.332	-2,948.61 **	-2.33	-0.172
DEP	110.72 **	2.45	0.261	89.90 **	2.18	0.214	137.22 ***	4.08	0.310
NONINT	1,693.52 **	2.37	0.236	806.01	1.28	0.128	1,476.36 ***	3.25	0.246
ASSETS	1.38E-07	0.50	0.522	1.02E-07	1.02	0.508	9.26E-08	0.81	0.304
SQASSETS	-8.09E-17	-0.58	-0.578	-6.59E-17	-1.17	-0.548	-5.72E-17	-0.97	-0.344
F-Value	7.82 ***			7.63 ***			12.05 ***		
Adjusted R-square	0.3733			0.3377			0.4068		
N	104			118			146		

Table 11 - Descriptive Statistics of Split Bond Ratings

This table contains descriptive statistics of split and agreed bond ratings for banks in the sample during 2000-2006 and the differences in characteristics of the two subsamples. Data on split ratings is obtained from Thomson Financial (SDC). Only banks with bond issues that are rated by both Moody's and S&P are included, which results in a total of 1,339 bond issues by 39 bank or financial holding companies. Letter ratings are transformed to a numerical scale similar to Morgan (2002), with higher quality bonds receiving the lowest numercial score. Financial data is from the quarter prior to the bond issuance. Asset composition variables are expressed as a percent of total assets, and CAPITAL is the book value of common equity as a percent of total assets. Average rating (AVGRAT) is computed as the average of the numerical Moody's and S&P ratings. The orignal issue maturity (MATURITY) is expressed in years, and the issue amount (PRINCIPAL) is presented in millions of dollars. ***, **, * denotes statistical significance at the 0.01, 0.05, and 0.10 levels, respectively, based on a standard t-test of the differences in means and a Wilcoxon test of difference in the medians.

Frequency of Split Ratings Among Banks (2000-2006)

	N	Average Rating	Rating Gap Distribution (percent) Gap=1	Gap=2	Gap=3	Gap=4
Split Ratings	1,118	4.66	48.1%	48.5%	2.8%	0.6%
Agreed Ratings	221	5.46				
Standard Deviation of Average Ratings						
Across all issuers		1.26				
Within each issuer		0.57				

Descriptive Stats for the Split Ratings (N=1,118)

	Mean	25th	Median	75th	Std
REALLOAN	27.01	21.22	26.77	31.32	11.45
OTHLOAN	29.32	25.21	29.32	32.48	7.26
OTHOPAQ	21.74	13.67	21.77	26.54	9.66
TRANSP	21.93	17.93	22.31	26.80	6.29
CAPITAL	8.31	7.22	8.08	9.36	1.58
AVGRAT	4.66	4.00	4.50	5.50	1.10
MATURITY (years)	5.78	2.01	5.00	10.04	13.12
PRINCIPAL (millions $)	387.28	23.60	100.00	500.00	581.82
Assets (millions $)	598.29	205.08	708.04	786.33	415.53

Descriptive Stats for the Agreed Ratings (N=221) | **Difference (Split vs Agreed)**

	Mean	25th	Median	75th	Std	Mean	Median
REALLOAN	18.96	9.08	13.78	28.18	13.09	8.05 ***	12.99 ***
OTHLOAN	30.76	20.58	27.48	41.00	11.78	-1.44 *	1.84
OTHOPAQ	26.73	14.73	21.77	41.11	14.28	-4.99 ***	0.00
TRANSP	23.54	18.64	24.02	28.54	5.78	-1.61 ***	-1.71 ***
CAPITAL	8.03	5.86	7.87	9.20	2.71	0.28	0.22 ***
AVGRAT	5.46	4.00	5.00	6.00	1.70	-0.80 ***	-0.50 ***
MATURITY (years)	4.09	2.01	3.02	5.02	6.01	1.69 ***	1.98 ***
PRINCIPAL (millions $)	268.83	17.00	91.00	300.00	429.54	118.45 ***	9.00 **
Assets (billions $)	496.17	116.48	534.27	839.30	368.03	102.12 ***	173.77

Table 12 -Asset Composition and Split Bond Ratings

This table presents the result of ordered probit and logit regressions of the magnitude of the split rating on bank asset composition and other variables. The model form and procedures are based on Morgan (2002). Bank variables have been previously defined. Bond characteristics are defined as follows: AVGRAT is the average numerical rating of Moody's and S&P, MATURITY is the the original maturity of the bond in years as of the issue date, and PRINCIPAL is the face amount of the bond at issue. Fixed effects are achieved by adding dummy variables for each distinct issuer. The intercepts (not reported) are negative and significant in all models, indicating that investments in transparent assets reduce the likelihood of split ratings among banks. ***, **, * denotes statistical significance at the 0.01, 0.05, and 0.10 levels, respectively.

