Asset vs. Equity Acquisitions by Financial Institutions

Abstract:

We examine the impact of asset vs. equity acquisitions in generating firm value for financial institutions. We find that acquirers experience statistically and economically significant higher CARs in asset acquisitions compared to equity acquisitions. We analyze the announcement period returns and find that investors' reaction to asset acquisitions by financial institutions is met more favorably than equity acquisitions. When employing the differences-in-differences approach, we find that asset acquisitions entail improved operating performance.

JEL Classification: G20, G21, G34

Keywords: Financial Institutions, Banks, Mergers and Acquisitions.

1. Introduction

Financial institutions (F.I.s) engage in mergers and acquisitions (M&As) to increase market size and benefit from potential economies of scale. Besides economic motives, there are managerial motives to engage in M&As, especially by CEOs with equity-based compensations (Bliss and Rosen, 2001) and bonuses (Liu, Padgett, and Varotto, 2017). Several researchers (e.g. Megginson, 2005; Kowalik, Davig, Morris, and Regehr, 2015); Phung and Troege, 2019) find there are also political motives to facilitate M&As among FIs. The strict regulatory structure that accompanies acquisitions of F.I.s, particularly banks, suggests that many of the M&A transactions produce a wide range of results for the combined institutions and their shareholders. To differentiate between acquisitions that yield favourable effects against unfavourable ones for the shareholders of FIs, we consider whether the acquisition of a target's specific assets as well as the assumption of some of the target's liabilities (termed asset acquisitions) elicits different wealth effects from the acquisition of a target FI equity (termed equity acquisitions).

The debate over the wealth effects between asset versus equity acquisitions has been examined in the corporate finance literature (Jory and Madura, 2009; Jory, Madura and Ngo, 2012; Jory, Ngo, and Nguyen, 2021). However, and to the best of our knowledge, this issue has not been looked at in the banking literature. A financial institution (F.I.) can perform an asset acquisition whereby it acquires the assets (both financial and non-financial) of another F.I., and at the same time assume some of the target firm's liabilities, mainly customer deposits. Alternatively, the acquiring FI may select to purchase a majority share ownership in the target F.I. The former is an example of asset acquisition, while the latter is an example of an equity acquisition. These two types of acquisitions, while transferring assets under the control of the acquirer, differ in

the form of the acquisition. How different are these two forms of acquisitions in the financial industry remains to be answered? We attempt to fill a gap in the literature by examining the wealth effects of an asset versus equity acquisitions among F.I.s.

There is ample evidence in the literature that not all bank acquisitions yield the same results performance-wise. For example, Brune, Lee and Miller (2015) find that capital-constrained banks are associated with better post-acquisition performance. This may be due to the lower premiums they pay to acquire targets and their preference to finance their acquisitions with cash. There is also evidence that the timing of the acquisition matters in addition to the financial strength of the target, the location of the acquirers, and whether the acquisition takes place during a crisis period (Shen, Chen, Hsu, and Lin, 2019). Therefore, we contribute to this line of the literature whereby the wealth effects of the acquisition are conditioned upon the type of acquisition.

We research the Standard and Poor's Global Market Intelligence SNL database for the sample period starting in 1991 and ending in 2018. We are able to categorize 3,322 deals by U.S.-based FIs as follows: 131 asset acquisitions and 3,191 equity acquisitions. Using stock return data from the CRSP database, we find that acquirers experience statistically and economically significant higher CARs in asset acquisitions than equity acquisitions. Similarly, asset acquisitions are associated with higher long-term stock performance relative to equity acquisitions. The better stock performance of asset acquirers is justified because we find that asset acquirers are associated with better operating performance than equity acquirers. We explore the value drivers of asset acquisitions among F.I.s.

2. Literature Review, Theory & Hypotheses

2.1 Literature on M&As among financial institutions

There is substantial literature on mergers, especially amongst banks. As such, there are studies pointing to both benefits and drawbacks of these mergers. For instance, Houston and Ryngaert (1994) find positive and significant overall gain from bank mergers. US bank consolidation may help previously inefficient banks (Berger, Demsetz, and Strahan, 1999). Becher (2000) finds that bank mergers provide wealth-enhancing synergies. Conversely, Rhoades (1998) does not find increases in efficiency in horizontal bank mergers. Amel, Barnes, Panetta, and Salleo (2004) find that mergers in the financial sector deliver minimal benefits to managerial efficiency or economies of scope.

Some studies differentiate wealth-enhancing mergers from those that are unable to add wealth. Linder and Crane (1993) find that mergers with previously acquired banks performed better than mergers with new banks. Casu, Dontis-Charitos, Staikouras, and Williams (2016) find that acquisitions of securities firms yield higher risk compared to acquisitions of insurance companies.

2.2 Literature on Asset and Equity Acquisitions

While there are several studies on asset acquisitions[1] and a lesser number of equity acquisitions (e.g. Slovin, Sushka, and Polonchek (2005) and Hege, Lovo, Slovin, and Sushka (2009)), there is not much evidence on the comparison between the two aside from one focusing on the global market (Jory et al., 2012) and another one on the REIT industry (Huerta-Sanchez, Ngo, and Pyles, 2020). Either type of acquisition is subject to target firm's valuation (Fu, Lin, and Officer, 2013);

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[1] Some studies include Jain,1985; Alexander, Benson, Kampmeyer, 1984; Hite, Owers, & Rogers, 1987; Sicherman and Pettway, 1992; Kaplan and Weisbach, 1992; John and Ofek, 1995; Comment and Jarrell, 1995; Lang, Poulsen, and Stulz, 1995; Warusawitharana, 2008; Jory et al., 2021; Jovanovic and Rousseau, 2002; Yang, 2008; John and Sodhajin, 2010)

agency problems (Fung, Jo and Tsai, 2009); executive compensation (Fung et al., 2009); amongst others. Nevertheless, the evidence toward the favourable effects of asset acquisitions is more prevalent (Jain, 1985; Sicherman and Pettway, 1992).

2.3 Asset versus equity acquisitions among F.I.s

2.3.1   Asset Acquisition

An example of an asset acquisition would be Merchants & Marine Bank's acquisition of Heritage First Bank's asset in August 2011. The acquisition is described as follows:

"*Merchants & Marine Bank, Pascagoula, Mississippi announced today that it has entered into an agreement to acquire the assets, including all loans, and assume certain liabilities, including all deposits, of two branches of Heritage First Bank, a subsidiary of Heritage First Bancshares, Inc., headquartered in Rome, Georgia. The two branches are located at 1820 Gulf Shores Parkway, Gulf Shores, Alabama and 8331 Alabama Highway 227, Crossville, Alabama with total assets of approximately $55 million.*

Royce Cumbest, Chairman of the Board, President and Chief Executive Officer of Merchants & Marine Bank, stated, "We are acquiring branches and moving into markets with strong growth potential which will provide a greater opportunity for enhanced shareholder value."

Merchants & Marine Bank anticipates retaining all active employees located at both locations.

Merchants & Marine Bank is a Mississippi banking corporation headquartered in Pascagoula and has total assets of $545 million. The acquisition is subject to approval by state and federal regulators and the transaction is expected to close in the fourth quarter of 2011."[1]

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[1] Source: https://www.sec.gov/Archives/edgar/data/1432405/000095012311073659/c21033exv99w1.htm

Another example of an asset acquisition by an F.I. would be United Fidelity Bank's acquisitions of the assets of First City Bank of Florida. The acquisition was described as follows: "*United Fidelity Bank, fsb ("United"), announced today that it has entered into a purchase and assumption agreement with the Federal Deposit Insurance Corporation ("FDIC") to assume all deposits and certain other liabilities and to purchase essentially all of the assets of First City Bank of Florida, a full service community bank headquartered in Ft. Walton Beach, Florida. With this acquisition, United's seventh since May 2014, United Fidelity will now operate a total of 19 banking centers.* "[2]

While these are only two examples, a review of the various asset deals points to the fact that the acquirer does not assume all the liabilities of the target in asset acquisitions. Thus, the likelihood that the acquirer leaves the problematic liabilities of the target F.I. out of the deal is maximized in asset acquisitions. Such flexibility is not permitted in equity acquisitions.

Asset acquisitions are also popular among financially weakened, undercapitalized targets and/or during crisis periods. Purchasing the equity of an undercapitalized bank poses a significant problem for the acquirer. For instance, under the BHC Act, the equity acquirer should file a capital restoration plan within days of acquiring the equity of an undercapitalized bank. Such issues do not arise if the deal is structured as an asset acquisition as the acquirer does not assume the undercapitalization of the target.

The fact that asset acquisitions perform superior to equity acquisitions and assets acquired tend to be of financially weakened targets and/or during periods of crisis would be consistent with the findings of Shen, Chen, Hsu, and Lin (2020). They find significant gains when acquiring weak targets and during banking crises though they do not differentiate between asset vs. equity

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[2] Source: https://www.unitedfidelity.com/united-fidelity-bank-assumes-deposits-and-acquires-assets-of-first-city-bank-of-florida-ft-walton-beach-florida/

acquisitions. Our study, therefore, can be seen as a test of the driver of the wealth difference documented in Shen et al. (2020).

