

Does Opacity Really Matter? Evidence from Bank Mergers

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Abstract

I investigate how the opaqueness of a bank, as measured by the composition of assets, is related to its cumulative abnormal return surrounding the merger announcement of another bank in the industry. The results suggest that the merger announcement conveys information about the value of other banks. Banks in the industry that hold more loans and fewer transparent assets have a larger positive cumulative abnormal return surrounding the announcement of a large merger. Other types of potentially opaque assets – such as trading or intangible assets – appear to have little influence on the stock price reaction. The signal appears most relevant for banks in the industry that are larger, hold more loans, have lower market-to-book ratios, and are more positively correlated with the target. The fact that loans are positively related to the cumulative abnormal stock return surrounding the merger announcement suggests they are a primary source of opacity for banks. Overall, it appears opacity does matter within the banking industry.

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I. Introduction

Lack of transparency can have a profound impact in financial markets. Evidence of this has been especially plentiful throughout the banking industry in recent months. As the quality of existing loan portfolios have deteriorated, banks have significantly tightened their lending standards. The rapid precipitation of the credit crisis in financial markets during the latter half of 2007 is clear evidence of some type of market failure. In response to the turmoil, on more than one occasion the Federal Reserve has been forced to take action, lowering interest rates and injecting several billion dollars of liquidity into financial markets through open market operations.

The opaque¹ nature of banks is often cited as one justification for the regulation of the banking industry. If banks are unusually opaque, market-based mechanisms of discipline may fail. While the opaqueness of other industries, such as computer software or pharmaceuticals, may also create opportunities for market failures, the banking industry requires regulatory intervention since it is critical for maintaining orderly economic activity (Bernanke, 1983). In the absence of a regulatory safety net (especially deposit insurance), the failure of one bank may create an unjustified exodus of deposits from other banks (Diamond and Dybvig, 1983). Though banks currently exist in a world with deposit insurance, thereby mitigating the potential for bank runs, an unusually high degree of opaqueness may still inhibit the ability of market participants to discipline bank risk-taking appropriately.

¹ “Opaque” refers to the inability of the market to accurately assess the true value of a firm. In other words, lack of transparency

Despite the conventional notion that banks lack transparency, the question has not been definitively answered in the empirical banking literature. I attempt to provide additional insight on the issue within the context of a unique event – the announcement of a bank merger. Specifically, I investigate how the asset composition of a bank is related to its cumulative abnormal return (CAR) surrounding the merger announcement of another bank in the industry. My results support the notion that the merger announcement conveys information about the value of other banks, in particular, those that hold more opaque assets. Banks in the industry that hold more loans and fewer transparent assets have a larger positive cumulative abnormal return surrounding the announcement of a large merger. Other types of potentially opaque assets – such as trading or intangible assets – appear to have little influence on the stock price reaction. The signal appears most relevant for banks in the industry that are larger, hold more loans, have lower market-to-book ratios, and are more positively correlated with the target. The fact that loans are positively related to the cumulative abnormal stock return surrounding the merger announcement suggests they are a primary source of opacity for banks. Overall, it appears opacity really does matter within the banking industry.

To conduct this study, I assemble a sample of publicly traded bank and financial holding companies as well as a sample of large mergers that occur in the banking industry. Throughout the paper, I use the term “BHC” or “bank” to refer to either a bank holding company or financial holding company. The paper is organized as follows. Section II provides a summary of prior literature. Hypothesis development occurs in Section III, and Section IV describes the data. The research methodology and a

discussion of the empirical findings are provided in Section V. A summary of the findings and directions for future research are outlined in Section VI.

II. Literature Review

Literature focusing specifically on the issue of opacity in the banking industry is somewhat thin. Moreover, the two studies that do exist reach opposite conclusions. The importance of the issue, the limited amount of prior research, and the conflicting results suggest that the topic of bank opacity is an excellent area of research.

Morgan (2002) presents evidence suggesting that banks are actually more opaque than other types of firms. Morgan's approach is to examine the ratings assigned to new bond issues by the two major rating agencies, Moody's and Standard and Poor's (S&P). He finds that Moody's and S&P disagree more frequently and in larger magnitudes (i.e. a "split" rating) on new bonds issued by banks. This greater tendency for split ratings among the bank sample is interpreted by Morgan as evidence that banks are more opaque than other types of firms. The source of the opacity is attributed primarily to loans and trading assets, as they are positively related to split ratings. Furthermore, Morgan finds that the amount of capital is negatively related to a split rating, suggesting that capital structure plays a role in the degree of opaqueness.

Flannery, Kwan, and Nimalendran (2004) ("FKN"), however, use a completely different methodology and reach an exactly opposite conclusion. Like Morgan (2002) FKN investigate a matched sample of bank and non-bank firms, but they compare the market microstructure characteristics of the two samples. To proxy for opacity, FKN use several elements of market microstructure: the size of the bid-ask spread, trading

volume, and the standard deviation of returns. In addition to microstructure variables, they also examine the accuracy and dispersion of earnings forecasts. FKN hypothesizes that if banks are more opaque, they should possess larger bid ask spreads, may have unusually high or low trading volume, have a larger standard deviation of returns, and earnings forecasts related to banks should be less accurate and more widely dispersed. For banks listed on the New York Stock Exchange (NYSE), they find that the bid-ask spread and trading volume for banks are very similar to the non-bank control sample. For Nasdaq listed firms, the bid-ask spreads are very similar to the control sample, but the trading volume is much lower for banks. The standard deviation of returns is lower for banks in both the NYSE and Nasdaq samples, which might suggest 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 control sample. However, for smaller Nasdaq listed banks, earnings forecasts are actually less dispersed and more accurate in the bank sample than in the control sample, which they interpret as evidence that banks are not more opaque. Overall, FKN (2004) concludes that “banking assets are not unusually opaque, they are simply boring” (p. 419).

FKN (2004) also investigate the relationship of their measures of opacity to the financial characteristics of the bank, controlling for other microstructure variables. Similar to Morgan (2002), they find some evidence suggesting that loans are a contributing factor to bank opacity, especially in the Nasdaq sample. Trading assets do not appear to be particularly relevant – in fact in different regression specifications the coefficient for trading assets is often of the wrong (negative) sign, suggesting that trading assets are actually a source of *transparency*. Higher leverage tends to be positively

related to the degree of opacity, which is consistent with Morgan (2002). Overall, however, any link established by FKN between the financial characteristics and their market microstructure measures of opacity is not overwhelmingly strong, and the additional explanatory power the financial characteristics add to the regression models is small.

Thus, prior literature points to two major categories of assets – loans and trading securities – that could contribute to the opaque nature of BHCs. Despite this, there is disagreement on whether a bank is more opaque than other types of companies. The evidence presented by Morgan (2002) would suggest that banks are more opaque, while FKN (2004) conclude that banks are not exceptionally opaque.

Aside from the two papers directly associated with the issue of opacity, there are numerous studies in the banking literature that suggest markets are somewhat capable of disciplining risk-taking by banks. Flannery (1998) surveys the banking literature and concludes that market discipline could likely take on greater responsibility for constraining risk taking behavior, especially for large financial firms.