	Ordered Probit		**Ordered Logit**		**Ordered Probit (With Fixed Effects)**		**Ordered Logit (With Fixed Effects)**	
	Estimate	Chi-Square	Estimate	Chi-Square	Estimate	Chi-Square	Estimate	Chi-Square
Bank Variables								
REALLOAN	3.6983 ***	26.87	6.5642 ***	26.97	5.7330 ***	15.43	10.5775 ***	16.24
OTHLOAN	1.5238 *	3.12	2.9861 **	3.88	0.6666	0.11	3.1323	0.73
OTHOPAQ	-6.3165 ***	35.77	-11.6552 ***	38.75	3.6023 *	3.01	4.9700	1.82
CAPITAL	11.0422 ***	11.20	19.5858 ***	11.17	25.0236 ***	19.44	40.6911 ***	15.93
ASSETS x 10^{-9}	5.1070 ***	158.96	9.4790 ***	169.62	-4.0600 ***	13.17	-7.3700 ***	13.08
SQASSETS x 10^{-20}	-165.0000 ***	53.53	-312.0000 ***	61.35	0.0187 ***	14.19	0.0330 ***	13.59
Bond Characteristics								
AVGRAT	-0.0798 **	5.16	-0.1268 **	4.25	-0.2218 ***	14.78	-0.3946 ***	14.80
MATURITY	0.0014	0.26	0.0042	0.76	0.0014	0.23	0.0042	0.66
PRINCIPAL	-0.0001 **	4.41	-0.0003 **	6.57	-0.0002 **	3.99	-0.0004 **	6.42
Year Dummies								
YEAR01	-0.1372	1.49	-0.1385	0.48	-0.5700 ***	14.26	-0.6856 **	6.53
YEAR02	0.2511 **	3.87	0.3815 *	2.79	-0.2158	1.37	-0.1563	0.22
YEAR03	0.3986 **	7.73	0.7781 ***	9.39	0.2085	0.83	0.7996 *	3.68
YEAR04	0.0954	0.35	0.1980	0.48	0.1185	0.24	0.6908	2.48
YEAR05	-0.4150 **	4.89	-0.7063 **	4.54	-0.3836	1.94	-0.2984	0.36
YEAR06	-0.9782 ***	25.02	-1.6747 ***	23.66	-1.0325 ***	11.65	-1.3956 **	6.57
AIC	2,502.29		2,479.22		2,225.47		2,171.76	
R-square	0.3614		0.3723		0.5093		0.5286	
N	1,339		1,339		1,339		1,339	

Table 13 - Split Ratings and Industry Revaluation

This table examines the relationship between split ratings and the industry revaluation. Panel A presents univariate results of the mean revaluation for banks divided by the median percent of split ratings. Panel B replicates the cross-sectional WLS regressions in Table 8, but adds the frequency of split ratings. AVGSPLIT represents the percentage of new bond issues by the bank during the 2000-2006 sample period that are split rated. If a bank does not have any new debt issues, AVGSPLIT is equal to zero. The weight used in the WLS estimation is the inverse of the average standard error for the industry banks from the 4-factor returns generating model used to compute the industry CAR. ***, **, * denotes statistical significance at the 0.01, 0.05, and 0.10 levels, respectively.

Panel A: Mean Industry Revaluation by Percent of Split Ratings

	N	Mean	Median	Std. Dev
Above median percent of split ratings	20	1.187	1.185	0.465
Below median percent of split ratings	19	0.980	0.980	0.504
Difference (one-sided test)		**0.207 ***	**0.205** *	