Acquisitions of assets are rare in the financial industry as it is a rare opportunity to purchase a target's assets and leave the liabilities aside. Asset acquisitions are made possible with the help of the regulator or a large sponsor. Such acquisitions tend to be of distressed banks. With the regulator's approval, the acquirer takes over the assets of the distressed bank and assumes certain liabilities, principally customer deposits. The remainder liabilities of the distressed target are left behind under the stewardship of the government. This acquisition method became even more popular following the 2007-2008 subprime mortgage crisis in the USA. Indeed, 80% of our sample of asset acquisitions occurs after 2006. Banks that suffered significant losses were forced to sell their risky assets at fire sale prices.

Under normal circumstances, the seller would want to maximize the proceeds from the sales to maximize gains. In the case of the distressed FIs, the government wants to hand control back to an acquirer with the expertise to turn around the FI's fortunes to avoid a crash in the financial system. The seller's motivation is not necessarily to maximize gains from the sale. However, we can argue that staying under government ownership increases the costs to the government to keep the operations of the distressed FI ongoing. Thus, to the government, the discount allowed on the sale may well be significantly smaller than the cost to keep the distressed FI under government ownership.

The Bank for International Settlements (BIS, 2018) reports that there has been a shift in bank business models since the crisis, with banks in the U.S. and other developed economies selling

their trading arms in favour of traditional banking activities.[3] Many such sales have occurred at discounted prices (U.S. Treasury, 2009) to benefit the acquiring F.I.s. Such fire sales did not happen only during the crisis of 2007-2008, but they tend to occur when an F.I. has reached the nadir, for example, the unwinding of LTCM (also see Caballero and Simsek, 2010).

While the prices received in asset sales may not reflect longer-run potential and are far below value in best use, the losses to the sellers represent significant gains for the acquirers (Shleifer and Vishny, 2011). For this reason, we hypothesize that the wealth effects of asset acquisitions for the acquiring firm shareholders would be positive.

Asset acquisitions yield a tax benefit to the acquirer that is not available with equity acquisitions. The acquirer can increase the tax basis of the assets to their fair market value and then allocate that value in the form of a higher depreciation amount over the asset's useful life. This will, in turn, reduce the corporation's tax return post-acquisition. The acquisition of an asset further allows the acquirer to recognize goodwill, which is then checked for impairment going forward. Any losses in the value of goodwill are used to reduce taxable profits. In sum, asset acquisitions make possible increased depreciation and impairment deductions.

Conversely, an equity acquisition is recorded as an investment in the acquirer's balance sheet. It does not allow a step-up in the basis of the individual assets owned as part of the acquisition to their fair market values. For instance, goodwill has a zero-tax basis in equity acquisition because it is a self-created asset. Thus, the tax basis in the target firm's stock is equal to the purchase price, while the assets transferred to the acquirer will remain at their original values as in the target firm's balance sheet before the acquisition. Again, this tax advantage of the asset

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[3] Source: https://www.bis.org/publ/cgfs60.pdf

acquisition is expected to increase the net worth of the acquirer relative to the equity acquisition alternative.

2.3.2   Equity Acquisitions

Such an acquisition tends to resemble more a merger of two F.I.s. An example would be the merger between Equity Bank and American State Bank & Trust, where Equity's parent company, Equity Bancshares, is the acquirer.[4] Kansas Bank Commissioner David Herndon classified the acquisition as "Based on the asset size of the resulting institution, it would be the largest merger of state-chartered banks in Kansas."[5]

A review of equity deals suggests that they are the most common form of acquisition, and yet some of their sizes dwarf the average size of asset acquisitions. A simple comparison of median values between the two subsamples suggests that the median equity deal value is $33.7 million while the asset deal value is $27.913 million. At the 25th percentile, the difference is wider, i.e., $13 million versus $5 million. We further find that the relative size of the deal in relation to the acquirer exerts a negative wealth effect. As such, the larger size of equity deals acts as an impediment to the ability of the acquirer to extract wealth from the target post-acquisition.

The legal consideration of equity acquisitions is more onerous than an asset acquisition. For instance, while there is no requirement for the bank holding company to provide additional capital to cover the acquired assets if the same deal was structured as an equity acquisition, the BHC must stand ready to furnish that capital on-demand and with no cap (by the Federal Reserve under the 'source of strength doctrine').[6]

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[4] Source: https://www.kansas.com/news/business/banking/article251477318.html
[5] Ibid.
[6] Source: https://www.lexology.com/library/detail.aspx?g=63bddf78-dabe-4d6d-98e7-c4b99becec3b

The empirical evidence on the wealth effects of acquirers in bank mergers is mixed. Several studies report negative wealth effects, including Trifts and Scanlon (1987), Cornett and De (1991), Houston and Ryngaert (1994), and Houston and Ryngaert (1997). However, few studies report the opposite, i.e., a positive effect, including James and Wier (1987), Neely (1987), and Becher (2000). We suspect that segregating asset acquisitions from equity acquisitions will shed more light on the actual effects of bank mergers, which we hypothesize to be negative.

3   Data

Our sample is obtained from Standard and Poor's Global Market Intelligence SNL database from 1991-2018. Our dataset does not account for sales of assets by FIs to meet regulatory capital limits or the sales of selected assets (for example, 10% of the total assets) by an FI. For example, a bank may elect to convert some of its risky assets into cash by selling them to an acquirer so that its ratio of equity capital-to-risky assets rises. In our dataset, the sale of assets refers to the alternative of buying the target FI's equity. Following the sale, the target either ceases to exist or has transferred complete control of its operations to the acquirer. We retain a final sample of M&A deals by financial institutions for which we can identify the acquirer firms in CRSP. In Table 1, we report the sample distribution and business lines. In Panel A of Table 1, there are a total of 131 deals classified as asset acquisitions and 3,191 deals classified as equity acquisitions by SNL. Results for business lines also shows a variety of businesses in the financial industry spread across different geographical areas in the US.

[INSERT TABLE 1]

In Panel A of Table 2, we report the summary statistics for the equity acquisition subsample and for the asset acquisition subsample in Panel B.

[INSERT TABLE 2]

4 Methodology and Results

4.1.1 *Acquirer's CAR*

The first question we examine is how investors react to asset acquisitions versus equity acquisitions. To measure investors' interest, we compute the acquirer's announcement period cumulative abnormal returns (CARs). Relative to Day 0, which is the day of deal announcement, we model the acquirer's daily returns in the (-255, -31) days window using the following four alternative models.

Fama-French 3-factor model with CRSP equally-weighted index as market benchmark:

$$R_{it} = \alpha_i + \beta_1 R_{mt} + \beta_2 SMB_t + \beta_3 HML_t + \varepsilon_{it} \tag{1}$$

Fama-French 4-factor model with CRSP equally-weighted index as the market benchmark:

$$R_{it} = \alpha_i + \beta_1 R_{mt} + \beta_2 SMB_t + \beta_3 HML_t + \beta_4 UMD_t + \varepsilon_{it} \tag{2}$$

where R_{it} is the excess return of firm i on day t. R_{mt} is the excess return on the CRSP equally-weighted index on day t. SMB_t, HML_t and UMD_t are the size premium factor, book-to-market premium factor and momentum factor from Professor Kenneth French website.

We compute parameter estimates using the pre-event period's daily returns following the above equations. Then we use the parameter estimates to compute the predicted returns for the acquirers in the event period. We subtract the acquirers' actual returns in the event period from the predicted returns to obtain the abnormal returns. We then calculate the

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cumulative abnormal returns (CARs) over several alternative windows, i.e., (-2,+1) and (-1,+1), which capture the market reactions to the acquisition news in the event period.

In Panel A of Table 3, we report and compare the CARs between equity acquisitions and asset acquisitions for acquirers. The results consistently show that acquirer CARs are statistically and economically significant for asset acquisitions than for equity acquisitions. The results are consistent regardless of estimation method and windows. Thus, the findings support the prediction where asset acquisitions will generate positive value.