Additional evidence of market discipline is provided by Morgan and Stiroh (2001). They conclude that the debt market is effective at realizing when a bank moves towards more risky activities, as the spreads of new bond issue tend to increase. Activities that tend to increase spreads on new bond issues include trading activities, credit card lending, and commercial and industrial lending. Morgan and Stiroh (2001) point out that changes in the asset composition *within* a bank over time seem to have a greatest impact on the spreads of new bond issues. From a cross-sectional perspective, however, the spreads on

new bond issues do not seem to be explained by differences in the asset structures *across* banks.

Bliss and Flannery (2002) find that both stock and bond markets are effective at *monitoring* the behavior of BHCs, but neither is particularly effective at *influencing* the behavior of a bank's management. Given this evidence, Bliss and Flannery (2002) conclude that market forces alone are incapable of effectively disciplining banks. Regulation is still a necessary force to constrain risk-taking behavior.

III. Hypothesis Development

The purpose of this paper is not to specifically answer the question of whether banks are more (or less) opaque than other types of firms, but rather to investigate if opacity matters *within* the banking industry. The issue of whether the banking industry is more opaque than other type of industries is reserved for future research.

How might opacity affect a bank? From a theoretical perspective, the market value of a firm's equity is the discounted expected value of net future cash flows. Opacity may influence the perceived value of equity in two ways: 1) it can obscure the ability of the market to determine the net future cash flows and 2) it creates difficulty in identifying the appropriate discount rate.

Assets provide future economic benefits, and should generally be associated with cash inflows. Liabilities represent a future economic cost, and are associated with cash outflows. The market value (MV) of equity is the discounted net value of the inflows minus the outflows and can be defined as:

$$MV_{Equity} = MV_{Assets} - MV_{Liabilities}$$

Based on this definition, difficulty in determining the market value of equity could arise from opaqueness of either assets or liabilities. If the probability of bankruptcy is relatively low, however, the liabilities of a bank are not likely to fluctuate much in value and the market value of liabilities will be very close to book value. In addition, factors that impact the credit or liquidity risk of a bank's liabilities will most likely impact all banks in a relatively similar manner. Simply stated, the market value of a bank's liabilities will most likely not fluctuate from their book value, and if they do, the fluctuation will be comparable for all banks. Under these conditions, the opaqueness of liabilities is not likely to have a major impact on the market's ability to value the equity of the bank.

If liabilities are unlikely to be a significant source of opacity for banks, then the focus turns to the asset side of the balance sheet. The literature already identifies two major asset classes that are may create opacity for banks: loans and trading assets. Loans are thought to be opaque because they are essentially a diverse collection of privately negotiated transactions between the bank and borrowers². This makes the valuation of loans by outside market participants especially difficult since they do not have access to the specific details of the contract and the creditworthiness of borrowers (Morgan, 2002).

Trading assets are comprised of various liquid, short-term securities (including derivatives) that the bank has intentions of actively trading in the market. The composition of trading assets, however, is not necessarily what makes them opaque – it is the fact that they are “slippery” (Morgan, 2002). In other words, banks can very quickly and easily change the composition of this asset class between reporting dates. For a

² Examples of theoretical models suggesting that loans lack transparency are presented by Campbell and Kracaw (1980) and Berlin and Loeys (1988), among others.

financial institution, Myers and Rajan (1998) argue that the liquidity 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.

Aside from loans and trading assets, there may be other types of assets that also contribute to the degree of opaqueness in banks. As suggested by the recent turmoil in credit markets, securitized loans (such as mortgage-backed or asset-backed securities) may also be very difficult for the market to value. While some types of these assets are included as trading securities, a good portion of them are actually classified as available-for-sale or held-to-maturity securities³.

To summarize, if we can with reasonable certainty exclude liabilities as a potential source of opacity for banks, then it must be the assets that are the biggest problem. The market value of equity is the residual value of the market value of assets less the liabilities. Thus, it is the opacity of a bank's assets that primarily affect the market value of equity. To test the notion that certain types of assets create opacity for a bank, I discuss two methodologies and related hypotheses in the following sections. The first approach is event-driven, and the second approach employs a cross-sectional methodology over time.

III.A Event-Driven Hypothesis

The fundamental cause of opacity is informational asymmetry. Banks possess information about the value of its assets that is very difficult or impossible for the market

³ FKN (2004) dismiss available-for-sale and held-to-maturity securities as a source of opacity for banks, but their sample data ends in 1998. Since that time, the market for securitized loan products has grown substantially, so I consider these types of assets as a potential contributor to bank opacity in the cross-sectional analysis.

to obtain. An event that reveals information regarding the market value of one bank should also provide some information regarding the value of other banks. If opacity obscures the ability of the market to value a bank, this information effect should have the greatest impact on banks that are relatively more opaque. In other words, the degree of opaqueness should be positively correlated with the re-pricing effect.

Prior research in other areas of the finance literature has demonstrated that major events that signal a value change in one firm in the industry can have an impact on the value of other firms as well. Lang and Stulz (1992) provide evidence that the bankruptcy of one firm leads to lower values of other firms in the industry, with the exception of highly concentrated (oligopolistic) industries in which there are few competitors, but a high degree of rivalry. In a highly concentrated industry, the bankruptcy actually improves the value of other firms since there is one less competitor. Firth (1996) demonstrates that a change in the dividend of one firm has contagion effects in that firm's industry. If one firm increases (decreases) its dividend level, it has a positive (negative) effect on the stock prices of other firms in the industry.

One major event that could be expected to provide information about the value of a bank is a merger. In a merger, the acquiring firm generally pays a premium to the shareholders of the target firm. The payment of a premium suggests, among other things, that the acquirer believes the target is undervalued. If the target bank is perceived to be undervalued by the acquirer, then the announcement of the merger may also provide information regarding the value of other banks. Thus, the announcement of a merger is an ideal event that provides new information to the market about the value of a bank.

Given the announcement of a merger in the industry, I expect to find that the equity value of other banks will increase as well. The stock price reaction of a BHC in the industry, however, should be related to its degree of opaqueness. It is harder for the market to value a very opaque bank, so any new information related to its value should be more informative. This leads to the first hypothesis:

***HI:** The opaque assets of a bank should be positively related to its cumulative abnormal return (CAR) surrounding the announcement of the merger of another bank.*

This hypothesis predicts that the CAR of a BHC with more opaque assets will be more positive than one with more transparent assets.

In addition to the asset composition of the industry BHCs, there are other factors that may affect the magnitude of the CAR throughout the industry. One factor is the similarity of the industry BHC to the target. I expect the CAR to be larger for those industry BHCs which are more similar to the target being acquired. The size of the premium paid to the target and the size of the target will also likely have an influence – larger premiums and larger deals are likely to have a greater influence on the CAR of other banks throughout the industry. I must control for these other factors in the empirical research design.

III.B Cross Sectional Hypothesis

(NOTE: This section is an incomplete work in progress, and no results are reported)

If banks hold more opaque assets than other banks, then this should be reflected in the cross-sectional risk and/or the valuation of the bank. I discuss the hypothesized impact on each factor separately in the following sections.

The Effect of Opacity on Risk

If opacity makes it difficult for the market to assign the correct discount rate, then a more opaque bank should be more sensitive to the arrival of new information. When new information is presented to the market, the discount rate of more opaque firms is likely to change by a larger magnitude. Other things equal, if the discount rate changes by a larger amount, this would tend to increase the volatility of equity returns. This leads to my second hypothesis, which is formally stated as:

***H2:** The opaque assets of a bank are positively related to the standard deviation of equity returns.*

Thus, a bank that is relatively more opaque should have more volatility in their stock price.