Panel B: Cross-Sectional Results

	Mode1 1		Model 2	
	Coef	t-stat	Coef	t-stat
Intercept	-0.026	-0.10	0.747 ***	4.33
Opacity Measures				
REALLOAN	0.981 ***	3.78		
OTHLOAN	1.482 ***	4.31		
OTHOPAQ	0.956	1.61		
AVGSPLIT	**0.217 ** **	**2.13**	**0.310 *** **	**3.50**
Merger-Specific Characteristics				
PAYDUM	0.108	1.09	0.102	1.03
PREM28	0.386 ***	2.77	0.399 ***	2.86
COMBCAR	15.128 ***	23.91	15.137 ***	23.92
TWOMERG	0.473 ***	3.42	0.499 ***	3.62
TEBT	-19.408 ***	-3.92	-19.125 ***	-3.87
TMVBVEQ	-0.549 ***	-7.79	-0.544 ***	-7.74
AEBT	3.200	0.58	3.631	0.66
AMVBVEQ	0.591 ***	12.54	0.590 ***	12.53
TASSETS x 10^{-8}	4.921 ***	13.90	4.897 ***	13.83
TSQASSETS x 10^{-16}	-1.346 ***	-15.12	-1.341 ***	-15.07
AASSETS x 10^{-9}	-5.535 ***	-8.16	-5.541 ***	-8.18
ASQASSETS x 10^{-18}	2.713 ***	5.40	2.734 ***	5.44
RELSIZE	-1.897 ***	-10.49	-1.886 ***	-10.43
Competitive Effects				
GFOCPFOC	-0.442 ***	-6.11	-0.441 ***	-6.10
GDIVPFOC	0.359 ***	4.56	0.365 ***	4.65
Spillover Effects				
LOGMVDIFF	-0.130	-0.56	-0.183	-0.80
TSAMESIZE	-0.043	-0.64	-0.038	-0.57
TSAMEDIST	0.072	0.75	0.081	0.85
MVSIZEINDIST	2.999 **	2.17	2.957 **	2.14
MVSIZEOUTDIST	1.484 ***	3.42	1.505 ***	3.47
F-Value	60.32 ***		67.85 ***	
Adjusted R-square	0.0691		0.0682	
N	19,193		19,193	

Table 13 - Split Ratings and Industry Revaluation (Continued)

Panel B: Cross-Sectional Results (Continued)