[INSERT TABLE 3]

The univariate tests of announcement period returns could be driven by different factors related to deal and bidder characteristics. Therefore, we conduct multivariate tests of regression on the acquirer CARs and report results in Table 3. In these regressions, we control for factors known to affect returns and include a dummy variable representing asset acquisitions. We report the results of OLS regressions in Panel B of Table 3 using the following model.

$$
\begin{aligned}
y_i = \alpha_i &+ \beta_1 ASSET\ ACQUISITIONS_i + \beta_2 RUNUP_i + \beta_3 RELSIZE_i\ + \beta_4 PUBLIC\ TARGETS_i \\
&+ \beta_5 RELATED\ TARGETS_i + \beta_6 CASH\ ONLY_i + \beta_7 LN(L.ACQ.ASSET)_i \\
&+ \beta_8 L.ACQ.ROA_i + \beta_9 L.ACQ.LIQUIDITY_i + \beta_{10} L.ACQ.EQUITY/ASSET_i \\
&+ \varepsilon_{it}\quad (3)
\end{aligned}
$$

The dependent variables (y_i) are the acquirers' CARs in (-2, +1) and (-1, +1) days windows, in alternate regressions. We estimate the CARs from the Fama-French 4-factor model using the CRSP EW index for the market benchmark shown in Panel A and from the Fama-French 4-factor model with Fama-French 48-Sector Returns as the market benchmark (in Panel B). The

independent variable of interest is the dummy variable for asset acquisitions

($ASSET\ ACQUISITION$). We control for the acquirer stock price runup in the (-30, -10) day

window before the announcement date as well as year and the acquirer's business fixed effects.

The t-statistics are calculated based upon clustered standard errors by the acquirer's business.

All the financial variables are measured at end of fiscal year prior to the announcement and

their definitions are stated in Table A.1 in the Appendix.

The multivariate results reported in Panel B of Table 3 are consistent with the univariate

results in Panel A of Table 3. The coefficient on asset acquisitions is positive and significant at

the 5% level in models 1 and 2 where the dependent variable is computed using Fama-French 3

factor for windows (-2, +1) respectively. Results are similar and significant at the 1% level in

Models 3 and 4 where CARs are computed using FF4 Factor for similar event windows. From

results in models 1 and 2, asset acquisitions outperform equity acquisitions by 4.0% and 3.3%

respectively. The results can be interpreted as asset acquisitions on average consistently have

higher CARs than equity acquisitions. This is evidence of the earlier prediction of positive value

generation to asset acquisitions.

4.1.2   Endogeneity issues

To address potential self-selection bias and other confounding effects, we conduct

additional robustness tests to eliminate these concerns.

4.1.3   Self-selection bias

To address for a possible self-selection bias (i.e., better performing acquirers elect to

undertake asset acquisitions in the first place), we utilize the Heckman two-stage regressions. In

the first stage, we conduct a logistic regression to determine the probability of asset acquisition

engagement. The predictor variables and their definitions are stated in the Appendix. Then, we

determine the predicted probabilities from the first stage regression to find the inverse Mills

ratios. These are included in the second stage regressions of CARs. We present the results of

the two-stage analysis in Table 4. The coefficients of ASSET ACQUISITIONS in the various

models presented are positively and statistically significant, which is consistent with the earlier

findings in Table 3.

[INSERT TABLE 4]

4.1.4 Entropy balancing and propensity score matching

Our baseline results may reflect the diverging characteristics between asset acquirers

and equity acquirers rather than the positive effects of asset acquisitions. To account for this

issue, we conduct our main analysis employing a weighted sample derived by entropy balancing

(EB) and propensity score matching. We follow Canil, Karpavičius, and Yu (2019) in the

application of EB. It calculates weights for each control observation. Their first, second, and

third moments are equal to those of the treated observations and effectively compare acquirers

in asset acquisitions to acquirers in equity acquisitions weighted to have similar covariates. This

process ensures that those higher-order moments (e.g., variance and skewness) of covariate

distributions are similar across treated and control samples. Conversely, PSM only assigns

integer weights to matched observations (also see Shipman et al., 2017).

We report the results from the entropy balancing procedure in Table 5. In Panel A, we

report the distribution of the control variables after entropy balancing procedure. The

standardized differences between the treated subsample [e.g., acquirers in asset acquisitions]

and control subsample [e.g., acquirers in equity acquisitions] are the differences in means between the two subsamples divided by the standard deviation of the treated sample for each covariate. According to Normand et al. (2001) and Austin (2011), standardized difference less than 10% indicates a negligible difference in the mean of a covariate between treatment groups and control groups. Panel B of Table 5 reports the results from the weighted OLS regressions. The results are qualitatively similar to the baseline results in Table 3. The association between ASSET ACQUISITIONS and CARs continues to be significantly positive. Thus, our result is robust to a weighted sample design.

[INSERT TABLE 5]

We report the results from the propensity score matching (PSM) procedure in Table 6. In Panel A, we compare the CARs between acquirers in asset acquisitions and propensity-matched acquirers in equity acquisitions. The CARs are significantly higher among acquirers in asset acquisitions. Panel B reports the regressions of CARs using acquirers in asset acquisitions and propensity-matched acquirers in equity acquisitions. The coefficient on the ASSET ACQUISITION variable continues to be positive and significant.

4.1.5 *Acquirer's Buy and Hold Abnormal Returns (BHARs)*

Analyses on CARs indicate a favorable response to asset acquisitions than equity acquisitions by financial institutions. It is essential to examine post-acquisition long-run stock price performance since several studies show the effect is incomplete around the announcement date (Agrawal et al., 1992; Moeller et al., 2003). For example, a successful acquisition may lead to positive stock returns after an announcement in the long run. Conversely, there will be corrections to (positive) overreaction through long-term negative

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returns. Thus, in this section, we examine the long-run stock price performance of acquirers.

We compute 12-, 24-, and 36-month buy-and-hold returns (BHR) for acquirers and then

subtract the corresponding BHR on the CRSP equally-weighted index from the acquirer's BHR.

The difference is the acquirer's buy-and-hold abnormal returns (BHARs)..

In Panel A of Table 7, we report statistics for the 12, 24, and 36 months BHARs after

the M&A announcement and draw comparisons between the BHARs related to asset

acquisitions and equity acquisitions for acquirers. Acquirers in asset acquisitions outperform

acquirers in equity acquisitions in all reported windows. However, the differences are only

statistically significant in the (+1,+24) month and (+1,+36) month windows at 8.70% and

13.90%, respectively.

[INSERT TABLE 7]

We report results to OLS regressions of acquirer BHARs in Panel B of Table 7, where

the dependent variable is the BHAR. The BHAR corresponds to the 12, 24- or 36-month post-

announcement windows in alternate regressions reported in models 1, 2, and 3, respectively.

The main independent variable of interest is the dummy variable for deals with asset

acquisitions (*ASSET ACQUISITIONS*). The coefficient on the $ASSET\ ACQUISITIONS_i$ variable is

positive and significant at the 1% level in all three windows (models 1-3). This is consistent with

univariate results reported in Panel A of Table 7. Asset acquisitions have around 3.0%, 3.7%,

and 4.4% increase in BHARs over 1, 2 and 3 years, respectively. Overall, these results suggest

that asset acquisitions generate more long-term value than equity acquisitions and are

consistent with our predictions.

4.1.6 Acquirer's Operating Performance Changes

This section analyzes how acquisitions involving assets compared to equity acquisitions affect the acquirers' operating performance by tracking the changes in the following variables: ROA, ROE, NET INTEREST MARGIN, and YIELD / COST SPREAD. Detailed variable definitions are presented in Table A.1 in the Appendix.

We employ the difference-in-difference approach to evaluate the impacts of asset acquisitions vs. equity acquisitions on the acquirers' operating performance. Table 8 reports the regressions of the acquirers' operating performance using the data in the (-3,+3) year window around the announcement date. The variable of interest is the interaction term between the dummy variable ASSET ACQUISITIONS and the dummy variable for the periods after the acquisitions, i.e., AFTER. The coefficient on the interaction term is positive and significant in the regression of ROA (Model 1) and YIELD / COST SPREAD (in Model 4), suggesting that asset acquisitions yield increases in operating performance..

[INSERT TABLE 8]

3.4.   *Detangling the Effects of Bank Size*

The financial sector is highly regulated, has a higher barrier to entry, and is dominated by several large institutions encapsulated by the "too big to fail" phenomenon to indicate the importance of these institutions. Consequently, size plays a significant factor in the ability to undertake M&A and the bargaining power an acquirer may have. For example, an article from the *American Banker* states that the majority of banking sector M&As in the banking sector include sellers that are smaller compared to buyers. In this section we test whether asset acquisitions effectiveness is contingent on acquirer size.

We sort our sample into size terciles and run regressions for our measures of performance separately. We report results of regressions of CARs (in Table 9), BHARs (in Table 10), and operating performance (in Table 11) separately for the tercile subsamples based upon the acquiring firm's asset in the year before the announcement date.

[INSERT TABLE 9]

In Table 9, we report results for regressions where CARs are the dependent variable and control for similar variables as in Table 3. The results for terciles 1, 2, and 3 are reported in models 1, 2, and 3, respectively. We observe statistically significant results for models 1 and 2 at the 10% and 1% levels, respectively. From the results, asset acquisitions have about 6.1% higher CARs than equity acquisitions for smaller banks and have about 9.3% higher CARs for medium banks. There is no evidence of higher CARs in larger. Overall, we interpret the results that larger sized financial institutions do not drive our findings.