The Effect of Opacity on Valuation

The effect of opacity on the valuation of the bank, however, is a bit more complex. A greater degree of opacity might increase the discount rate, which would tend to have a negative impact on the valuation of the bank. But this line of reasoning ignores the fact that the assets which are more opaque may also be more profitable and generate higher cash flows, which would tend to increase the value of the bank. Thus, the impact of opacity on the valuation of the bank is less clear. I must control for both a discount rate effect and a cash flow effect.

Essentially, I wish to find the part of the bank's market value that is related to the profitability of its assets and remove it. The residual value is what should be related to

opacity. One approach is the residual income valuation (RIV) technique proposed by Ohlson (1995) and Feltham and Ohlson (1995, 1996). The RIV technique is based on the premise that differences between the market value and book value of a firm arise from the “residual” income generated by assets beyond the level that is required by investors. Begley, Chamberlain, and Li (2006) apply the RIV model to the banking industry to model the factors that create value for banks. In general terms, the model would be specified as:

$$MV_{i,t} - BV_{i,t} = \sum_t^T \frac{(Inc_{j,t} - r_{j,t} \cdot BV_{Asset_{j,t}})}{(1 + \rho)^t} + \varepsilon_{i,t}$$

where $MV_{i,t}$ is the market value of equity and $BV_{i,t}$ is the book value at time t . $Inc_{j,t}$ is the income stream generated by asset j and $BV_{Asset_{j,t}}$ is the book value of asset j at time t . The required return on asset j is given by $r_{j,t}$. The denominator represents the discount rate. The portion of the market value not explained by the residual income is represented by $\varepsilon_{i,t}$. Empirically, the appeal of this approach is that it allows for testing how the composition of assets (i.e. more or less opaque) impacts the market value of the firm, given the relative profitability of each asset class. This leads to the statement of a third hypothesis:

***H3:** After extracting the portion of excess market value related to the cash flows generated by the assets, the absolute value of the residual should be larger for banks that are more opaque.*

In other words, the portion of the BHC’s market value that is not explained by the residual income generated by its assets should deviate more over time for a BHC that is more opaque.

IV. Data

IV.A Banking Industry Sample

My data consists of all domestic, publicly traded bank or financial holding companies from the Center for Research in Security Prices (CRSP) with available data from Form FR Y-9C⁴ for the years ended 1999 through 2006⁵. I begin by examining all firms that have a CRSP Standard Industrial Classification (SIC) code of 6020-6030, 6712, or 6719. I cross reference these firms with the data from the National Information Center (NIC) website to see if they are in fact a bank or financial holding company, and not some other type of financial institution. I obtain the entity number from NIC, and use the entity number to extract financial information from Form FR Y-9C.

IV.B M&A Sample

I identify a sample of BHC mergers from Thomson Financial SDC Platinum Mergers and Acquisitions Database (SDC)⁶. My goal is find mergers or acquisitions involving banks that are materially significant and do not overlap with the announcement of other large mergers. I begin by obtaining mergers and acquisitions for all publicly traded banks in which a majority of control (>50%) is obtained. I restrict my analysis to domestic transactions that are announced (and successfully completed) during the calendar years 2000 through 2006, but I exclude any transaction that SDC flags as a

⁴ Throughout the sample period, the majority of publicly traded BHC or FHC are required to file an FR Y-9C. Prior to June 30, 2006, a one-bank BHC or FHC with less than \$150 million in assets is required to file only form FR Y-9SP, and there are very few publicly traded banks of this size. As of June 30, 2006, however, the asset threshold was raised to \$500 million.

⁵ I choose this time period because there are two major regulatory changes in the banking industry that occurred in the 1990's. The Riegle-Neal Interstate Banking and Branching Act (1994) effectively eliminated interstate banking restrictions and the Graham-Leach-Bliley Act (1999) significantly reduced restrictions on the ability of depository institutions to engage in investment banking activities.

⁶ I 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.

“rumored” deal prior to the actual announcement. From this list, I exclude small mergers, defined as those in which the asset size of the target is below the industry median. Since I ultimately intend to measure the industry reaction to the announcement of the merger, I also must exclude mergers with announcement periods that overlap, so I require that there be at least 20 calendar days between the announcement dates of another large merger. This leaves a final sample of 30 mergers between publicly traded BHCs that occur from 2000 to 2006 where the target is large (i.e. above the industry median) and the announcement period does not overlap with the announcement of another large merger.

V. Methodology and Results

V.A Descriptive Statistics

I construct financial variables for all BHCs as of the years ended 1999 through 2005. There is data for approximately 400 BHCs in each year and I divide the sample into large banks (above the median assets) and small banks (below median assets). I exhaustively categorize the assets of the balance sheet based on the general classification format on Form FR-Y9C as follows:

Category Name	Included Items	Transparent/ Opaque
CASH	Cash and balances due from depository institutions	Transparent
SECURITY	Held-to-maturity and available-for-sale securities	Transparent
FEDFUND	Federal funds sold and securities purchased under agreements to resell	Transparent
LOAN	Net loans and leases	Opaque

TRADEA	Trading assets	Opaque
FIXED	Premises and fixed assets (including capitalized leases)	Opaque
OREO	Other real-estate owned	Opaque
INVEST	Investments in unconsolidated subsidiaries	Opaque
INTANGIBLE	Intangible assets (including goodwill) and other assets	Opaque

The classification of assets is roughly the same as that used by FKN (2004). Table 1 presents the mean, median, and standard deviation of the variables for each sample. The difference in the mean values between large and small banks and the significance level are presented in the last two columns.

Significant differences exist between small and large banks. Large banks have significantly higher valuations (MVBVEQ), lower risk (STD), and are more profitable (ROA). Net loans (LOAN) account for roughly two-thirds of assets in both samples, with small banks holding relatively more loans than large banks. The percent of the loan loss allowance (LLAPCT) is slightly higher in the large bank sample. The loan portfolio is also more diversified among the large BHCs, as LOANHERF is significantly lower. Large banks make relatively fewer commercial real estate (COMMREAL) and residential real estate (RESREAL) loans, and relatively more commercial and industrial (CILOAN) and consumer loans (CONSLOAN), which includes credit cards.

Transparent assets represent slightly more than one quarter of total assets. The predominant category of transparent assets is SECURITY, which include available-for-

sale and held-to-maturity securities⁷. Large banks appear to hold more securities than small banks and slightly less cash.

Aside from loans and the transparent assets, the remaining assets are considered to be a potential source of opacity. These include trading assets (TRADEA), premises and other fixed assets (FIXED), other real estate owned (OREO), investments in unconsolidated subsidiaries (INVEST), and intangible assets (INTANGIBLE). Large banks have more trading assets compared to small banks. The mean and median statistics are a deceiving, as only about 60 of the approximately 400 banks in the sample engage in trading activity. Large banks also have significantly more intangible assets, such as goodwill.

V.B Event-Driven Results

The characteristics of the mergers are presented in Table 2. The announcement date (TARANN) is presented in the first column, followed by the names of the target and acquirer. Eleven of the 30 acquirers pay for a portion of the deal in cash, with two using 100% cash. The majority of the transactions, however, are completed by the acquirer issuing stock to the target shareholders. None of the transactions are tender offers, and all are listed as “friendly” by SDC.

The mean (median) premium to target shareholders (PREM28) is 27.22% (22.91%).