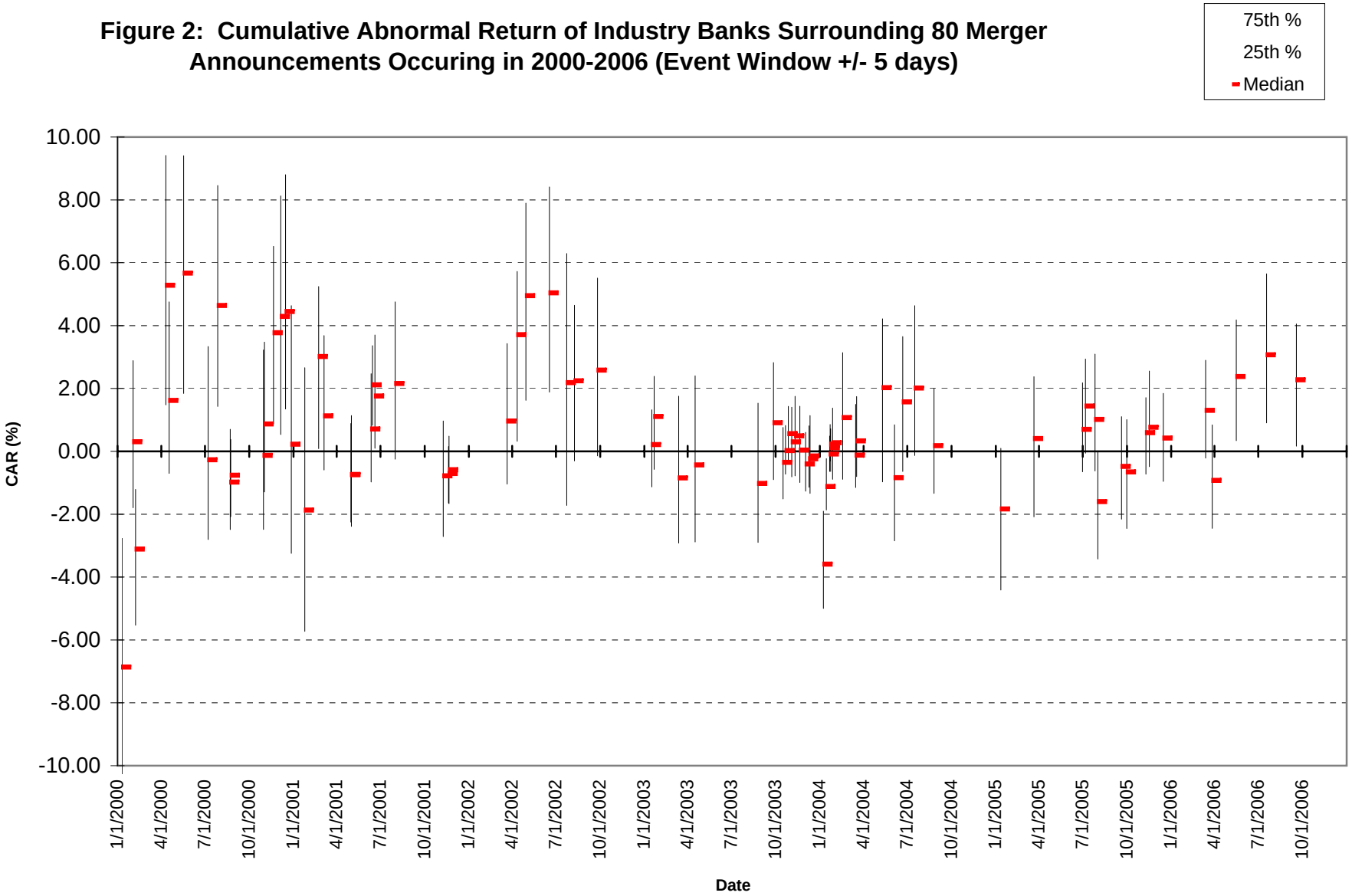
Adding Year Dummies

	Mode1 1		Model 2	
	Coef	**t-stat**	**Coef**	**t-stat**
Intercept	0.396	1.52	1.014 ***	5.26
Opacity Measures				
REALLOAN	0.765 ***	3.11		
OTHLOAN	1.115 ***	3.30		
OTHOPAQ	0.651	1.11		
AVGSPLIT	**0.220 ** **	**2.22**	**0.278 *** **	**3.21**
Merger-Specific Characteristics				
PAYDUM	-0.119	-1.18	-0.117	-1.16
PREM28	0.165	1.15	0.167	1.17
COMBCAR	15.409 ***	23.40	15.419 ***	23.42
TWOMERG	0.344 **	2.20	0.351 **	2.25
TEBT	-57.753 ***	-10.98	-57.898 ***	-11.01
TMVBVEQ	-0.202 **	-2.51	-0.194 **	-2.41
AEBT	-3.283	-0.58	-3.240	-0.57
AMVBVEQ	0.547 ***	11.23	0.547 ***	11.22
TASSETS x 10^{-8}	5.732 ***	15.35	5.737 ***	15.36
TSQASSETS x 10^{-16}	-1.555 ***	-16.89	-1.556 ***	-16.90
AASSETS x 10^{-9}	-3.095 ***	-4.38	-3.099 ***	-4.39
ASQASSETS x 10^{-19}	2.313	0.44	2.283	0.43
RELSIZE	-1.509 ***	-8.29	-1.511 ***	-8.30
Competitive Effects				
GFOCPFOC	-0.517 ***	-7.00	-0.517 ***	-7.00
GDIVPFOC	0.061	0.75	0.061	0.75
Spillover Effects				
LOGMVDIFF	-0.519 **	-2.25	-0.558 **	-2.43
TSAMESIZE	-0.030	-0.46	-0.024	-0.38
TSAMEDIST	0.079	0.84	0.087	0.93
MVSIZEINDIST	2.175	1.61	2.140	1.59
MVSIZEOUTDIST	1.312 ***	3.09	1.324 ***	3.12
Time				
YEAR01	-0.104	-0.99	-0.103	-0.98
YEAR02	2.520 ***	20.89	2.514 ***	20.95
YEAR03	-0.538 ***	-5.22	-0.559 ***	-5.49
YEAR04	-1.081 ***	-9.25	-1.102 ***	-9.53
YEAR05	-0.276 **	-2.26	-0.273 **	-2.29
YEAR06	0.484 ***	2.82	0.494 ***	2.91
F-Value	81.82 ***		90.36 ***	
Adjusted R-square	0.1122		0.1117	
N	19,193		19,193	