[INSERT TABLE 10]

Table 10 reports regressions where BHARs are the dependent variable, and the sample is separated along terciles. We use 12, 24- or 36-month post-announcement windows and control for similar variables as in Table 7. The results for 12, 24- or 36-month windows are reported in Panels A, B, and C, respectively. Results for terciles 1, 2, and 3 are reported in models 1, 2, and 3 respectively. We observe varying degrees of statistical significance for 12 and 24 month windows along tercile groups. Specifically, in Panel A, the coefficient on asset acquisitions is statistically significant for medium and larger-sized banks at the 1% level. In contrast, in Panel B, the coefficient is statistically significant for smaller and medium-sized banks at the 5% and 10% levels. In Panel C, the coefficient for asset acquisitions is significant at the

1% level for smaller and larger banks, and significant at the 10% level for medium-sized banks. From the results, asset acquisitions have higher BHARs than asset acquisitions and are not driven solely by the size of banks. Thus, the main findings from earlier analyses reported in Table 7 hold.

[INSERT TABLE 11]

In Table 11, we report results for regressions along tercile groups where measures of long-term operating performance are the dependent variables using similar explanatory variables consistent as in Table 8. The results for ROA, ROE, NET INTEREST MARGIN, and YIELD/COST SPREAD are reported in Panels A, B, C, and D, respectively. Results for terciles 1, 2, and 3 are reported in models 1, 2, and 3, respectively. We find statistical significance at varying levels for the coefficient on asset acquisitions for all measures of operating performance except ROA. Overall, we interpret these results that size does not drive the results in operating performance. Thus, results are qualitatively similar to those found earlier in Table 8 and robust.

5   Conclusion

We explore the motivation behind bank mergers and acquisitions (M&A) and the effect of deal structure on value generation and performance. Specifically, we examine asset versus equity acquisition for financial institutions and the valuation effect of deals for the acquirer. We predict that a positive effect for short-term, long-term, and operating performance for asset acquisitions compared to equity acquisitions. Overall, we find support for better performance for the short and long term, and operating performance for asset acquisitions. While our study

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does not consider the magnitude of the asset acquisitions, future research can uncover the relationship between the gains to acquirers and the size of the assets acquired.

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Appendix A

Table A.1: Variable List and Definitions

Variable	Definition
$RUNUP_i$	the acquirer stock price runup in the (-30,-10) day window preceding the announcement date
$RELSIZE_i$	the ratio of the deal value to the acquirer total asset
$RELATED\ TARGETS_i$	the dummy variable for acquisitions by acquirers and targets in the same business
$PUBLIC\ TARGETS_i$	the dummy variable for acquisitions of publicly-traded targets
$CASH\ ONLY_i$),	the dummy variable for cash-only acquisitions
$LN(L.ACQ.ASSET)_i$	the natural log of the acquirer total asset before the acquisition
$L.ACQ.ROA_i$,	the acquirer return on asset percentage
$L.ACQ.LIQUIDITY_i$	the acquirer liquidity ratio
$L.ACQ.EQUITY/ASSET$	equity-to-asset percent
LN(L.TIER 1 CAPITAL)	the natural log of lagged tier 1 capital
L.ROAA	lagged returns on asset
LOG(FIRM SAME STATE)	logarithm of the number of financial institutions in the same state
ROA	the ratio of net income to average assets
ROE	the ratio of net income to average equity
NET INTEREST MARGIN	the ratio of net interest income to average earning assets
YIELD / COST SPREAD	the yield on earning assets (which is the ratio of total interest & dividend income to average earning assets) minus the cost of interest-bearing liabilities (which is the ratio of total interest expense to average interest-bearing liabilities)
Table A.1 reflects the variable and definitions in the data tests.	

Table 1 - Sample distribution
In this table, we report frequency statistics for equity acquisitions and asset acquisitions by year, industry for target and acquirer, and by geographic region.

Panel A - Distribution by announcement years

Announcement year	Equity acquisitions		Asset acquisitions	
	Freq.	Percent	Freq.	Percent
1991	84	2.63	2	1.53
1992	144	4.51	1	0.76
1993	231	7.24	1	0.76
1994	222	6.96	1	0.76
1995	166	5.2	1	0.76
1996	164	5.14	1	0.76
1997	204	6.39	2	1.53
1998	200	6.27	4	3.05
1999	136	4.26	2	1.53
2000	105	3.29	3	2.29
2001	84	2.63	5	3.82
2002	85	2.66	4	3.05
2003	114	3.57	2	1.53
2004	114	3.57	4	3.05
2005	127	3.98	0	0
2006	106	3.32	9	6.87
2007	89	2.79	4	3.05
2008	42	1.32	4	3.05
2009	22	0.69	9	6.87
2010	32	1	9	6.87
2011	51	1.6	9	6.87
2012	59	1.85	6	4.58
2013	75	2.35	3	2.29
2014	109	3.42	7	5.34
2015	108	3.38	12	9.16
2016	99	3.1	11	8.4
2017	122	3.82	8	6.11
2018	97	3.04	7	5.34
Total	3,191	100	131	100

Panel B - Distribution by acquirer industry

Acquirer industry	Equity acquisitions		Asset acquisitions	
	Freq.	Percent	Freq.	Percent
Asset Manager	6	0.19	0	0
Bank	3,052	95.64	115	87.79
Broker-Dealer	29	0.91	5	3.82
Financial Technology	2	0.06	0	0
Insurance Underwriter	8	0.25	1	0.76
Savings Bank/Thrift/Mutual	82	2.57	6	4.58
Specialty Lender	12	0.38	4	3.05

Panel C - Distribution by target industry

Target industry	Equity acquisitions		Asset acquisitions	
	Freq.	Percent	Freq.	Percent
Asset Manager	130	4.08	33	25.19
Bank	2,168	68.09	10	7.63

Broker-Dealer	63	1.98	9	6.87
Financial Technology	40	1.26	14	10.69
Insurance Broker	96	3.02	17	12.98
Insurance Underwriter	12	0.38	0	0
Investment Company	1	0.03	0	0
Not Classified	62	1.95	12	9.16
Savings Bank/Thrift/Mutual	475	14.92	0	0
Specialty Lender	137	4.3	36	27.48

Panel D - Distribution by acquirer region

	Equity acquisitions		Asset acquisitions	
Acquirer region	Freq.	Percent	Freq.	Percent
Mid Atlantic	536	16.8	30	22.9
Midwest	883	27.67	42	32.06
Northeast	149	4.67	10	7.63
Southeast	936	29.33	28	21.37
Southwest	331	10.37	6	4.58
West	356	11.16	15	11.45

Panel E - Distribution by acquirer region

	Equity acquisitions		Asset acquisitions	
Target region	Freq.	Percent	Freq.	Percent
Mid Atlantic	500	15.99	17	18.68
Midwest	772	24.7	22	24.18
Northeast	154	4.93	5	5.49
Southeast	868	27.77	20	21.98
Southwest	456	14.59	10	10.99
West	376	12.03	17	18.68

Table 2 - Sample descriptive statistics

We report the summary statistics of the variables in this study. DEAL VALUE is the deal value in $ million. ACQUIRER TOTAL ASSET is the acquirer total asset in the year preceding the acquisition measured in millions. RELATIVE SIZE is the ratio of the deal value to the acquirer total asset. RELATED TARGET is the dummy variable for acquisitions by acquirers and targets in the same business. CASH ONLY DEAL is the dummy variable for cash-only acquisitions. ACQUIRER ROA is the acquirer the ratio of net income to average assets as a percentage. ACQUIRER LIQUIDITY RATIO is the acquirer liquidity ratio, which is calculated as the sum of cash, balances due, securities, fed funds sold, repos, and trading account assets-pledged securities divided by total liabilities. ACQUIRER EQUITY/ASSET is the equity-to-asset percent of the acquirer.