The premium is calculated as follows:

$$PREM28 = \frac{P^* - P_{-28}}{P_{-28}}$$

⁷ I classify SECURITY as a transparent asset, but there may be some securities, such as mortgage-backed or asset backed securities, which may not be transparent in nature. I plan to divide this asset category into transparent and opaque securities in future revisions.

where P^* is the price per share paid to target shareholders and P_{-28} is the stock price of the target 28 calendar days prior to the announcement date⁸. Notice that for three of the mergers, PREM28 is actually slightly negative.

Nine of the mergers involve BHCs that are headquartered in the same state. The mean (median) asset size of the target is \$17.5 billion (\$2.5 billion), while the size of the acquirer is \$87 billion (\$46.2 billion). In the majority of the sample, the acquirer is substantially larger than the target. The asset composition of the targets is similar to that of the entire BHC sample, with on average about two-thirds of assets held as loans (TLOAN), one-quarter of assets classified as transparent (TTRANSP), and the remaining percent comprised of other opaque assets (TOPAQUE).

I calculate the CAR for both the target (TARCAR) and acquirer (ACQCAR) surrounding the announcement of the merger. I run a regression for trading days -312 to -60 relative to the announcement to compute the estimated intercept and beta according to the standard market model:

$$R_{it} = \alpha_i + \beta_i \cdot (R_{mt})$$

Where R_{it} is the return on firm i at time t and R_{mt} is the return on the CRSP value-weighted⁹ market index at time t . Using the estimated parameters $\hat{\alpha}_i$ and $\hat{\beta}_i$, I compute the abnormal return for trading days -5 through +5 surrounding the merger announcement as

$$AR_{it} = R_{it} - \hat{\alpha}_i - \hat{\beta}_i \cdot (R_{mt})$$

The CAR is the sum of the AR over the 11-day event period¹⁰, specified as

⁸ Verified using the stock price given by CRSP.

⁹ The CRSP equal weighted index was also used, with virtually identical results.

¹⁰ Alternative event windows were used, with qualitatively similar results.

$$CAR_i = \sum_{t=-5}^{+5} AR_{it}$$

The mean (median) of TARCAR is 19.16% (19.32%), while ACQCAR is -2.12% (-2.62%). This is consistent with prior research on the announcement period returns of bank mergers (e.g. Houston and Ryngaert, 1994; Delong, 2001) which suggests that the CAR of targets is significantly positive, while the CAR of acquirers is often negative, or at best zero. This provides some assurance that my sample of 30 large mergers is similar to other samples of large bank mergers.

Industry CAR Ranked By Asset Composition

I also calculate the CAR for each BHC in the industry surrounding each of the merger announcements. I employ the same procedure used to calculate the CAR for the targets and acquirers, with the exception that I expand the announcement window to days -5,+10 relative to the announcement date¹¹. This captures any additional drift that might occur in the industry after the announcement date. Table 3 presents the mean and median CAR for large and small banks in the industry¹². The mean (median) CAR for the sample of large BHCs is 0.8906 (0.5472) and is significantly different from zero. For the small banks, however, we cannot reject the hypothesis that the overall CAR is zero.

I rank the CAR within each sample by whether the BHC falls in the upper or lower half of percent of loans (LOAN), percent of other opaque assets besides loans (OPAQUE), and the percent of transparent assets (TRANSP) as of the most recent year

¹¹ Results are similar using alternative announcement windows of days -5,+5 and -5,+20.

¹² I exclude extreme outliers by Winsorizing the data surrounding each announcement at the 1% and 99% intervals of the CAR. I also exclude the CARs of the targets and acquirers from this analysis.

end¹³ that occurs prior to the merger announcement. Within the sample of large banks, both the mean and median CAR is significantly higher (lower) for BHCs that hold more (less) opaque assets. As predicted, this evidence suggests that the merger announcement is most informative about the value of more opaque banks. The evidence is not as compelling in the sample of small banks, as only the difference in the mean ranked by TRANSP exhibits statistical significance. Overall, the evidence in Table 3 is consistent with the notion that the announcement of a large merger is most informative about the value of larger banks that hold more opaque assets.

Event-Driven Cross Sectional Results

While Table 3 provides some preliminary evidence that opacity is positively related to the reaction in the industry to a large merger, it does not control for numerous factors that might also influence the CAR in the industry. In order to control for other influential factors, I perform a cross-sectional regression and introduce other variables that might have an influence on the CAR of the industry BHCs. The general specification of the regression model is:

$$CAR_{-5,+10} = f(\text{BHC properties, target properties, deal properties, time dummies})$$

I include combinations of other financial aspects of the industry BHC, characteristics of the target, deal characteristics, and time variables as other independent variables. Each of these variables, and the logic for including them in the model, is discussed in the sections below.

¹³ Though quarterly data is readily available for BHCs, I use annual data because I ultimately will compare the banking industry to other industries. Quarterly data is not as plentiful for other industries.

Beyond the asset composition of the BHC, I include a size variable, measured as the natural log of total assets (LNASSETS). The market-to-book value of equity (MVBVEQ) is included, as a merger announcement may provide more information about BHCs that are undervalued. I also include leverage (LEV), which is computed as total liabilities divided by total assets. Finally, the correlation between the stock returns of the industry BHC and the target (CORR) is included as a proxy to capture similarities in business activities not captured by other variables¹⁴.

The properties of the target itself are also likely to influence the reaction throughout the industry. I include the size of the target as the natural log of assets (TLNASSETS), as larger deals may have a greater impact. The relative value of the target could also be an influence, so I also use the market-to-book value of equity for the target (TMVBVEQ). If a relatively overvalued (undervalued) target is acquired, this may provide less (more) information to the rest of the industry. Finally, I include the percent of loans (TLOAN) and the percent of all opaque assets besides loans (OPAQUE). I group the other opaque assets of the target into one category because including them as separate categories introduces significant multicollinearity issues.

I include three deal-related characteristics as additional control variables¹⁵. First is the premium paid to the target shareholders (PREM28). A larger premium is likely a signal the target is relatively more undervalued, which is expected to elicit a larger CAR throughout the industry. As a proxy for whether the market perceives the merger as

¹⁴ This method has also been used by Morck, Shleifer, and Vishny (1990) and DeLong (2003) to measure similarities or dissimilarities in business activities for the purpose of determining whether a merger is focusing or diversifying.

¹⁵ In alternative model specifications (not reported), I also include a variable for method of payment (cash vs. stock), the correlation of the target and acquirers stock returns, and a dummy variable indicating whether or not the industry BHC is in the same state as the target or acquirer. None of these variables appear to have any influence on the CAR of BHCs in the industry.

“good”, I also include the CAR of the acquiring firm surrounding the announcement¹⁶ (ACQCAR). I also include a binary variable equal to one if the target and acquirer are in the same state, and equal to zero otherwise (GEOFOCUS). This variable controls for the fact that an intrastate merger likely results in significantly more geographic market power for the combined firm (at the expense of other firms). The perception that the target is undervalued also may be less of a motivating factor in geographically concentrating mergers. Thus, the signal from an intrastate merger may be weaker, resulting in a lower (or negative) industry reaction. Finally, I also add time dummy variables (DUM01 – DUM06) if the merger is announced in years 2001 through 2006, respectively.

