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TESTING THE MERGER PREMIUMS IN PUBLICLY TRADED FIRMS: THE CASE OF U.S. COMMERCIAL BANKS

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Abstract

This study examines the short-term wealth effects of the mergers and acquisitions (M&As) transactions that were announced between 2000 and 2014 in U.S. Banking Industry. In particular, the merger premiums before and after the Global Financial Crisis (2008-2009) are examined. The results reveal that, on average, cumulative abnormal returns (CARs) to the target banks are 23.64% while CARs to the bidders are -1.24% around the announcement date over the sample period. We also find statistically significant positive CARs of 2.42% for the combined banks. The findings point out that M&As are value-creating events for the combined banks due to synergies created between bidders and targets; however, bidders may sometimes overpay to realize these gains. Our findings also reveal that M&As taking place before the Global Financial Crisis period (2000-2007) realize lower gains for targets, bidders and combined firms compared post-Crisis period (2010-2014) possibly due to stronger banks surviving the Crisis and existence of a more prudent and reliable market environment after the passage of Dodd-Frank Act.

Keywords: Banking; Mergers and Acquisitions; Event Study; Global Financial Crisis, Investment, Stocks.

JEL Classification: G34; G21; G14; G30

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1. Introduction

Due to the liberalization and deregulation of financial markets, the U.S. Banking Industry has experienced an unprecedented change over the past several decades. During this time, the number of U.S. commercial banks has declined from 14,417 (1985) to 4,852 (Q1:2018)¹. This decline has also stemmed from technological innovation, advanced applications and the banks' motivation to control their costs along with economies of scale. Mergers and acquisitions have been used as a strategic tool by banks' management to grow market share, diversify geographically, or improve their competitive position in their respective markets. After witnessing such a big wave of U.S. bank mergers in past decades, it is relevant to ask whether these transactions create value, and if they do, what the drivers of such value creation are. Unfortunately, empirical evidence does not provide unambiguous answers with respect to these questions. Furthermore, examination of the recent merger transactions is of importance because the Global Financial Crises, which took place in 2008 and 2009, has led to substantial changes in the way financial institutions operate mainly due to increased legislative oversight. Since the investors became more cautious regarding financial markets and valuations in general, it is reasonable to believe that the short-term market reactions to bank M&As may have changed.

This study explores the short-term market reaction to M&A announcements that occurred during the 2000-2014 period in the U.S. banking industry and aims to test value creation capacity of M&A transactions around the Global Financial Crisis and financial regulation that followed such as the Dodd-Frank Wall Street Reform and Consumer Protection Act of, 2010 with the aim of providing empirical contribution to the ongoing debate. With this goal in mind, we analyze the target, bidder and combined firm cumulative abnormal returns² (CARs) computed using standard event study methodology and empirically examine the short-term stock price returns to U.S. bank M&A announcements in order to measure the value creation capacity of these deals. Finally, we explore whether the short-term market reaction to bank merger announcements has changed before and after the Global Financial Crisis to better understand the influence of regulation on drivers and patterns of the Abnormal Returns (AR).

The selection of the benchmark to measure normal returns is central to conduct the event study. In previous literature, S&P 500 Index was employed frequently as a benchmark in computation of ARs. To correctly measure the announcement impact of an M&A deal in banking industry, we need to control for confounding factors outside the banking industry. With this goal in mind, we employ the U.S. Banking Index alternative to S&P 500 Index as a benchmark. This approach may yield more accurate results relative to traditional approach since the returns of the banks subject to M&A deal are more correlated with Banking Index returns than S&P 500 Index returns, thus capturing the

¹ Federal Reserve Bank of St. Louis, <https://research.stlouisfed.org/fred2/series/USNUM> (As of 5th of December, 2018)

² Abnormal return is the return to shareholders due to nonrecurring events that differs from what would have been predicted by the market model.

actual effect of the deal. In this respect, one minor contribution of this study to the current literature is the introduction of new benchmark in computation of ARs.