Panel A - Equity acquisitions (N = 3,191)

Variables	Mean	Median	25th percentile	75th percentile	Standard deviation
Deal value	300.134	33.700	13.000	103.108	2,228.488
Acquirer total assets ($ million)	41,500	4,383.1	1,537.325	12,700.000	190,000.000
Relative size	0.000	0.000	0.000	0.000	0.000
Related targets	0.685	1.000	0.000	1.000	0.465
Cash only deal	0.196	0.000	0.000	0.000	0.397
Acquirer ROA (%)	1.146	1.130	0.930	1.350	0.375
Acquirer liquidity ratio (%)	21.945	19.950	13.580	27.100	12.144
Acquirer equity / asset (%)	9.251	8.830	7.570	10.330	2.364

Panel B - Asset acquisitions (N = 131)

Variables	Mean	Median	25th percentile	75th percentile	Standard deviation
Deal value	795.000	27.913	5.000	100.000	4,195.539
Acquirer total assets ($ million)	165,000	11,200	2,846.857	159,000.000	394,000.000
Relative size	0.000	0.000	0.000	0.000	0.000
Related targets	0.107	0.000	0.000	0.000	0.310
Cash only deal	0.473	0.000	0.000	1.000	0.501
Acquirer ROA (%)	1.068	1.030	0.720	1.360	0.544
Acquirer liquidity ratio (%)	23.898	19.540	11.950	30.950	16.314
Acquirer equity capital (%)	10.118	9.720	8.140	11.530	2.726

Table 3 - Cumulative abnormal returns

This table reports the results from analyses on CARs. In Panel A, we report results from univariate comparisons for equity and asset acquisitions. The CARs are estimated from the Fama-French 3 or 4-factor model with the CRSP EW index as the market benchmark. In Panel B, we report results for multivariate analyses with CARs as dependent variables. CARs are computed around (-2,+1) and (-1,+1) windows using Fama-French 3 or 4-factor model with the CRSP EW index as the market benchmark. ASSET ACQUISITIONS is the dummy variables for asset acquisitions. RUNUP is the acquirer's CAR in the (-30,-10) days window. RELSIZE is the ratio of the deal value to the acquirer total asset. LN(L.ACQ.ASSETS) is the natural log of the acquirer total asset in the year preceding the acquisition. RELATED TARGET is the dummy variable for acquisitions by acquirers and targets in the same business. PUBLIC TARGETS is the dummy variable for acquisitions of publicly-traded targets. CASH ONLY is the dummy variable for cash-only acquisitions. ACQUIRER ROA is the acquirer return on asset percentage. L.ACQ.LIQUIDITY is the acquirer liquidity ratio, which is calculated as the sum of cash, balances due, securities, fed funds sold, repos, and trading account assets-pledged securities divided by total liabilities in the year preceding the acquisition. L.ACQ.EQUITY/ASSET is the equity-to-asset percent of the acquirer in the year preceding the acquisition.

*, ** and *** denote significance levels of 10%, 5% and 1%, respectively.

Panel A - Univariate comparisons

	Equity acquisitions	Asset acquisitions	Difference	t-stats	Wilcoxon-stats
Fama-French 3-factor model CARs (-2,+1)	-0.300%	0.900%	1.200%	3.41***	3.44***
Fama-French 3-factor model CARs (-1,+1)	-0.300%	0.700%	1.000%	3.04***	3.07***
Fama-French 4-factor model CARs (-2,+1)	-0.300%	0.800%	1.100%	3.38***	3.54***
Fama-French 4-factor model CARs (-1,+1)	-0.300%	0.700%	1.000%	3.21***	3.23***

Panel B - Regressions of CARs

Variables	Model 1 Fama-French 3-factor model CARs (-2,+1)	Model 2 Fama-French 3-factor model CARs (-1,+1)	Model 3 Fama-French 4-factor model CARs (-2,+1)	Model 4 Fama-French 4-factor model CARs (-1,+1)
ASSET ACQUISITIONS	0.040	0.033	0.043	0.037
	(3.535**)	(3.395**)	(5.361***)	(5.368***)
RUNNUP	0.020	0.011	0.020	0.010
	(11.030***)	(3.799***)	(8.656***)	(2.843**)
RELSIZE	-0.059	-0.072	-0.057	-0.068
	(-5.179***)	(-7.744***)	(-4.986***)	(-6.783***)
PUBLIC TARGETS	-0.178	-0.181	-0.178	-0.182
	(-54.141***)	(-54.659***)	(-43.812***)	(-45.501***)
RELATED TARGETS	0.015	0.022	0.018	0.027
	(6.246***)	(7.845***)	(6.590***)	(9.023***)
CASH ONLY	0.038	0.047	0.038	0.047

	(1.741)	(2.350*)	(1.815)	(2.425*)
LN(L.ACQ.ASSET)	-0.072	-0.074	-0.070	-0.070
	(-10.021***)	(-16.071***)	(-9.002***)	(-12.679***)
ACQUIRER ROA	0.013	0.016	0.013	0.017
	(3.431**)	(5.958***)	(2.759**)	(5.509***)
L.ACQ. LIQUIDITY	-0.002	-0.017	-0.003	-0.018
	(-0.144)	(-1.056)	(-0.214)	(-1.352)
L.ACQ.EQUITY/ASSET	0.022	0.020	0.025	0.022
	(2.649**)	(2.963**)	(2.906**)	(3.659**)
Constant	0.009	0.013	0.008	0.011
	(2.800**)	(3.418**)	(2.267*)	(2.777**)
Observations	3,231	3,231	3,231	3,231
Adj. R-squared	0.0657	0.0681	0.0645	0.0671
Year fixed effect	Yes	Yes	Yes	Yes
Industry fixed effect	Yes	Yes	Yes	Yes
Clustered std err	Yes	Yes	Yes	Yes

Table 4 - Heckman self-selection regressions of CARs

In this table, we report the regressions of CARs for (-2, +1) and (-1,+1) windows computed using Fama-French 3 or 4-factor model with the CRSP EW index as the market benchmark. We control for the inverse Mills ratios obtained from the multinomial logistic regressions. The inverse Mills ratios are calculated from the predicted probability of pursuing asset acquisitions. ASSET ACQUISITIONS is the dummy variables for asset acquisitions. RUNNUP is the acquirer's CAR in the (-30,-10) days window. RELSIZE is the ratio of the deal value to the acquirer total asset. LN(L.ACQ.ASSETS) is the natural log of the acquirer total asset in the year preceding the acquisition. RELATED TARGET is the dummy variable for acquisitions by acquirers and targets in the same business. PUBLIC TARGETS is the dummy variable for acquisitions of publicly-traded targets. CASH ONLY is the dummy variable for cash-only acquisitions. ACQUIRER ROA is the acquirer return on asset percentage. L.ACQ.LIQUIDITY is the acquirer liquidity ratio, which is calculated as the sum of cash, balances due, securities, fed funds sold, repos, and trading account assets-pledged securities divided by total liabilities in the year preceding the acquisition. L.ACQ.EQUITY/ASSET is the equity-to-asset percent of the acquirer in the year preceding the acquisition. *, ** and *** indicate the significance levels of 10%, 5% and 1%, respectively.

Variables	Model 1 Fama-French 3-factor model CARs (-2,+1)	Model 2 Fama-French 3-factor model CARs (-1,+1)	Model 3 Fama-French 4-factor model CARs (-2,+1)	Model 4 Fama-French 4-factor model CARs (-1,+1)
ASSET ACQUISITIONS	0.045	0.038	0.042	0.033
	(5.477***)	(5.293***)	(3.514**)	(3.322**)
INVERSE MILLS	0.956	0.092	0.604	-0.097
	(1.282)	(0.095)	(0.767)	(-0.096)
RUNNUP	0.021	0.010	0.021	0.011
	(7.497***)	(2.509*)	(9.735***)	(3.460**)
RELSIZE	-0.054	-0.066	-0.056	-0.070
	(-4.512**)	(-6.147***)	(-4.611***)	(-6.924***)
PUBLIC TARGETS	-0.175	-0.181	-0.175	-0.180
	(-42.695***)	(-42.604***)	(-52.817***)	(-51.454***)
RELATED TARGETS	0.022	0.030	0.018	0.025
	(8.157***)	(9.374***)	(7.683***)	(8.560***)
CASH ONLY	0.040	0.049	0.040	0.050
	(1.770)	(2.246*)	(1.721)	(2.204*)
LN(L.ACQ.ASSET)	-0.077	-0.074	-0.078	-0.078
	(-10.784***)	(-14.262***)	(-11.970***)	(-17.856***)
L.ACQ.ROA	0.167	0.035	0.114	0.005
	(1.423)	(0.228)	(0.923)	(0.032)
L.ACQ.LIQUIDITY	0.251	0.006	0.160	-0.041
	(1.197)	(0.024)	(0.717)	(-0.147)
L.ACQ.EQUITY/ASSET	-0.084	0.009	-0.050	0.027
	(-0.966)	(0.087)	(-0.542)	(0.238)
Constant	-0.172	0.003	-0.098	0.041
	(-1.110)	(0.017)	(-0.599)	(0.215)
Observations	3,099	3,099	3,099	3,099
Adj. R-squared	0.0644	0.0675	0.0653	0.0683
Year fixed effect	Yes	Yes	Yes	Yes
Industry fixed effect	Yes	Yes	Yes	Yes
Clustered std err	Yes	Yes	Yes	Yes

Table 5 - Entropy matching

In this table, we report results from Entropy Balancing (EB) procedure. In Panel A we report the mean, variance and skewness for both asset acquisitions and equity acquisitions as well as standard deviations to demonstrate similarity of the matched sample. In Panel B, we report the results from the matched samples using EB procedure. ASSET ACQUISITIONS is the dummy variables for asset acquisitions. RUNNUP is the acquirer's CAR in the (-30,-10) days window. RELSIZE is the ratio of the deal value to the acquirer total asset. LN(L.ACQ.ASSETS) is the natural log of the acquirer total asset in the year preceding the acquisition. RELATED TARGET is the dummy variable for acquisitions by acquirers and targets in the same business. PUBLIC TARGETS is the dummy variable for acquisitions of publicly-traded targets. CASH ONLY is the dummy variable for cash-only acquisitions. ACQUIRER ROA is the acquirer return on asset percentage. L.ACQ.LIQUIDITY is the acquirer liquidity ratio, which is calculated as the sum of cash, balances due, securities, fed funds sold, repos, and trading account assets-pledged securities divided by total liabilities in the year preceding the acquisition. L.ACQ.EQUITY/ASSET is the equity-to-asset percent of the acquirer in the year preceding the acquisition. *, ** and *** indicate the significance levels of 10%, 5% and 1%, respectively.