The results of this regression are presented separately for large and small BHCs in Table 4. Model 1 includes the characteristics of the individual industry BHC and the properties of the merger deal, and Model 2 adds the characteristics of the target as well. Model 3 replaces the composition of opaque assets of the industry BHC with the percent of transparent assets (TRANSP). Focusing attention on the sample of large BHCs, the coefficient of LOAN is positive and significant in Models 1 and 2. This is consistent with the hypothesis that the announcement should provide more information for banks that hold more of the opaque asset loans.

Aside from loans, there is little evidence that the other types of opaque assets have a significant relationship with the CAR of the banks in the industry, as only the coefficient of INVEST is significant, but the sign is opposite of what is expected. This could be attributed to the fact that only 10 of the 30 targets hold an investment in unconsolidated

¹⁶ Among other things, the CAR of the acquirer likely contains information regarding expected synergies of the combined operations, whether the market believes the acquirer overpaid, and/or if the acquirer’s stock used as a method of payment might be overvalued.

subsidiary on their balance sheet, and of those 10, the largest value for INVEST is less than one-quarter of one percent¹⁷.

In Model 3 for large BHCs, TRANSP is negative and significant. This suggests that if an industry BHC holds more transparent assets, the CAR around the merger announcement is smaller (less positive). Transparent assets, such as cash and securities, are easily valued by the market. The negative sign of TRANSP provides further evidence that the information conveyed by the merger announcement is related to the opaque assets (especially loans) and not the transparent categories of assets.

Models 2 and 3 include the properties of the target in the merger. Not surprisingly, the size of the target (TLNASSETS) is positively related to the CAR, suggesting that larger mergers convey more information. The positive and significant coefficient of TMVBVEQ implies that if the value of the target is higher prior to the announcement, the industry CAR is lower. In other words, the industry reaction is greater when the target is more undervalued.

The coefficients of TLOAN and TOPAQUE are both negative and significant. The negative coefficient suggests that when a target has more opaque assets, the CAR of other BHCs in the industry is lower. Initially, this might seem surprising, but is best interpreted as the industry reacting less positively to the acquisition of target that is more opaque. When the target is more opaque, the industry as a whole is less certain about its value, resulting in a lower CAR for industry firms, *ceteris paribus*. However, the market assigns higher values to those firms in the industry that have a greater portion of opaque assets, especially loans, after the announcement of a large merger.

¹⁷ The same principle holds true for trading assets, as only nine of 30 targets have trading assets on the balance sheet and the values of TRADEA are all very small.

The coefficients of the deal characteristics also have the expected signs. The premium paid (PREM28) is positive and significant in all three models. Thus, it appears that a larger premium conveys more information, which is intuitively accurate. The acquirer of the target (ACQCAR) is also positive and significant, suggesting that if the market rewards (punishes) the acquirer for obtaining the target, the CAR among other BHCs is higher (lower). Finally, the coefficient of GEOFOCUS is negative. This could be attributed to two factors. First, the primary motivation of a geographically concentrating merger may not be that the target is undervalued, but instead that the acquiring bank wishes to increase its market power. Hence, there may be less information content about the possible undervaluation of other banks. Second, the negative sign of GEOFOCUS could result from an increase in the geographic market power of the acquiring firm, which may actually be bad news for other banks.

In the smaller sample of BHCs, the evidence is much less compelling. Among the asset composition variables, only the coefficient of INTANGIBLE is significant, but it is of the opposite sign. The R-squared for the models in small bank sample are also very low relative to sample of large banks. A few of the control variables, such as MVBVEQ, CORR, and GEOFOCUS remain significant, but overall it appears that the announcement of a large merger has little impact on the stock prices of smaller BHCs. The asset composition of a smaller bank does not appear to have an effect on its CAR.

Robustness Check - Fixed Effects Regression

As a robustness check, I perform a one-way fixed effects regression, the results of which are presented in Table 5. The CAR of the industry BHC remains the dependent

variable. The fixed effect uses a binary variable equal to one for each of the 30 merger announcements, which controls for the specific characteristics of each deal using only the dummy variable. The model I specified in general terms as:

$$CAR_{-5,+10} = f(BHC \text{ properties}, \text{deal dummies})$$

I construct a panel data subsample of industry BHCs that are traded continuously throughout the entire seven year period 2000 through 2006. Each of these BHC has trading data available at the time of all 30 large merger announcements. Instead of the time component being a year, however, it is the announcement dates of the mergers. The subsample consists of 130 BHCs, the majority of which are large in size.

The results in Table 5 are consistent with the findings from the OLS regressions performed in the large bank sample in Table 4. The coefficient of LOAN in Model 1 is positive and significant, and once again none of the other types of opaque assets seem to have a significant effect on the CAR. In Model 2, TRANSP is negative and significant. In both Model 1 and 2, the size of the BHC, leverage, and its correlation with the target all seem to have relationship with its CAR, while the market-to-book ratio has a negative relationship.

V.C Cross-Sectional Results

(TO BE INSERTED)

VI. Conclusion

The main conclusion of this paper is that *within* banking industry, opacity does seem to matter. I examine the stock price reaction of BHCs surrounding the announcement of

a large merger in the industry. I find that the announcements of such mergers tend to have an overall positive effect, as measured by the CAR, on the market values of other large banks. The magnitude of the CAR is positively related to the percent of loans held by the BHC. The results suggest that the merger announcement provides valuable information to the market about the values of other banks, especially those that have more loans. It demonstrates that an exogenous signal which contains information about the value of one bank in the industry has a greater influence on the market value of banks that hold more opaque assets.

Like any research endeavor, there are limitations of this study. First, I dismiss the liabilities of a bank as a potential source of opacity. While the argument seems logical, it could be that liabilities have an impact. Second, my sample covers a period of time in which the banking industry is very profitable and stable, so my findings may not be generalized to a period of instability. Due to the recent events in the credit markets, the next five years may be a more interesting period of study.

Future research should focus on applying the methodology outlined in this paper to other industries in the hope of providing evidence on whether banks are indeed more opaque than other firms. How strong is the information effect surrounding a merger announcement in other industries? What are the sources of opacity in these industries? If banks are more opaque, I expect to find that the CAR is relatively larger in the banking industry. While this paper has not specifically focused on the issue of whether banks should be regulated because they are more opaque than other types of firms, addressing this issue is the next logical step.

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Table 1 - BHC Descriptive Statistics