Our research also contributes to the literature by examining the most recent merger deals including those occurred after the Global Financial Crisis as we get to examine whether merger premiums have changed around the Crisis and recent regulation in the financial markets such as Dodd-Frank Wall Street Reform and Consumer Protection Act. Although the impact of the Crisis on financial markets is extensively examined, to our best knowledge, there is no comprehensive study on the wealth effect of the U.S. bank mergers comparing pre- and post- Crisis. In this sense, our sample period is relatively large (from 2000 to 2014) and comprehensive compared to earlier studies in relevant literature.

This paper is organized as follows. The next section presents a short overview of the related literature. Section 3 elaborates on the hypotheses to be tested. Section 4 outlines data and sample selection methodology. Section 5 introduces the event study methodology and the model used in the current study. Section 6 presents the empirical results and section 7 offer concluding remarks.

2. Literature Review

The short term and long term impacts of M&A transactions from various aspects have been examined in depth in the literature by market researchers and academicians since the beginning of consolidation took place in U.S. banking industry.

Empirical evidence from earlier research typically reports significant positive abnormal returns to the shareholders of the target firms, significant negative returns to shareholders of bidder firms, and significant positive returns to the shareholders of the combined firms around the transaction date [See, among others, Dodd and Ruback (1977), Bradley (1980), Jensen and Ruback (1983), Desai and Stover (1985), James and Weir (1987), Neely (1987), Trifts and Scanlon (1987), Wall and Gup (1989), Hawavini and Swary (1990), Cornett and De (1991), Cornett and Tehranian (1992), Baradwaj, Dubofsky, and Fraser (1992), Aggrawal, Jajje, Gershon, and Mandelker (1992), Houston and Ryngaert (1994), Madura and Wiant (1994), Holdren, Bowers, and Mason (1994), Palia (1994), Zhang (1995), Hudgins and Seifert (1996), Pilloff (1996), Siems (1996), Loughran and Vijh (1997), Subrahmanyam, Rangan, and Rosenstein (1997), Rau and Vermaelen (1998), Esty, Narasimhan, and Tufano (1999), Becher (2000), Andrade et al. (2001), DeLong (2001), Houston, James, and Ryngaert (2001), Hart and Apilado (2002), Fuller, Netter, and Mike (2002), Amilhud, DeLong, and Saunders (2002), Anderson, Becher, and Campbell (2004), DeLong and DeYoung (2004), Moeller, Schlingemann, and Stulz (2005), Kolaric and Schiereck (2013). and Asimakopoulos and Athanasoglou (2013)].

Jensen and Ruback (1983) concluded that corporate takeovers result positive yields, from which shareholders of target firm gain and shareholders of bidding firm do not lose as Neely (1987) studied 29 U.S. mergers for the 1979-1985 periods and found 36.22% positive ARs for target firms. Trifts and Scanlon (1987) investigated 21 U.S. M&As for the period of 1982-1985 and found average losses of 3.25% for bidders and average

gains of 21.4% for targets. Cornett and De (1991a) studied 189 U.S. Banks (152 Bidders and 37 Targets) during the period of 1982-1986 and found average loss of 0.44% for bidders and gains of 9.76% for targets.

Houston and Ryngaert (1994) analyzed 153 bank mergers over the period of 1985–1991. Of the announced mergers, 131 were completed and 22 were not. Over a 5-day event window period, 131 completed mergers result CARs of –2.25%, 14.77% and 0.46% for bidder banks, target banks and combined, respectively. Over a 5-day event window period, 22 uncompleted/cancelled mergers result CARs of –2.93%, 9.79% and 0.43% for bidder banks, target banks and combined, respectively. Over a 5-day event window period, 153 all mergers results CARs of –2.32%, 14.39% and 0.38% for bidder banks, target banks and combined, respectively. Later study by Houston and Ryngaert (1997), using 209 mergers over the period of 1985–1992, in a 6-day (-4, +1) event-window period, found 0.24% and 20.4% for bidder and target CARs, respectively.