Panel A - Firm characteristics after entropy matching

Variables	Equity acquisitions			Asset acquisitions			
	Mean	Variance	Skewness	Mean	Variance	Skewness	Std.Diff
LN(L.ACQ.ASSET)	16.726	5.089	0.333	16.743	5.094	0.310	0.007
L.ACQ.ROA	1.067	0.295	0.530	1.068	0.296	0.524	0.002
L.ACQ.LIQUIDITY	23.874	265.881	1.107	23.898	266.156	1.102	0.001
L.ACQ.EQUITY/ASSET	10.107	7.423	1.120	10.118	7.431	1.108	0.004

Panel B - Regressions of CARs after entropy matching

Variables	Model 1 Fama-French 3-factor model CARs (-2,+1)	Model 2 Fama-French 3-factor model CARs (-1,+1)	Model 3 Fama-French 4-factor model CARs (-2,+1)	Model 4 Fama-French 4-factor model CARs (-1,+1)
ASSET ACQUISITIONS	0.103	0.104	0.106	0.093
	(7.160***)	(9.234***)	(4.731***)	(4.627***)
RUNNUP	0.049	0.042	0.068	0.056
	(1.527)	(1.052)	(1.754)	(1.256)
RELSIZE	0.066	0.104	0.062	0.100
	(3.572**)	(9.117***)	(3.504**)	(10.704***)
PUBLIC TARGETS	-0.156	-0.189	-0.158	-0.190
	(-8.996***)	(-8.744***)	(-11.641***)	(-10.468***)
RELATED TARGETS	-0.002	0.016	-0.002	0.011
	(-0.149)	(1.852)	(-0.176)	(1.326)
CASH ONLY	-0.009	-0.031	-0.032	-0.045
	(-0.127)	(-0.428)	(-0.424)	(-0.611)
LN(L.ACQ.ASSET)	-0.143	-0.054	-0.140	-0.050

	(-9.678***)	(-3.010**)	(-8.605***)	(-2.423*)
L.ACQ.ROA	-0.008	-0.029	-0.005	-0.031
	(-0.500)	(-1.089)	(-0.327)	(-1.273)
L.ACQ.LIQUIDITY	0.138	0.034	0.143	0.041
	(1.963*)	(0.411)	(1.802)	(0.453)
L.ACQ.EQUITY/ASSET	-0.016	-0.005	-0.001	0.012
	(-0.346)	(-0.073)	(-0.023)	(0.165)
Constant	-0.006	-0.008	-0.009	-0.011
	(-0.379)	(-0.390)	(-0.513)	(-0.515)
Observations	3,231	3,231	3,231	3,231
Adj. R-squared	0.150	0.133	0.147	0.125
Year fixed effect	Yes	Yes	Yes	Yes
Industry fixed effect	Yes	Yes	Yes	Yes
Clustered std err	Yes	Yes	Yes	Yes

Table 6 - Propensity score matching

In this table, we report results from Propensity score matching (PSM). In Panel A we report the CARs and compare CARs between equity and asset acquisitions. In Panel B, we report the results from the regressions of CARs as the dependent variable using acquirers in asset acquisitions and propensity-matched acquirers in equity acquisitions. ASSET ACQUISITION is the main independent variable. ASSET ACQUISITIONS is the dummy variables for asset acquisitions. RUNNUP is the acquirer's CAR in the (-30,-10) days window. RELSIZE is the ratio of the deal value to the acquirer total asset. LN(L.ACQ.ASSETS) is the natural log of the acquirer total asset in the year preceding the acquisition. RELATED TARGET is the dummy variable for acquisitions by acquirers and targets in the same business. PUBLIC TARGETS is the dummy variable for acquisitions of publicly-traded targets. CASH ONLY is the dummy variable for cash-only acquisitions. ACQUIRER ROA is the acquirer return on asset percentage. L.ACQ.LIQUIDITY is the acquirer liquidity ratio, which is calculated as the sum of cash, balances due, securities, fed funds sold, repos, and trading account assets-pledged securities divided by total liabilities in the year preceding the acquisition. L.ACQ.EQUITY/ASSET is the equity-to-asset percent of the acquirer in the year preceding the acquisition. *, ** and *** indicate the significance levels of 10%, 5% and 1%, respectively.

Panel A - Univariate comparisons

Variables	Equity acquisitions	Asset acquisitions	Difference	t-stats	Wilcoxon-stats
Fama-French 3-factor model CARs (-2,+1)	-0.300%	0.800%	1.100%	2.46**	2.47**
Fama-French 3-factor model CARs (-1,+1)	-0.300%	0.600%	0.900%	2.16**	1.95**
Fama-French 4-factor model CARs (-2,+1)	-0.300%	0.800%	1.100%	2.47**	2.61***
Fama-French 4-factor model CARs (-1,+1)	-0.400%	0.600%	1.000%	2.30**	2.14**

Panel B - Regressions of CARs

Variables	Model 1 Fama-French 3-factor model CARs (-2,+1)	Model 2 Fama-French 3-factor model CARs (-1,+1)	Model 3 Fama-French 4-factor model CARs (-2,+1)	Model 4 Fama-French 4-factor model CARs (-1,+1)
ASSET ACQUISITIONS	0.125	0.099	0.121	0.070
	(3.517**)	(2.471*)	(3.573**)	(1.988*)
RUNNUP	0.031	0.012	0.064	0.044
	(0.969)	(0.299)	(1.820)	(0.941)
RELSIZE	0.071	0.120	0.066	0.114
	(1.764)	(2.929**)	(1.726)	(2.934**)
PUBLIC TARGETS	-0.076	-0.157	-0.087	-0.161
	(-2.450*)	(-4.724***)	(-3.632**)	(-5.773***)
RELATED TARGETS	-0.034	-0.029	-0.037	-0.064
	(-0.746)	(-0.567)	(-0.889)	(-1.383)
CASH ONLY	0.074	0.048	0.057	0.044
	(0.748)	(0.506)	(0.600)	(0.472)
LN(L.ACQ.ASSET)	-0.195	-0.095	-0.159	-0.078
	(-7.963***)	(-3.633**)	(-5.998***)	(-2.936**)
L.ACQ.ROA	-0.043	-0.080	-0.046	-0.085
	(-2.746*)	(-3.843**)	(-3.188**)	(-4.665***)
L.ACQ.LIQUIDITY	0.124	0.026	0.134	0.042
	(1.500)	(0.356)	(1.468)	(0.497)
L.ACQ.EQUITY/ASSE	0.079	0.091	0.113	0.136

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	(1.560)	(1.382)	(2.038)	(2.124)
Constant	0.064	0.065	0.053	0.060
	(11.774***)	(9.833***)	(13.292***)	(10.118***)
Observations	221	221	221	221
Adj. R-squared	0.0662	0.0437	0.0676	0.0547
Year fixed effect	Yes	Yes	Yes	Yes
Industry fixed effect	Yes	Yes	Yes	Yes
Clustered std err	Yes	Yes	Yes	Yes

Table 7 - Long-run stock price performance

Table 7 reports the results of long-run price performance examining Buy and Hold Abnormal Returns after M&A announcement. Panel A displays the univariate comparisons for windows of (+1,+12), (+1,+24), and (+1,+36) months for equity acquisitions, asset acquisitions, and the difference between equity and asset acquisitions. Panel B shows results to OLS Buy and Hold Abnormal Returns (BHARs) regressions on asset acquisitions, The BHAR corresponds to the 12, 24- or 36-month post-announcement windows in alternate regressions reported in models 1, 2, and 3 respectively. The main independent variable of interest is the dummy variable for deals with asset acquisitions (ASSET ACQUISITIONS). ASSET ACQUISITIONS is the dummy variables for asset acquisitions. RUNNUP is the acquirer's CAR in the (-30,-10) days window. RELSIZE is the ratio of the deal value to the acquirer total asset. LN(L.ACQ.ASSETS) is the natural log of the acquirer total asset in the year preceding the acquisition. RELATED TARGET is the dummy variable for acquisitions by acquirers and targets in the same business. PUBLIC TARGETS is the dummy variable for acquisitions of publicly-traded targets. CASH ONLY is the dummy variable for cash-only acquisitions. ACQUIRER ROA is the acquirer return on asset percentage. L.ACQ.LIQUIDITY is the acquirer liquidity ratio, which is calculated as the sum of cash, balances due, securities, fed funds sold, repos, and trading account assets-pledged securities divided by total liabilities in the year preceding the acquisition. L.ACQ.EQUITY/ASSET is the equity-to-asset percent of the acquirer in the year preceding the acquisition. *, ** and *** indicate the significance levels of 10%, 5% and 1%, respectively.