	Large Banks (Firm Year Obs=1359)			Small Banks (Firm Year Obs=1355)			Difference in Mean	P-value
	Mean	Median	STD	Mean	Median	STD		
Valuation/Risk Variables								
MVBVEQ	1.97	1.88	0.77	1.57	1.46	0.92	0.40 ***	0.0001
STD	31.77	30.13	10.78	36.02	32.15	17.06	-4.25 ***	0.0001
Financial Variables								
ASSETS (\$000)	31,686,338	3,129,416	127,690,268	530,580	505,826	235,024	31,155,758 ***	0.0001
NONINT	0.0538	0.0527	0.0123	0.0574	0.0566	0.0119	-0.0036 ***	0.0001
LEV	0.9095	0.9112	0.0215	0.9069	0.9099	0.0257	0.0026 *	0.0678
ROA	0.0115	0.0116	0.0048	0.0088	0.0091	0.0060	0.0027 ***	0.0001
Loan Related Variables								
LOAN	0.6383	0.6554	0.1184	0.6742	0.6860	0.1180	-0.0359 ***	0.0001
LLAPCT	0.0143	0.0135	0.0048	0.0132	0.0125	0.0053	0.0010 ***	0.0001
LOANHERF	35.30	31.44	13.35	40.60	37.45	12.66	-5.30 ***	0.0001
COMMREAL	0.3629	0.3468	0.1779	0.4434	0.4337	0.1858	-0.08 ***	0.0001
RESREAL	0.2898	0.2822	0.1563	0.3093	0.2898	0.1806	-0.02 ***	0.0012
CILOAN	0.1845	0.1622	0.1189	0.1561	0.1346	0.1039	0.03 ***	0.0001
CONSLOAN	0.1039	0.0812	0.1031	0.0663	0.0425	0.0716	0.04 ***	0.0001
OTHLOAN	0.0588	0.0371	0.0905	0.0249	0.0116	0.0372	0.03 ***	0.0001
Transparent Assets								
CASH	0.0388	0.0328	0.0302	0.0408	0.0357	0.0244	-0.0020	0.1243
SECURITY	0.2343	0.2202	0.1046	0.2152	0.1994	0.1194	0.0190 ***	0.0001
FEDFUND	0.0152	0.0030	0.0330	0.0177	0.0047	0.0295	-0.0025 **	0.0290
Opaque Assets (Exc. Loans)								
TRADEA	0.0055	0.0000	0.0260	0.0002	0.0000	0.0028	0.0053 ***	0.0001
FIXED	0.0152	0.0137	0.0078	0.0175	0.0166	0.0094	-0.0023 ***	0.0001
OREO	0.0009	0.0004	0.0018	0.0012	0.0003	0.0022	-0.0003 ***	0.0001
INVEST	0.0006	0.0000	0.0013	0.0004	0.0000	0.0023	0.0002 ***	0.0008
INTANGIBLE	0.0619	0.0518	0.0407	0.0365	0.0313	0.0245	0.0254 ***	0.0001

This table presents descriptive statistics of all domestic publicly traded BHC that filed an FR-Y9C (assets over \$150 million) as of the years ended 1999 through 2005. MVBVEQ is the market value of equity at the end of the year divided by the book value of equity. STD is the annualized daily standard deviation of stock returns during the year. ASSETS is total assets, presented in thousands of dollars. NONINT is non interest income (excluding service charges on deposit accounts) divided by total assets. LEV is total liabilities divided by total assets. ROA is net income divided by total assets. LOAN is total loans (net) divided by total assets. LLAPCT is the loan loss reserve divided by loans. LOANHERF is a Herfindahl index (multiplied by 100) computed based on the percentage of loans in each of five (exhaustive) categories: commercial real estate (COMMREAL), residential real estate (RESREAL), commercial and industrial loans (CILOAN), consumer loans (CONSLOAN), and other loans (OTHLOAN).

CASH is the percent of assets that are cash or cash equivalents. SECURITY is the percent of assets that are either available-for-sale or held-to-maturity securities. FEDFUND is the percent of assets that are either federal funds sold or securities purchased under agreements to resell. TRADEA is the percent of assets that are trading assets. FIXED is the percent of assets that are premises and fixed assets. OREO is the percent of assets that are considered other real estate owned. INVEST is the percent of assets classified as investments in unconsolidated subsidiaries. INTANGIBLE is the percent of assets classified as intangible and other assets.

***, **, * denotes statistical significance at the 0.01, 0.05, and 0.10 levels, respectively.

Table 2 - Sample of Large Bank Mergers

TARANN	Target	Acquirer	%CASH	%STOCK	PREM28	Same State	TASSETS	AASSETS	TLOAN	TOPAQUE	TTRANSP	TARCAR	ACQCAR
01/10/00	Anchor Financial Corp	Carolina First Corp,SC	-	100.00	0.2818	1	1,206,843	3,561,888	0.7064	0.0439	0.2496	0.2420	-0.1091
05/17/00	Keystone Finl,Harrisburg,PA	M&T Bank Corp,Buffalo,New York	35.97	64.03	0.3543	0	6,887,508	22,409,115	0.6548	0.0553	0.2899	0.4061	0.0581
07/07/00	Brenton Banks,Des Moines,IA	Wells Fargo & Co,California	100.00	-	0.0704	0	1,985,455	218,102,000	0.6083	0.0548	0.3369	-0.0966	0.0198
07/27/00	FCNB Corp,Frederick,MD	BB&T Corp	-	100.00	0.1331	0	1,505,796	43,480,996	0.5936	0.0621	0.3443	0.0685	0.0928
08/22/00	Shoreline Financial Corp,MI	Chemical Financial Corp,MI	-	100.00	0.2278	1	1,013,314	1,890,968	0.6855	0.0412	0.2733	0.0973	-0.0803
11/20/00	Old Kent Finl Corp,Michigan	Fifth Third Bancorp,Cincinnati	-	100.00	0.4481	0	17,986,503	41,589,512	0.7107	0.0753	0.2140	0.4246	0.0200
12/05/00	Century South Banks Inc,GA	BB&T Corp	-	100.00	0.6432	0	1,273,242	43,480,996	0.7361	0.0455	0.2184	0.4395	0.0844
01/24/01	F&M National,Winchester,VA	BB&T Corp	-	100.00	0.5756	0	3,556,119	59,340,228	0.5746	0.0484	0.3771	0.4130	-0.0181
04/30/01	National City Bancorp	Marshall & Ilsley Corp,WI	-	100.00	0.6518	0	1,193,612	26,077,739	0.7513	0.0369	0.2118	0.4903	-0.0442
06/17/02	Mississippi Valley Bancshares	Marshall & Ilsley Corp,WI	51.96	48.04	0.1202	0	2,055,077	27,272,753	0.7056	0.0408	0.2536	0.1920	-0.0227
01/21/03	First Virginia Banks Inc,VA	BB&T Corp	-	99.87	0.2758	0	11,227,587	80,216,816	0.5620	0.0522	0.3858	0.1289	-0.0758
03/13/03	F&M Bancorp,Frederick,MD	Mercantile Bankshares Corp,MD	100.00	-	0.5857	1	2,094,987	10,790,376	0.6303	0.0355	0.3342	0.3430	-0.0899
04/16/03	CB Bancshares Inc,Honolulu,HI	CPB Inc,Honolulu,Hawaii	20.81	79.19	0.8726	1	1,692,927	2,028,163	0.6701	0.0598	0.2701	0.4337	-0.1046
10/27/03	FleetBoston Financial Corp,MA	Bank of America Corp	-	100.00	0.5018	0	190,589,000	660,458,000	0.6095	0.1677	0.2228	0.2021	-0.0934
11/20/03	Allegiant Bancorp,St Louis,MO	Natl City Corp,Cleveland,Ohio	N/A	N/A	0.2494	0	2,406,499	118,019,355	0.7163	0.0827	0.2010	0.2119	0.0236
12/02/03	Republic Bancshares Inc,FL	BB&T Corp	41.42	58.58	0.0833	0	2,526,769	80,216,816	0.5878	0.0572	0.3550	0.0315	-0.0374
01/08/04	Second Bancorp Inc,Warren,OH	Sky Financial Group Inc,	-	100.00	0.1701	1	2,116,761	12,896,494	0.6288	0.0702	0.3010	0.2129	0.0174
01/23/04	Union Planters Corp,Memphis,TN	Regions Financial Corp	-	100.00	-0.0123	0	31,918,488	48,881,023	0.7048	0.0942	0.2009	0.0138	0.0379
02/17/04	Provident Financial Group Inc	Natl City Corp,Cleveland,Ohio	-	100.00	0.2110	1	17,115,479	113,933,460	0.5481	0.1622	0.2897	0.1427	0.0031
05/10/04	Natl Commerce Finl Corp,TN	SunTrust Banks Inc,Atlanta,GA	27.63	72.37	0.2079	0	23,002,505	125,393,153	0.5707	0.1154	0.3139	0.1945	-0.0601
06/21/04	SouthTrust Corp,Birmingham,AL	Wachovia Corp,Charlotte,NC	-	100.00	0.3011	0	52,128,326	401,032,000	0.6777	0.0765	0.2458	0.1523	-0.0608
07/16/04	Riggs Natl Corp,Washington,DC	PNC Finl Svcs Grp Inc,PA	42.67	57.33	-0.0352	0	6,239,161	68,193,348	0.5124	0.1022	0.3855	0.0938	-0.0291
03/07/05	Hibernia Corp,New Orleans,LA	Capital One Financial Corp	44.49	55.51	0.1428	0	22,308,088	53,747,255	0.6979	0.0524	0.2497	0.2575	0.0185
03/21/05	State Finl Svcs Corp,WI	Associated Banc,Green Bay,WI	-	100.00	0.2774	1	1,475,556	20,546,358	0.6275	0.0841	0.2883	0.2105	-0.0410
07/26/05	Columbia Bancorp Inc	Fulton Finl Corp,Lancaster,PA	47.68	52.33	0.1594	0	1,179,006	11,158,351	0.8035	0.0264	0.1701	0.1254	-0.0362
11/09/05	Gold Banc Corp Inc,Leawood,KS	Marshall & Ilsley Corp,WI	14.84	85.16	0.2542	0	4,330,376	40,479,185	0.7098	0.0632	0.2270	0.1981	-0.0234
12/15/05	Main Street Banks Inc,GA	BB&T Corp	-	100.00	0.0532	0	2,326,442	100,508,641	0.7214	0.1037	0.1749	-0.0133	0.0145
03/13/06	North Fork Bancorp,Melville,NY	Capital One Financial Corp	35.36	64.64	0.2305	0	57,616,871	88,701,411	0.6487	0.1397	0.2116	0.1342	-0.0894
05/25/06	AmSouth Bancorp,Alabama	Regions Financial Corp	-	100.00	-0.0101	1	52,619,315	84,786,331	0.6831	0.0721	0.2447	-0.0482	-0.0609
07/18/06	Texas United Bancshares,TX	Prosperity Bancshares Inc,TX	-	100.00	0.1416	1	1,554,238	3,593,056	0.6573	0.1160	0.2267	0.0474	0.0493
		MEAN	19.41	80.59	0.2722	0.3	17,504,395	87,092,860	0.6565	0.0746	0.2689	0.1916	-0.0212
		MEDIAN	-	100.00	0.2291	0	2,466,634	46,181,010	0.6637	0.0627	0.2516	0.1932	-0.0262