Becher (2000) analyzed 558 U.S. bank mergers over the period 1980–1997 and found that target banks enjoyed positive returns. According to Becher (2000), bank mergers posit synergistic gains and mergers in this industry do not take place just to create empires for chief executive officers (CEOs). Over a 36-day (-30, +5) event window, CARs are 22.64%, -0.10% and 3.03% for target banks, bidder banks and combined, respectively. Over an 11-day (-5, +5) event window, CARs are 17.10%, -1.08% and 1.80% for target banks, bidder banks and combined, respectively.

Asimakopoulos and Athanasoglou (2013) examined the impact of announced M&As on banks' stock prices by utilizing a standard event study analysis for a sample of European banks for a period of 15 years (1990-2004). They found that overall, an M&A announcement does not create value for the shareholders of bidders as opposed to the positive and significant value creation for the shareholders of the targets as Neely (1987) studied 29 U.S. Bank merger transactions for the 1979-1985 periods and found 3.12% average gains but not statistically significant for bidder banks.

3. Testable Hypotheses

Literature offers several hypotheses to explain motivations behind mergers and acquisitions that can broadly be categorized under value-creating and non-value creating motivations. In this study we test three alternative hypotheses explaining the possible reasons of mergers and acquisitions as outlined in Becher (2000); the *synergy hypothesis*, the *hubris or empire building hypothesis*, and the *combined synergy and hubris hypothesis*.

According to the *synergy hypothesis*, M&As take place when the combined firm value is greater than the sum of the values of the individual firms. The additional value is the synergistic gain arising from increase in operational or financial efficiencies obtained by combining the resources of the bidder and target firms. Accordingly, *synergy hypothesis* predicts CARs to target firms should be positive, CARs to bidder firms should be non-negative, and CARs to the combined should be positive. As an example to the non-value creating motivations, the *hubris or empire building hypothesis* bidder firms overpay to

acquire the target firm due to either bidder management suppose that synergies between target and bidder exist when in fact they do not exist or the management of bidder firm is self-driven to realize a merger or acquisition in order to build an empire rather than create a synergy. The hubris or empire building hypothesis would predict that, on average, CARs to target firms are positive, CARs to bidder firms are negative, and the CARs to the combined firm are non-positive (Roll, 1986).

In sum, while the synergy hypothesis claims that mergers are wealth creating events, the hubris or empire building hypothesis states otherwise by claiming that M&As may be the result of managerial hubris and empire building rather than any synergistic reason. A third alternative hypothesis put forth by Becher (2000) is that mergers and acquisitions are a result of both the synergy and hubris hypotheses. Accordingly, CARs to the target and combined firm to be positive along with negative CARs for the bidder firms implying that positive synergies may be associated with an M&A transaction, however, bidder firms might overpay to obtain these synergies.

4. Data and Sample Selection

Initially, a global list of 15,847 bank M&A deals data from the year of 2000 to 2014 is retrieved from SNL Financial database. In SNL Financial data, there are four different country classifications; 'Actual Acquirer Country', 'Buyer Country', 'Target Country' and 'Seller Country'. Having included only U.S.-based banks for all four classifications, our sample size reduced to 8,622. A proper ticker for each bank needs to be at hand in order to get the daily stock return data from the Center for Research in Security Prices (CRSP) database. In SNL Financial data, there are three different ticker classifications; Buyer Ticker, Target Ticker and Seller Ticker. After including the firms with tickers for all three classifications in our data, our sample size dramatically came down to 604. For the purpose of our analysis, only commercial banks and bank holding companies are included in the sample. This reduced our sample size to 450³.

We utilize CRSP database to obtain the return data of each security for 500 trading days. Another inclusion criterion being conducted for our sample data is that the bidder and target banks having at least 100 observations in pre-event period available in the CRSP database to be able to estimate the market model parameters correctly. We also test our results by limiting our observations to maximum of 250 daily returns to estimate the market model and calculate ARs for bidders, targets and combined however; we do not get any significant differences compared to 500 daily returns. As a result of this last criterion, our final sample size reduced to 214 bidder and target banks in the period of 2000-2014.