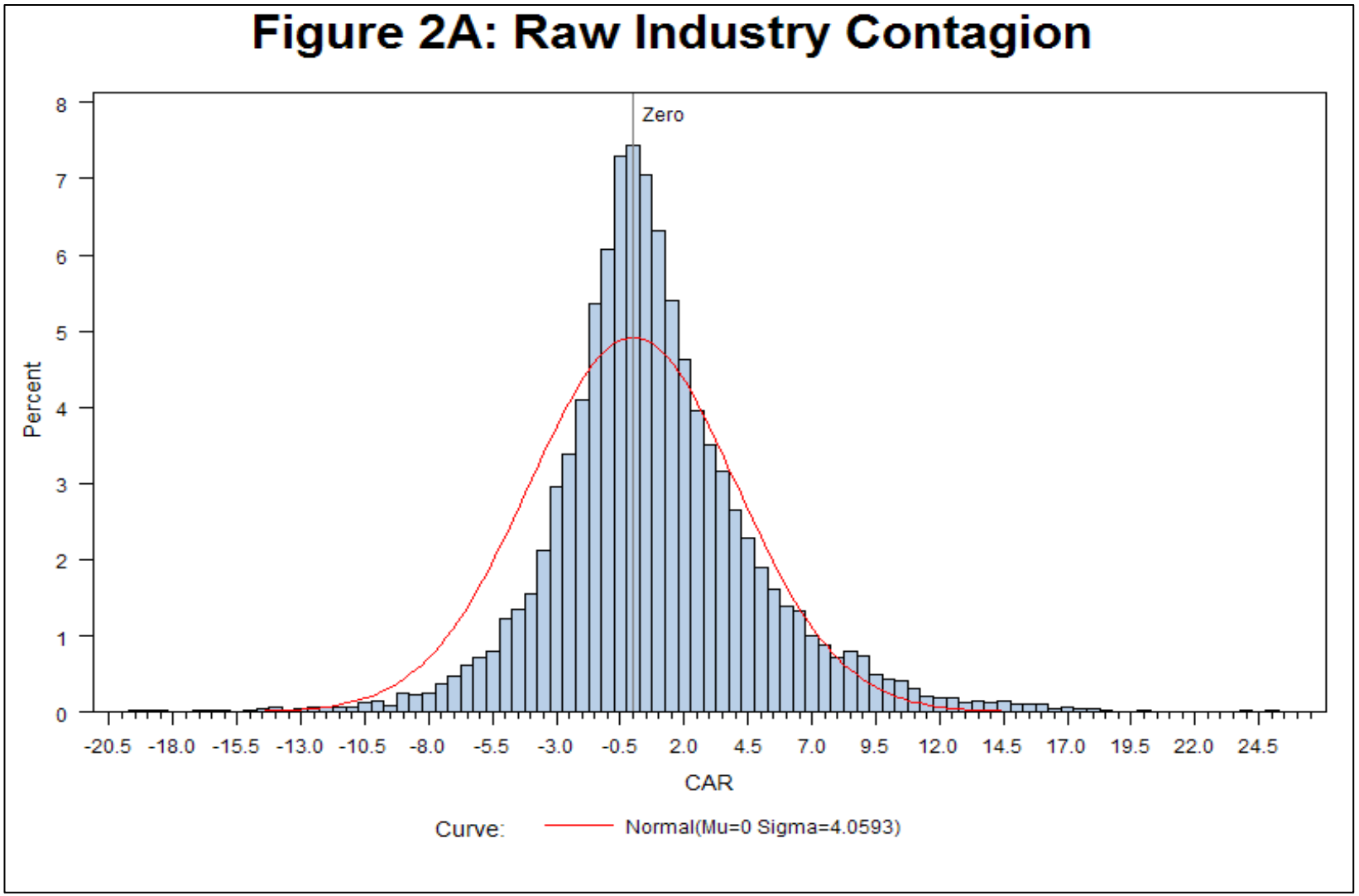
With Deal Dummies (Not reported)

	Mode1 1		Model 2	
Opacity Measures	**Coef**	**t-stat**	**Coef**	**t-stat**
REALLOAN	0.672 ***	2.91		
OTHLOAN	1.046 ***	3.44		
OTHOPAQ	0.681	1.28		
AVGSPLIT	**0.239 *** **	**2.68**	**0.311 *** **	**4.03**
F-Value	88.38 ***		81.47 ***	
Adjusted R-square	0.2742		0.2738	
N	19,193		19,193	

Figure 2: Cumulative Abnormal Return of Industry Banks Surrounding 80 Merger Announcements Occuring in 2000-2006 (Event Window +/- 5 days)



The histogram below is created from the raw CARs of the industry banks for all 80 merger announcements in the sample. The data is Winsorized at the 1% levels surrounding each announcement event. The curve represents a normal distribution with mean zero and standard deviation equal to the actual standard deviation of the overall sample.



The histogram below is created from the precision-adjusted CARs of the industry banks for all 80 merger announcements in the sample. Precision adjustment is perfromed by dividing the industry bank CAR by the average standard error for that bank from the 4-factor model. The data is Winsorized at the 1% levels surrounding each announcement event. The curve represents a normal distribution with mean zero and standard deviation equal to the actual standard deviation of the overall precision-adjusted sample.