This table presents the announcements of large bank mergers identified from SDC where the target in the upper half of the industry based on asset size and there is at least 20 calendar days between announcement dates of another large bank merger. TARANN is the announcement date of the merger given by SDC. %CASH is the percent of the total price paid in cash, and %STOCK is the percent of the price paid in the form of the acquirer's stock. PREM28 is the percent of the premium paid based on the share price of the target 28 calendar days prior to the official announcement. Same State is a binary variable equal to 1 if the target and acquirer are headquartered in the same state. TASSETS and AASSETS are the assets of the target and acquirer, respectively, at the fiscal year end prior to the year of the announcement. TLOAN, TOPAQUE, and TTRANSP are the percent of loans, opaque assets, and transparent assets of the target. TARCAR and ACQCAR are the cumulative abnormal return of the target and acquirer, respectively, calculated over trading days -5,+5 relative to the merger announcement using the standard market model and the CRSP value-weighted index.

Table 3 - Industry CAR Surrounding Merger Announcements

	Large Banks		Small Banks	
	Mean	Median	Mean	Median
Total	0.8906	0.5472	0.0809	-0.3074
T-stat ($H_0: CAR=0$)	10.62 ***		1.02	
N	4,790		4,520	
Rank by LOAN				
Lower half (fewer loans)	0.6592	0.2997	-0.0340	-0.3186
Upper half (more loans)	1.1146	0.7456	0.1897	-0.2901
Difference	0.4553 ***	0.4459 **	0.2236	0.0285
P-value	0.0066	0.0119	0.1599	0.2640
Rank by OPAQUE				
Lower half (fewer opaque)	0.7460	0.3303	0.1210	-0.1702
Upper half (more opaque)	1.0413	0.7223	0.0424	-0.4388
Difference	0.2954 *	0.3920 *	-0.0786	-0.2686
P-value	0.0784	0.0872	0.6212	0.2403
Rank by TRANSP				
Lower half (less transparent)	1.1931	0.7571	0.2114	-0.2903
Upper half (more transparent)	0.6077	0.2934	-0.0528	-0.3102
Difference	-0.5854 ***	-0.4637 ***	-0.2641 *	-0.0199
P-value	0.0005	0.0024	0.0967	0.1644

This table presents the mean and median cumulative abnormal return (CAR) of other BHCs in the industry surrounding the M&A announcement in terms of percentage points. All firms that become targets during the sample period are excluded, and the acquirer involved in the M&A transaction is excluded for that transaction only. LOAN is total loans (net) divided by total assets. OPAQUE is the sum of all other opaque assets besides loans, divided by total assets. TRANSP is the sum of all transparent assets divided by total assets. The CAR is calculated over trading days -5, +10 relative to the announcement date using the standard market model and the CRSP value-weighted index. The data is Windsorized for each announcement event at the 1% and 99% intervals based on CAR. The results are qualitatively similar using event windows of days -5,+5 or -5,+20. For tests of the mean, a standard t-test is used, and for the median, a Wilcoxon signed-rank test.

***, **, * denotes statistical significance at the 0.01, 0.05, and 0.10 levels, respectively.

Table 4 - OLS Regression of Variables on the Industry CAR Surrounding Large BHC Merger Announcements