According to Pilloff and Santomero (1998) selection bias stems from either including in the sample only major M&A deals during the period surrounding the deal of interest or excluding from the sample M&As that banks had multiple mergers in the same year, or over a given time period. Because of these criteria, transactions that are most relevant to analysis of M&A deals might be omitted in the sample. Since our sample selection

³ U.S. Banking index return data is obtained from Bloomberg database.

method does not have such inclusion criteria, our analysis is not subject to such selection biases.

Total number of M&A transactions for 15 years covered in this study is 214, which translates roughly 14 transactions per year. The highest number of transactions took place in the years of 2004, 2006 and 2007 with the numbers of 30, 27 and 28, respectively. The lowest number of M&A transactions took place in the years of 2001 and 2002 with only 1 transactions in each. Average target-to-bidder ratio in the whole sample is 15.64%. This number means that from 2000 to 2014; on average, market value of bidder bank is 6.39 times larger than the value of target bank in our sample. Average target-to-bidder ratio out of 125 M&A transactions taking place in pre-Crisis period (2000-2007) is 16.3% while the same ratio out of 74 M&A transactions taking place in post-Crisis period (2010-2014) is 14.7% meaning that either bidder banks got bigger or target banks got smaller or both happened together following the Crisis.

5. Empirical Model and Methodology

Event study methodology has been used frequently by the academicians to assess the effect of a particular event on the returns of a firm's common stock price. In a typical study, first the market model is estimated using historical data, and then the estimated market model's parameters are used to determine the size and direction of the price changes. In this study, we get to examine the value creation around the announcement of a bank merger and acquisition by using the method as outlined in Brown and Warner (1985). According to the efficient market hypothesis, the market incorporates all available information immediately and fully in stock prices. Thus, prompt correction or balancing will be coming into the prices after the announcement of an M&A event.

Abnormal return represents the gain or loss for shareholders, which could be explained by many factors including an M&A transaction. It is called an abnormal return in a sense that it deviates from what an investor would normally expect to earn or lose for accepting a certain level of risk in normal market conditions. The null hypothesis of our study is that such an M&A event has no impact on the return generating process or the abnormal return is to be zero.

In order to estimate the expected return of each security, this study uses the market model which is a statistical model relating return of a corresponding security to the return of a market portfolio. The market model assumes that there is a stable linear relationship between the market return and the security return. The linear relationship in the pre-event estimation period may be given as:

$$\tilde{R}_{it} = \alpha_i + \beta_i \tilde{R}_{mt} + \varepsilon_{it} \quad (1)$$

where \tilde{R}_{it} is the expected return on the stock of bank i at time t , \tilde{R}_{mt} ⁴ is the return on the CRISP equally-weighted index at time t (market portfolio) and ε_{it} is the zero mean disturbance term at time t . This regression analysis is performed in the estimation

⁴ U.S. Banking Index is utilized as the market return in our analysis.

window to determine the market parameters. Then, the following equation is utilized to compute the abnormal returns or risk-adjusted returns in the event period:

$$A_{it} = R_{it} - \hat{\alpha}_i - \hat{\beta}_i R_{mt} \quad (2) \quad \text{or} \quad A_{it} = R_{it} - \tilde{R}_{it} \quad (2)$$

where A_{it} is the abnormal return for bank i at time t , R_{it} is the actual return on the stock of bank i at time t , \tilde{R}_{it} is the expected return of bank i at time t , and $\hat{\alpha}_i$ and $\hat{\beta}_i$ are the market model parameters as estimated in regression model (1). Then, the CARs over the event period are calculated as the sum of the arithmetic means of the cross-sectional abnormal returns of each day over the event window period. For instance, if the event window is 3-day (-1, +1); the ARs are computed for each day (-1, 0 and +1) then the sum of ARs ($AR_{-1} + AR_0 + AR_{+1}$) for security A provides us CAR for Security A. The CARs under 3-day (-1,+1), 5-day (-2,+2) and 36-day (-30,+5) event windows are calculated.