Panel A - Univariate comparisons

Windows	Equity acquisitions	Asset acquisitions	Difference	t-stats	Wilcoxon-stats
(+1,+12) months	-6.100%	-2.300%	3.800%	1.449	1.532
(+1,+24) months	-12.100%	-3.400%	8.700%	2.132**	1.888*
(+1,+36) months	-16.400%	-2.500%	13.900%	2.736***	2.571***

Panel B - Regressions of BHARs

Variables	Model 1 (+1,+12)	Model 2 (+1,+24)	Model 3 (+1,+36)
ASSET ACQUISITIONS	0.030	0.037	0.044
	(5.337***)	(4.260***)	(4.427***)
RELSIZE	-0.135	-0.161	-0.113
	(-29.842***)	(-68.139***)	(-60.055***)
RELATED TARGETS	0.010	-0.016	-0.018
	(0.713)	(-2.006*)	(-4.063***)
PUBLIC TARGETS	0.095	0.100	0.086
	(8.338***)	(12.263***)	(12.013***)
LN(L.ACQ.ASSET)	-0.037	-0.041	-0.003
	(-37.837***)	(-18.406***)	(-0.312)
L.ACQ.ROA	-0.050	0.082	0.238
	(-4.409***)	(11.611***)	(15.577***)
L.ACQ.LIQUIDITY	0.056	0.101	0.116
	(5.381***)	(31.903***)	(9.636***)
L.ACQ.EQUITY/ASSET	0.063	0.083	0.120
	(4.386***)	(6.066***)	(2.957**)
Constant	-0.282	-0.725	-4.388
	(-1.782)	(-11.558***)	(-7.600***)
Observations	3,235	2,993	2,689
Adj. R-squared	0.0193	0.0443	0.0847
Year fixed effect	Yes	Yes	Yes
Industry fixed effect	Yes	Yes	Yes
Clustered std err	Yes	Yes	Yes

Table 8 - Long-run operating performance

Table 8 reports the regressions of the acquirers' operating performance using the data in the (-3,+3) year window around the announcement date. The variable of interest is the interaction term between the dummy variable ASSET ACQUISITIONS and the dummy variable for the periods after the acquisitions AFTER. Model 1 measures Return on Assets (ROA). Model 2 measures Return on Equity (ROE), Model 3 measures Net Interest Margin, and Model 4 measures the ratio of Yield and Cost Spread. We use a difference-in-difference approach requiring 3 years before and 3 years after the announcement date for regression specifications. ASSET ACQUISITIONS is the dummy variables for asset acquisitions. RUNNUP is the acquirer's CAR in the (-30,-10) days window. RELSIZE is the ratio of the deal value to the acquirer total asset. LN(L.ACQ.ASSETS) is the natural log of the acquirer total asset in the year preceding the acquisition. RELATED TARGET is the dummy variable for acquisitions by acquirers and targets in the same business. PUBLIC TARGETS is the dummy variable for acquisitions of publicly-traded targets. CASH ONLY is the dummy variable for cash-only acquisitions. ACQUIRER ROA is the acquirer return on asset percentage. L.ACQ.LIQUIDITY is the acquirer liquidity ratio, which is calculated as the sum of cash, balances due, securities, fed funds sold, repos, and trading account assets-pledged securities divided by total liabilities in the year preceding the acquisition. L.ACQ.EQUITY/ASSET is the equity-to-asset percent of the acquirer in the year preceding the acquisition. *, ** and *** indicate the significance levels of 10%, 5% and 1%, respectively.

Variables	Model 1 ROA	Model 2 ROE	Model 3 NET INTEST MARGIN	Model 4 YIELD/COST SPREAD
ASSET ACQUISITIONS	-0.005	-0.009	-0.002	-0.014
	(-0.427)	(-0.710)	(-0.469)	(-1.240)
AFTER	-0.081	-0.098	-0.091	-0.061
	(-7.907***)	(-20.808***)	(-8.290***)	(-5.948***)
ASSET ACQUISITIONS * AFTER	0.009	0.007	0.004	0.016
	(2.961**)	(1.327)	(0.684)	(2.043*)
RELSIZE	-0.072	-0.056	0.045	0.037
	(-5.970***)	(-8.793***)	(4.294***)	(3.376**)
RELATED TARGETS	0.022	0.017	0.091	0.093
	(6.245***)	(7.254***)	(13.229***)	(15.728***)
PUBLIC TARGETS	0.019	0.013	0.016	0.026
	(8.374***)	(10.557***)	(3.695**)	(7.211***)
LN(L.ACQ.ASSET)	0.094	0.120	-0.178	-0.222
	(9.930***)	(34.872***)	(-26.426***)	(-48.258***)
L.ACQ.EQUITY/ASSET	0.447	0.051	0.248	0.244
	(3.502**)	(1.621)	(2.471**)	(3.360**)
Constant	4.765**	11.172**	0.872	-0.331
	(3.040**)	(3.070**)	(0.615)	(-0.291)
Observations	21,032	21,021	21,032	20,895
Adj. r-squared	0.407	0.148	0.361	0.249
Year fixed effect	Yes	Yes	Yes	Yes
Industry fixed effect	Yes	Yes	Yes	Yes
Clustered std err	Yes	Yes	Yes	Yes

Table 9 - Cumulative abnormal returns by bank size terciles

Table 9 reports the results for regressions where CARs are the dependent variable and control for similar variables as in Table 3. The results for terciles 1, 2, and 3 are reported in models 1, 2, and 3 respectively. Model 3 measures smaller banks, Model 2 measures medium banks, and Model 3 measures larger banks. ASSET ACQUISITIONS is the dummy variables for asset acquisitions. RUNNUP is the acquirer's CAR in the (-30,-10) days window. RELSIZE is the ratio of the deal value to the acquirer total asset. LN(L.ACQ.ASSETS) is the natural log of the acquirer total asset in the year preceding the acquisition. RELATED TARGET is the dummy variable for acquisitions by acquirers and targets in the same business. PUBLIC TARGETS is the dummy variable for acquisitions of publicly-traded targets. CASH ONLY is the dummy variable for cash-only acquisitions. ACQUIRER ROA is the acquirer return on asset percentage. L.ACQ.LIQUIDITY is the acquirer liquidity ratio, which is calculated as the sum of cash, balances due, securities, fed funds sold, repos, and trading account assets-pledged securities divided by total liabilities in the year preceding the acquisition. L.ACQ.EQUITY/ASSET is the equity-to-asset percent of the acquirer in the year preceding the acquisition. *, ** and *** indicate the significance levels of 10%, 5% and 1%, respectively.

Variables	Model 1 Smaller banks	Model 2 Medium banks	Model 3 Larger banks
ASSET ACQUISITIONS	0.061	0.093	-0.019
	(2.550*)	(4.479***)	(-1.274)
RUNNUP	0.044	0.010	-0.031
	(20.989***)	(3.971**)	(-6.163***)
RELSIZE	-0.055	-0.013	-0.183
	(-9.216***)	(-0.887)	(-3.715**)
PUBLIC TARGETS	-0.128	-0.202	-0.186
	(-23.908***)	(-12.172***)	(-11.561***)
RELATED TARGETS	0.060	0.025	-0.023
	(14.970***)	(1.913)	(-2.308*)
CASH ONLY	0.044	0.036	0.030
	(7.526***)	(1.171)	(1.105)
LN(L.ACQ.ASSET)	-0.064	0.037	-0.065
	(-22.061***)	(9.699***)	(-4.095***)
L.ACQ.ROA	0.028	-0.032	0.030
	(7.281***)	(-1.160)	(0.849)
L.ACQ.LIQUIDITY	-0.065	0.034	0.017
	(-3.327**)	(1.023)	(1.115)
L.ACQ.EQUITY/ASSET	0.030	0.007	0.024
	(2.722*)	(0.552)	(0.830)
Constant	0.050	-0.034	0.008
	(30.805***)	(-7.190***)	(1.064)
Observations	1,095	1,093	1,043
Adj. R-squared	0.0535	0.0697	0.0990
Year fixed effect	Yes	Yes	Yes
Industry fixed effect	Yes	Yes	Yes
Clustered std err	Yes	Yes	Yes

Table 10 - Long-run stock price performance by bank size terciles

Table 10 reports the results for regressions where BHARs are the dependent variable and the sample is separated along terciles. We use 12, 24- or 36-month post-announcement windows and control for similar variables as in Table 7. The results for12, 24- or 36-month windows are reported in Panels A, B, and C respectively. Results for terciles 1, 2, and 3 are reported in models 1, 2, and 3 respectively. RUNNUP is the acquirer's CAR in the (-30,-10) days window. RELSIZE is the ratio of the deal value to the acquirer total asset. LN(L.ACQ.ASSETS) is the natural log of the acquirer total asset in the year preceding the acquisition. RELATED TARGET is the dummy variable for acquisitions by acquirers and targets in the same business. PUBLIC TARGETS is the dummy variable for acquisitions of publicly-traded targets. CASH ONLY is the dummy variable for cash-only acquisitions. ACQUIRER ROA is the acquirer return on asset percentage. L.ACQ.LIQUIDITY is the acquirer liquidity ratio, which is calculated as the sum of cash, balances due, securities, fed funds sold, repos, and trading account assets-pledged securities divided by total liabilities in the year preceding the acquisition. L.ACQ.EQUITY/ASSET is the equity-to-asset percent of the acquirer in the year preceding the acquisition.