	Large Banks						Small Banks					
	Model 1		Model 2		Model 3		Model 1		Model 2		Model 3	
	Estimate	P-value	Estimate	P-value	Estimate	P-value	Estimate	P-value	Estimate	P-value	Estimate	P-value
Intercept	-15.343 ***	0.0004	-15.188 ***	0.0010	7.937 *	0.0571	-2.572	0.4491	-2.771	0.4616	-2.968	0.4236
LOAN	2.971 ***	0.0001	2.967 ***	0.0001			1.066	0.1117	1.064	0.1121		
TRADEA	-5.185	0.1444	-5.759	0.1017			14.702	0.5326	14.803	0.5294		
INVEST	-113.498 *	0.0829	-112.039 *	0.0836			30.036	0.3978	30.294	0.3934		
FIXED	-2.078	0.8384	-2.503	0.8039			2.620	0.7813	2.549	0.7869		
OREO	5.615	0.9004	6.050	0.8916			-33.976	0.3256	-34.272	0.3210		
INTANGIBLE	3.387	0.2119	3.393	0.2062			-6.584 *	0.0999	-6.630 *	0.0972		
TRANSP					-3.059 ***	0.0001					-0.945	0.1405
LNASSETS	0.211 ***	0.0052	0.249 ***	0.0010	0.122 **	0.0282	0.403 **	0.0218	0.405 **	0.0209	0.354 **	0.0392
MVBVEQ	-0.576 ***	0.0001	-0.561 ***	0.0001	-0.510 ***	0.0001	-0.467 ***	0.0001	-0.463 ***	0.0001	-0.415 ***	0.0001
LEV	13.860 ***	0.0002	13.775 ***	0.0019	11.184 ***	0.0062	-1.656	0.6115	-1.685	0.6050	0.095	0.9756
CORR	3.619 ***	0.0001	2.664 ***	0.0001	2.907 ***	0.0001	1.726 *	0.0578	1.665 *	0.0683	1.705 *	0.0612
TLNASSETS			0.504 ***	0.0001	0.490 ***	0.0001			0.118	0.1762	0.117	0.1791
TMVBVEQ			-1.155 ***	0.0001	-1.158 ***	0.0001			-0.637 ***	0.0027	-0.635 ***	0.0027
TLOAN			-7.964 ***	0.0001	-7.974 ***	0.0001			0.231	0.8900	0.210	0.9000
TOPAQUE			-8.262 **	0.0118	-8.060 **	0.0141			-6.251 *	0.0573	-6.214 *	0.0588
PREM28	4.031 ***	0.0001	3.958 ***	0.0001	3.988 ***	0.0001	-0.436	0.3924	-0.703	0.2239	-0.696	0.2288
ACQCAR	20.300 ***	0.0001	23.854 ***	0.0001	23.896 ***	0.0001	0.806	0.6338	1.653	0.3698	1.631	0.3761
GEOFOCUS	-2.085 ***	0.0001	-1.696 ***	0.0001	-1.691 ***	0.0001	-0.445 **	0.0202	-0.411 *	0.0856	-0.411 *	0.0856
DUM01	-0.810 **	0.0418	-1.367 ***	0.0012	-1.386 ***	0.0011	3.255 ***	0.0001	2.915 ***	0.0001	2.933 ***	0.0001
DUM02	3.427 ***	0.0001	4.354 ***	0.0001	4.349 ***	0.0001	-1.254 ***	0.0095	-1.082 **	0.0282	-1.102 **	0.0251
DUM03	-3.011 ***	0.0001	-3.407 ***	0.0001	-3.474 ***	0.0001	-0.468 *	0.0937	-0.495 *	0.0888	-0.527 *	0.0689
DUM04	-1.801 ***	0.0001	-2.710 ***	0.0001	-2.780 ***	0.0001	-2.116 ***	0.0001	-2.141 ***	0.0001	-2.211 ***	0.0001
DUM05	-3.288 ***	0.0001	-2.852 ***	0.0001	-2.911 ***	0.0001	-1.276 ***	0.0001	-1.346 ***	0.0001	-1.450 ***	0.0001
DUM06	1.478 ***	0.0001	0.735 *	0.0904	0.714 *	0.0963	-0.629 *	0.0636	-0.732 *	0.0950	-0.836 *	0.0541
F-Value	50.99 ***	0.0001	47.68 ***	0.0001	60.19 ***	0.0001	16.96 ***	0.0001	14.57 ***	0.0001	18.30 ***	0.0001
Adjusted R ²	0.1655		0.1831		0.1820		0.0629		0.0646		0.0645	
N	4,790		4,790		4,790		4,520		4,520		4,520	

This table presents the regression of industry BHC firm and merger deal characteristics on the CAR of the industry BHC. The sample of mergers are described in Table 3. The CAR for each industry firm is calculated over days -5,+10 relative to the announcement date using the standard market model and the CRSP value-weighted index. Financial variables of the industry BHC are as of the year ended prior to the year of the merger announcement. LOAN is total loans (net of the loan loss reserve) divided by total assets. TRADEA is the percent of assets that are trading assets. FIXED is the percent of assets that are premises and fixed assets. OREO is the percent of assets that are considered other real estate owned. INVEST is the percent of assets classified as investments in unconsolidated subsidiaries. INTANGIBLE is the percent of assets classified as intangible and other assets. TRANSP is the percent of transparent assets. LNASSETS is the natural log of assets. MVBVEQ is the market-to-book value of equity. LEV is total liabilities divided by total assets. CORR is the correlation of daily stock returns between the industry BHC and the target over the 12 months ended at least one month before the merger announcement.

TLNASSETS, TMVBVEQ, TLOAN, and TOPAQUE are the natural log of assets, market-to-book value of equity, percentage of net loans, and percent of opaque assets (excluding loans) of the target as of the year ended prior to the M&A announcement. PREM28 is the premium paid to target shareholders based on the stock price 28 calendar days prior to the announcement. ACQCAR is the CAR of the acquirer for days -5 to +5 relative to the announcement. GEOFOCUS is a binary variable equal to 1 if the target and acquirer are headquartered in the same state. DUM01-DUM06 are binary variables equal to 1 if the merger announcement occurs in years 2001-2006, respectively.

***, **, * denotes statistical significance at the 0.01, 0.05, and 0.10 levels, respectively.

Table 5 - One Way Fixed Effect Regression of Variables on the Industry CAR Surrounding Large BHC Merger Announcements

	Model 1		Model 2	
	Estimate	P-value	Estimate	P-value
Intercept	-11.863 ***	0.0005	-8.495 ***	0.0080
LOAN	2.164 ***	0.0014		
TRADEA	-5.806	0.1092		
INVEST	-20.860	0.8071		
FIXED	-10.878	0.3241		
OREO	-6.544	0.8577		
INTANGIBLE	0.194	0.9586		
TRANSP			-2.006 ***	0.0020
LNASSETS	0.236 **	0.0142	0.108	0.1266
MVBVEQ	-0.704 ***	0.0001	-0.627 ***	0.0001
LEV	10.726 ***	0.0044	10.871 ***	0.0020
CORR	2.118 ***	0.0014	2.512 ***	0.0001
F-Value (H ₀ : No FE)	23.13 ***	0.0001	23.51 ***	0.0001
R ²	0.1657		0.1643	
N	3,900		3,900	

This table presents the results of a one-way fixed effects regression of the financial characteristic of the industry BHC on the CAR surround the announcement of merger announcements where the target is in the upper half of all BHC based on asset size. The fixed effect uses a binary variable for each of the 30 merger announcements, which controls for each of the deal's specific characteristics using only the dummy variable. The CAR for each industry firm is calculated over days -5,+10 relative to the announcement date using the standard market model and the CRSP value-weighted index. Only industry BHCs in which a CAR can be calculated around all 30 merger announcements (a total of 130 BHCs) are included in this regression.

Financial variables of the industry BHC are as of the year ended prior to the year of the merger announcement. LOAN is total loans (net of the loan loss reserve) divided by total assets. TRADEA is the percent of assets that are trading assets. FIXED is the percent of assets that are premises and fixed assets. OREO is the percent of assets that are considered other real estate owned. INVEST is the percent of assets classified as investments in unconsolidated subsidiaries. INTANGIBLE is the percent of assets classified as intangible and other assets. TRANSP is the percent of transparent assets. LNASSETS is the natural log of assets. MVBVEQ is the market-to-book value of equity. LEV is total liabilities divided by total assets. CORR is the correlation of daily stock returns between the industry BHC and the target over the 12 months ended at least one month before the merger announcement.

***, **, * denotes statistical significance at the 0.01, 0.05, and 0.10 levels, respectively.