The event study analysis is conducted for the whole sample period (2000–2014), and the sub-sample periods of 2000–2007 (pre-Crisis period), 2008–2009 (Crisis period) and 2010–2014 (post-Crisis period). To explore whether the abnormal returns have changed over time, four sub-sample periods were determined. These sub-sample periods are 2000 – 2007 representing the pre-Crisis period, 2008 – 2009 representing the Crisis period and 2010 – 2014 representing post-Crisis period. The last period was introduced to see if the Crisis led to a permanent change in the patterns by comparing with 2009-2010 period. In order to test whether a merger is value creating, we examine the combined CARs to bidder and target in line with the methodology drafted by Houston and Ryngaert (1994):

$$\text{Combined Cumulative Abnormal Return (CCAR)} = \frac{(V_{ib} \text{CAR}_{ib}) + (V_{it} \text{CAR}_{it})}{(V_{ib} + V_{it})} \quad (4)$$

where V_{ib} is the market value of bidder bank i on the first day of the event window and V_{it} is the market value of target bank i on the first day of the event window. Value of each bank is computed by multiplying the market value of the bank's stock price with the bank's number of shares outstanding. CAR_{ib} represents the CAR for bidder bank i over the event window and CAR_{it} represents the CAR for target bank i over the respective event window.

6. Empirical Results

The target shareholders usually demand a fairly large premium to sell their shares to the bidder firms because a typical merger is expected to create significant corporate value in the post-merger firm. In an efficient market, this premium should be immediately reflected in the target firm's share price. Average wealth effects for the overall sample and for various sub-samples classified by different event windows are presented in Table 1.

Overall, M&As announced between 2000 and 2014 create substantial positive CARs (statistically significant at the 1% level) for the target and combined. Over the entire sample period, the CARs to the target banks are on average 23.41% (3-day event window), 23.14% (5-day event window), and 26.04% (36-day event window), respectively with all three at 1% significance level. These results are in line with the previous studies that report shareholders of the target banks earn significant *positive* returns around the announcement dates.

The CARs to target banks within 3-day (-1, +1) event window for 2000 – 2014, 2000 – 2007, 2008 – 2009 and 2010 –2014 periods are 23.41%, 19.55%, 25.99% and 29.48% (all statistically significant at the 1%), respectively. For the same periods, the CARs to target banks within 5-day (-2, +2) and 36-day (-30, +5) event windows are also similar. Target banks results are consistent with the synergy hypothesis, hubris hypothesis and hubris & synergy hypothesis as all three hypotheses expect target banks to have positive CARs.

Table 1- Cumulative Abnormal Returns (CARs) with U.S. Banking Index

Year	3-day (-1, +1) event window		5-day (-2, +2) event window		36-day (-30, +5) event window	
	CARs (%)	p-value	CARs (%)	p-value	CARs (%)	p-value
Panel A						
Target Banks						
2000 – 2014	23.41	.0001	23.14	.0001	26.04	.0001
2000 – 2007	19.55	.0001	19.35	.0001	22.10	.0001
2008 – 2009	25.99	.0013	25.41	.0015	28.07	.0012
2010 – 2014	29.48	.0001	29.07	.0001	32.29	.0001
Panel B						
Bidder Banks						
2000 – 2014	-1.41	.0041	-1.07	.0354	-1.07	.1333
2000 – 2007	-2.06	.0001	-2.09	.0001	-2.11	.0003
2008 – 2009	-4.09	.2005	-4.19	.1823	-5.72	.0570
2010 – 2014	0.24	.8350	1.29	.2707	1.64	.3320
Panel C						