Panel A - BHARs in (+1,+12) month window

Variables	Model 1 Smaller banks	Model 2 Medium banks	Model 3 Larger banks
ASSET ACQUISITIONS	-0.001	0.059	0.047
	(-0.178)	(6.744***)	(6.406***)
RELSIZE	-0.188	-0.115	-0.099
	(-100.968***)	(-93.518***)	(-4.094***)
RELATED TARGETS	0.008	0.022	0.019
	(0.335)	(1.322)	(2.270*)
PUBLIC TARGETS	0.129	0.159	0.007
	(10.872***)	(8.861***)	(0.743)
LN(L.ACQ.ASSET)	-0.076	-0.037	-0.034
	(-36.275***)	(-13.716***)	(-3.573**)
L.ACQ.ROA	-0.021	-0.072	-0.085
	(-3.411**)	(-2.241*)	(-3.748**)
L.ACQ.LIQUIDITY	0.054	0.034	0.038
	(1.889)	(2.540*)	(3.693**)
L.ACQ.EQUITY/ASSET	0.022	0.188	0.026
	(7.924***)	(5.001***)	(3.245**)
Constant	0.422	-0.480	0.377
	(30.986***)	(-1.780)	(2.450*)
Observations	1,053	1,105	1,077
Adj. R-squared	0.0363	0.0218	0.00777
Year fixed effect	Yes	Yes	Yes
Industry fixed effect	Yes	Yes	Yes
Clustered std err	Yes	Yes	Yes

Panel B - BHARs in (+1,+24) month window

Variables	Model 1 Smaller banks	Model 2 Medium banks	Model 3 Larger banks
ASSET ACQUISITIONS	0.031	0.054	0.033
	(3.908**)	(2.466*)	(1.464)
Constant	-0.231	-1.149	-0.596
	(-10.941***)	(-51.662***)	(-3.458**)
Observations	957	1,038	998
Adj. R-squared	0.0727	0.0441	0.0220

Year fixed effect	Yes	Yes	Yes
Industry fixed effect	Yes	Yes	Yes
Clustered std err	Yes	Yes	Yes
Other control variables	Yes	Yes	Yes

Panel C - BHARs in (+1,+36) month window

Variables	Model 1 Smaller banks	Model 2 Medium banks	Model 3 Larger banks
ASSET ACQUISITIONS	0.033	0.051	0.054
	(49.330***)	(2.514*)	(7.974***)
Constant	-0.620	-5.630	-0.902
	(-41.416***)	(-17.308***)	(-5.708***)
Observations	845	946	898
Adj. R-squared	0.139	0.0796	0.0437
Year fixed effect	Yes	Yes	Yes
Industry fixed effect	Yes	Yes	Yes
Clustered std err	Yes	Yes	Yes
Other control variables	Yes	Yes	Yes

Table 11 - Long-run operating performance by bank size terciles

In table 11, we report results for regressions along tercile groups where measures of long-term operating performance are the dependent variables. We use operating variables and control variables consistent as in Table 8. The results for ROA, ROE, NET INTEREST MARGIN, and YIELD/COST SPREAD reported in Panels A, B, C, and D respectively. Results for terciles 1, 2, and 3 are reported in models 1, 2, and 3 respectively. RUNNUP is the acquirer's CAR in the (-30,-10) days window. RELSIZE is the ratio of the deal value to the acquirer total asset. LN(L.ACQ.ASSETS) is the natural log of the acquirer total asset in the year preceding the acquisition. RELATED TARGET is the dummy variable for acquisitions by acquirers and targets in the same business. PUBLIC TARGETS is the dummy variable for acquisitions of publicly-traded targets. CASH ONLY is the dummy variable for cash-only acquisitions. ACQUIRER ROA is the acquirer return on asset percentage. L.ACQ.LIQUIDITY is the acquirer liquidity ratio, which is calculated as the sum of cash, balances due, securities, fed funds sold, repos, and trading account assets-pledged securities divided by total liabilities in the year preceding the acquisition. L.ACQ.EQUITY/ASSET is the equity-to-asset percent of the acquirer in the year preceding the acquisition.

Panel A – ROA

Variables	Model 1 Smaller banks	Model 2 Medium banks	Model 3 Larger banks
ASSET ACQUISITIONS	-0.011	-0.012	0.021
	(-0.532)	(-0.853)	(1.246)
AFTER	-0.129	-0.068	-0.049
	(-13.892***)	(-6.644***)	(-2.343*)
ASSET ACQUISITIONS * AFTER	-0.005	0.018	0.005
	(-0.459)	(3.050**)	(0.622)
RELSIZE	-0.097	-0.054	-0.008
	(-7.243***)	(-8.516***)	(-0.561)
RELATED TARGETS	0.007	0.019	0.016
	(8.713***)	(2.236*)	(1.569)
PUBLIC TARGETS	0.017	0.011	-0.005
	(2.136)	(2.143*)	(-0.878)
LN(L.ACQ.ASSET)	0.053	0.045	0.027
	(5.848***)	(4.466***)	(1.301)
L.ACQ.EQUITY/ASSET	0.258	0.633	0.424
	(9.204***)	(3.417**)	(2.979**)
Constant	-0.067	1.993	5.924
	(-0.891)	(0.859)	(4.251***)
Observations	6,983	7,051	6,998
adj. r-squared	0.161	0.587	0.344
Year fixed effect	Yes	Yes	Yes
Industry fixed effect	Yes	Yes	Yes
Clustered std err	Yes	Yes	Yes

Panel B – ROE

Variables	Model 1 Smaller banks	Model 2 Medium banks	Model 3 Larger banks
ASSET ACQUISITIONS	-0.011	-0.034	0.028
	(-0.591)	(-2.802**)	(1.420)
AFTER	-0.148	-0.082	-0.047
	(-16.908***)	(-14.309***)	(-9.503***)
ASSET ACQUISITIONS * AFTER	-0.004	0.034	-0.011
	(-0.426)	(41.626***)	(-1.242)
Constant	0.416	1.021	36.706

	(1.437)	(0.332)	(20.178***)
Observations	6,976	7,047	6,998
adj. r-squared	0.107	0.161	0.270
Year fixed effect	Yes	Yes	Yes
Industry fixed effect	Yes	Yes	Yes
Clustered std err	Yes	Yes	Yes
Other control variables	Yes	Yes	Yes

Panel C - NET INTEREST MARGIN

Variables	Model 1 Smaller banks	Model 2 Medium banks	Model 3 Larger banks
ASSET ACQUISITIONS	-0.040	-0.049	0.047
	(-12.533***)	(-4.153***)	(4.998***)
AFTER	-0.092	-0.095	-0.095
	(-18.369***)	(-13.269***)	(-3.614**)
ASSET ACQUISITIONS * AFTER	0.011	-0.018	0.007
	(7.132***)	(-1.880)	(1.462)
Constant	5.799	2.287	-1.412
	(49.420***)	(1.468)	(-0.586)
Observations	6,983	7,051	6,998
adj. r-squared	0.323	0.339	0.407
Year fixed effect	Yes	Yes	Yes
Industry fixed effect	Yes	Yes	Yes
Clustered std err	Yes	Yes	Yes
Other control variables	Yes	Yes	Yes

Panel D - YIELD/COST SPREAD

Variables	Model 1 Smaller banks	Model 2 Medium banks	Model 3 Larger banks
ASSET ACQUISITIONS	-0.077	-0.056	0.050
	(-3.408*)	(-6.114***)	(2.168*)
AFTER	-0.070	-0.052	-0.074
	(-31.235***)	(-3.431**)	(-3.078**)
ASSET ACQUISITIONS * AFTER	0.029	-0.022	0.022
	(3.103*)	(-1.351)	(3.678**)
Constant	5.011	1.379	-4.797
	(60.264***)	(0.846)	(-1.962)
Observations	6,931	7,028	6,936
adj. r-squared	0.160	0.190	0.318
Year fixed effect	Yes	Yes	Yes
Industry fixed effect	Yes	Yes	Yes
Clusterred std err	Yes	Yes	Yes
Other control variables	Yes	Yes	Yes