Combined							
2000	-	2.24	.000	2.52	.0001	3.29	.0001
2014			1				
2000	-	1.05	.002	0.97	.0087	1.55	.0048
2007			5				
2008	-	2.68	.331	2.69	.2728	3.39	.4095
2009			0				
2010	-	4.20	.000	5.12	.0001	6.22	.0001
2014			4				

This table represents the CARs results with respect to U.S. Banking Index utilized. P-values test the statistical significance of the CARs

Panel B of Table 1 displays the results for the bidder banks. For the full 2000–2014 period, the CARs to their shareholders are negative under each event window and statistically significant within 3-day (-1, +1) and 5-day (-2, +2) event windows. The CAR values are -1.41% (significant at 1%), -1.07% (significant at 5%), and -1.07% within the 3-day (-1, +1), 5-day (-2, +2), and 36-day (-30, +5) event windows, respectively. These results are in line with the findings of prior studies that the shareholders of the bidder firms experience a loss around the announcement of an M&A.

The CARs to bidder banks in 2000 – 2014, 2000 – 2007, 2008 – 2009 and 2010 –2014 periods are -1.41% (significant at 1%), -2.06% (significant at 1%), -4.09% and 0.24%, respectively within 3-day (-1,+1) event window. For the same periods, the CARs to bidder banks within 5-day (-2, +2) event window are -1.07% (significant at 5%), -2.09% (significant at 1%), -4.19% and 1.29%, respectively. Within 36-day (-30, +5) event window, the CARs to the bidder banks in 2000 – 2014, 2000 – 2007, 2008 – 2009 and 2010 –2014 periods are -1.07%, -2.11% (significant at the 1%), -5.72% (significant at the 10%), and 1.64%, respectively. Bidder results are consistent with hubris hypothesis and hubris & synergy hypothesis as these hypotheses expect bidder banks to have negative CARs. However, our overall results for the banks are not consistent with the synergy hypothesis as this hypothesis expects the bidder banks to realize non-negative CARs.

Panel C of Table 1 summarizes CARs to the combined entity are positive and statistically significant at the 1 percent level in all event windows for the full period. CARs to combined came to be 2.24%, 2.52% and 3.29% and all statistically significant at 1% for 3-day (-1, +1), 5-day (-2, +2) and 36-day (-30, +5) event windows, respectively.

These results are consistent with the prior literature that combined firm shareholders or combined stock prices rose significantly around the announcement of a merger or acquisition. Overall, the results obtained by utilizing U.S. Banking Index return data point out that target banks realize a positive return, bidder banks realize a negative return, and the combined experiences a positive return around the merger announcement. These results also imply that the target banks increase their values at the expense of the bidder banks and the overall result is positive for the combined. These results exhibit that the combined firm experiences a positive but small return around the announcement

of a merger or acquisition and suggests a wealth transfer from the bidder banks to the target banks. This finding is also substantiated by Becher (2000) who observed 3% positive return for the combined, Anderson, Becher, and Campbell (2004), and Delong and DeYoung (2004).

Overall Results with Respect to the Hypotheses

Our research directly tests three hypotheses; synergy hypothesis, hubris hypothesis and hubris & synergy hypothesis outlined in section 3. As mentioned before, the most essential motive of companies engaging in mergers and acquisitions is the synergy. The synergy hypothesis proposes that the value of the combined firm is higher than the sum of the individual firm values (Bradley, Desai, and Kim, 1988; Seth, 1990; Maquiera, Megginson, and Nail, 1998; Hubbard and Palia, 1990).

The hubris hypothesis (Roll, 1986) implies that managers seek to acquire firms for their own personal motives and that the pure economic gains to the acquiring firm are not the only motivation or even the primary motivation in the acquisition. Roll (1986) also states that if the hubris hypothesis explains takeovers, the following should occur for those takeovers motivated by hubris: The stock price of the acquiring firm should fall after the market becomes aware of the takeover bid. This should occur because the takeover is not in the best interests of the acquiring firm's stockholders and does not represent an efficient allocation of their wealth. The stock price of the target should increase with the bid for control. This should occur because the acquiring firm is not only going to pay a premium but also may pay a premium for excess of the value of the target. The combined effect of the rising value of the target and the falling value of the acquiring firm should not be positive. This takes into account the costs of completing the takeover process. Table 2 compares our results produced using U.S. Banking Index Return with the expectation of each hypothesis.

Table 3- Pre- and Post-Crisis Cumulative Abnormal Returns (CARs) with U.S. Banking Index

Year	3-day (-1, +1) event window				5-day (-2, +2) event window				36-day (-30, +5) event window				
	C A R (%)	F- v.	t-v.	p- v.	C A R (%)	F - v.	t-v.	p- v.	C A R (%)	F- v.	t-v.	p-v.	
Panel A													
Target Banks													
2000	-	19.55	2.50	-0.039	19.35	2.7	-2.83*	0.055	22.10	2.70	-2.72	0.077	
2010	-	29.48		***	29.07	9	**		32.29		***		
Panel B													
Bidder Banks													
2000	-	-	8.9	-0.0	-	7.	-	0.0	-	5.0	-	0.03	
2007		2.0	5	1.93	576	2.0	1	2.79*	064	2.1	9	2.12	62

2010	-	6		*		9	9	**		1		**	
2014		0.2				1.2				1.6			
2014		4				9				4			
Panel C													
Combined													
2000	-	1.0	6.4	-	0.0	0.9	5.	-	0.0	1.5	4.8	-	0.00
2007		5	7	2.65	096	7	6	3.52*	007	5	2	2.85	54
2010	-	4.2		***		5.1	0	**		6.2		***	
2014		0				2				2			

This table displays the CARs for targets, bidders, and combined around the announcement date of a bank merger or acquisition. *, **, *** denote statistical significance at the 10%, 5%, and 1% level, respectively. For F-test, H_0 =Variances are equal. P-value represents the significant of difference.

Comparing the two periods for the target banks, we can reject the null hypothesis ($H_0 = \text{CARs}_{\text{pre-Crisis}} = \text{CARs}_{\text{post-Crisis}}$) in all three event windows (3-day (-1, +1), 5-day (-2, +2) and 36-day (-30, +5) at 1% significance level, meaning that the CARs to the target banks before and after the Global Financial Crisis are statistically significantly different than each other.

CARs to bidder banks in pre-Crisis period are also lower than those in post-Crisis period (slightly higher than zero). The CARs to bidder banks in pre-Crisis period for 3-day (-1,+1), 5-day (-2,+2) and 36-day (-30,+5) event windows are -2.06% at 1% significance level, -2.09% at 1% significance level and -2.11% at 1% significance level, respectively, whereas the CARs to bidder banks in post-Crisis period for 3-day (-1,+1), 5-day (-2,+2) and 36-day (-30,+5) event windows are 0.24%, 1.29% and 1.64%, respectively.

Comparing the two periods for the bidder banks, we can reject the the null hypothesis ($H_0 = \text{CARs}_{\text{pre-Crisis}} = \text{CARs}_{\text{post-Crisis}}$) in all three event windows with different significance levels. We can reject the the null hypothesis ($H_0 = \text{CARs}_{\text{pre-Crisis}} = \text{CARs}_{\text{post-Crisis}}$) within 3-day (-1,+1) event window at 10% significance level, within 5-day (-2,+2) event window at 1% significance level and within 36-day (-30,+5) event window at 5% significance level, meaning that the CARs to the bidder banks before and after the Global Financial Crisis are statistically significantly different than each other within all event windows.

CARs to combined in pre-Crisis period are lower than those in post-Crisis period, similar to target banks. The CARs to combined in pre-Crisis period for 3-day (-1,+1), 5-day (-2,+2) and 36-day (-30,+5) event windows are 1.05% at 1% significance level, 0.97% at 1% significance level and 1.55% at 1% significance level, respectively, whereas the CARs to combined in post-Crisis period for 3-day (-1,+1), 5-day (-2,+2) and 36-day (-30,+5) event windows are 4.20% at 1% significance level, 5.12 at 1% significance level and 6.22% at 1% significance level, respectively. Comparing the pre-Crisis and post-Crisis periods for the combined, we can reject the the null hypothesis ($H_0 = \text{CARs}_{\text{pre-Crisis}} = \text{CARs}_{\text{post-Crisis}}$) in 5-day (-2,+2) and 36-day (-30,+5) event windows all at 1% significance level meaning that the CARs to the combined before and after the Global Financial Crisis are statistically significantly different than each other within 3-day (-1,+1), 5-day (-2,+2) and 36-day (-30,+5) event windows, respectively.

In terms of overall comparison of S&P500 Index return and U.S. Banking Index return, U.S. Banking Index return provides us more robust results as pre-Crisis and post-Crisis CARs to targets, bidders and combined are statistically significantly different than each

other within all three event windows whereas when S&P500 utilized for the bidder bank within 3-day (-1, +1) event window, the results are not statistically significant.

7. Summary and Conclusion

The legislative measures taken after 2008-2009 Global Financial Crisis were designed to boost the financial stability by improving accountability and transparency in the financial system and to cease “too big to fail” perception to protect the U.S. financial system from abusive banking practices. These supervisory actions are more than likely to influence the characteristics of mergers and acquisitions both in terms of the managerial motives and the size of control premium which determines the value created or destroyed by these deals. In this study, we examine the wealth effects of a sample of 214 U.S. bank mergers spanning a period of 15 years (2000-2014), by utilizing a standard event-study analysis. To the best of our knowledge, this study is the first utilizing the U.S. Banking Index as the market return in estimation of market parameters. According to the overall results, M&A announcements on average create significant value for the shareholders of the target and the combined banks but do not create value for the shareholders of acquirer banks. Our results are in consonance with Houston and Ryngaert (1994) and Becher (2000).

We test three hypotheses in M&A literature: synergy hypothesis, hubris hypothesis and hubris & synergy hypothesis. Target banks results are consistent with synergy hypothesis, hubris hypothesis and hubris & synergy hypothesis as all three hypotheses expect target banks to have positive CARs. Bidder bank results are consistent with hubris hypothesis and hubris & synergy hypothesis as these hypotheses expect bidder banks to have negative CARs. However, our overall results for the bidder banks are not consistent with the synergy hypothesis as this hypothesis expects the bidder banks to realize non-negative CARs. Combined bank results are consistent with synergy hypothesis and hubris & synergy hypothesis as these hypotheses expect combined firm to have positive CARs. However, our overall results for the combined banks are not consistent with the hubris hypothesis as this hypothesis expects the combined to realize non-positive CARs.

Empirical results also suggest that pre-Crisis (2000-2007) and post-Crisis (2010-2014) CARs to targets, bidders and combined are different and statistically significant. In terms of comparison, pre-Crisis (2000-2007) and post-Crisis (2010-2014) periods' variances are tested. Equality of variances between two periods is rejected at 1% significance level for the targets and combined in all three event windows. Equality of variances between two periods is rejected at 1% significance level within 5-day (-2, +2) and 36-day (-30, +5) event windows and at 10% significance level within 3-day (-1, +1) event windows for bidder banks. The CARs to targets, bidders and combined banks increased significantly following the Global Financial Crisis, which brings forth the Dodd-Frank Act (2010). This fairly new regulation implemented after the Crisis could be one of the reasons of significantly higher CARs in the post-Crisis period as this regulation could reduce the risk levels by making the market more reliable and transparent with stricter rules. Another reason could be that stronger and healthier banks surviving the Crisis could increase the quality of target pool for the acquirers.

In future research, including U.S. Financial Index and compare the results with U.S. Banking Index and S&P500 Index can lead to a more comprehensive study. This study can be replicated by focusing purely on the effects of regulation, which have direct impact on U.S. Banking Industry.

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