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Do equity mispricing and management compensation incentives drive bank mergers?

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Abstract

Purpose – The purpose of this paper is to test whether bank mergers are driven by equity overvaluation and management compensation incentives.

Design/methodology/approach – To test whether equity mispricing drive bank mergers, the authors employ two alternative price-to-residual income valuation (*P/V*) measures for bidders and targets while the authors control for their growth prospects with the price-to-book (*P/B*) (two years before) ratio. The intrinsic value (*V*) is estimated using the three-period forecast horizon residual income model of Ohlson (1995) and perpetual residual income model that does not rely on analysts' forecasts of future earnings prospects. The latter measure allows the authors to estimate *V* for a much larger sample of banks. The empirical analysis is supplemented with a standard event analysis and assessment of the long-term performance of bank mergers subsequent to the announcement date.

Findings – The evidence shows that bidders are overvalued relative to their targets, especially in equity offer deals. The authors also find that highly valued bidders: are more likely to use stock than cash; are willing to pay more relative to the target market price; are more likely to acquire private than public targets; earn lower announcement-period returns; fail to create synergy gains; experience long-term underperformance; and reward their top managers of with large compensation increases subsequent to mergers.

Originality/value – This study provides results consistent with the view that behavioral and managerial incentives play an important role in motivating bank mergers.

Keywords Managerial compensation, Bank mergers, Equity mispricing

Paper type Research paper

1. Introduction

The US banking industry has been consolidating rapidly through acquisitions in recent years. As a result, the number of US commercial banks fell from about 14,000 in 1980 to about 6,500 by the end of 2010[1]. The banking and financial services industry has consistently ranked in the top five of all industries in terms of the number of merger transactions taking place each year. From 1980 to 2010, the share of assets held by the ten largest commercial banks (ranked by assets) rose from 22 to 53.4 percent, while the share of deposits held by the ten largest commercial banks (ranked by deposits) rose from 19 to 42 percent[2]. In the aftermath of the financial crisis, risk taking by financial institutions has been profoundly criticized by academics, practitioners, regulators, and the general public. A key reason for this scrutiny is that banks may be subject to runs if

JEL Classification — G21, G34, J33, L14

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concerns emerge about the quality of their assets and size increases from their past investment decisions (Gorton, 2009). Bank mergers lead to the transformation of the financial system and if not addressed to understand the forces behind these changes the banking system will be vulnerable to financial crisis. The development of large financial institutions through mergers increases systemic risk with serious consequences for the macroeconomy (Haldane and May, 2011; Neale *et al.*, 2010). Furthermore, since big financial institutions are exposed to common shocks because they are highly interconnected, the probability that they default in periods of financial distress is not negligible. Despite the critical importance of these issues there is little empirical evidence directly demonstrating the driving forces behind bank mergers. In this paper, we quantify the extent to which non-fundamental stock-price movements and executive compensation incentives affect bank mergers.

To date, various motivations underlying bank mergers have been investigated in the literature such as the desire to create shareholder value through the exploitation of synergies (economies of scale or scope), improving target operating performance, capitalization of the targets, prospects for future growth, industry concentration and deal size (Hannan and Pilloff, 2007; Hernando *et al.*, 2009)[3][4]. Based on the previous empirical evidence, it is difficult to make a compelling case that acquiring banks create shareholder value, reduce costs or improve profitability. Equally, there is also lack of supporting evidence that expansion of scope in banking is beneficial (Berger and Ofek, 1995). So the question of why banks merge remains an important issue that warrants investigation and we aim to address it in this study.

The recent debate about the motives behind mergers and acquisitions has been linked with high stock market valuations (e.g. see Shleifer and Vishny, 2003; Rhodes-Kropf and Viswanathan, 2004). This strand of the literature theorizes that bidders attempt to profit by buying undervalued targets for cash at a price below fundamental value or by paying equity for targets that, even if overvalued, are less overvalued than bidders. While recent corporate empirical evidence has generally been supportive of this view (Dong *et al.*, 2006; Ang and Cheng, 2006), there is no evidence that bank takeovers are motivated by misvaluation. This is probably because of the belief that banks are regulated and hence bank managers are unlikely to behave the same way managers do in other industries. The view, that the relative misvaluation motive between the acquirer and target may not be large enough to trigger bank mergers, given that both are affected by the same industry-level shocks, could be another reason. Our results, however, show that there is significant relative misvaluation between the acquirer and target. Hence, seeking to determine if bank mergers are sensitive to equity mispricing, the first objective of this study, allows us to reflect on the role of regulations that are designed to make banks operate different (less opportunistic) than firms in other industries. Furthermore, this is important because if bank mergers are motivated by equity misvaluation (i.e. cater to market sentiment) they are more likely to make risky negative net present value investments (Jensen, 2004, 2005) that the markets deem unprofitable, which, in turn, increase systemic risk and financial instability.

While certain bank conglomeration may be desirable, beyond some point it may result in inefficiencies as mergers could encourage bank trading activities relative to conventional relationship-based services by using their "spare" capital to profitably expand the scale of trading. When a bank engages in trading, two inefficiencies emerge: a bank may allocate too much capital to trading ex-post, compromising the incentives to build relationships ex-ante and a bank may use trading for risk-shifting[5].

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Consequently, bank mergers (especially stock-for-stock ones that could be the result of equity manipulation and easier to implement especially during periods of investor optimism) should be of great concern to regulators in order to avoid to become too big (to fail) and make the financial system vulnerable to financial crisis (see Mishkin, 2006). Furthermore, stock-for-stock mergers have implications for capital, scope and scale in banking.

While bank mergers motivated by equity misvaluation may cater to investor sentiment, managers may also pursue them in an attempt to retain or increase the value of their equity-based compensation (i.e. stock and stock options), leading them to pursue risky projects (Coles *et al.,* 2006; Rajgopal and Shevlin, 2002). The 2008 near-collapse of global financial markets led to renewed scrutiny of executive compensation practices by journalists, academicians, politicians, and regulators. Much of the recent scrutiny has centered on alleged excesses in the compensation packages the executives deemed, at least partially, responsible for the economic turmoil (Karaian, 2008; Rappeport, 2008; McCann, 2009). To the extent that executive compensation is equity based and is positively associated with firm size (Bliss and Rosen, 2001; Gabaix and Lainder, 2008), compensation incentives cannot be ruled out as another motive for bank mergers. Consequently, bank mergers driven by equity misvaluation and compensation incentives should be of considerable concern to regulators. While the objective of this study is not to address how regulatory authorities should monitor this type of mergers that lead toward greater bank concentration, conglomeration and increased systemic risk, an implication of this study is that regulatory inertia in the sphere of bank mergers could undermine the stability of the financial system. The recent deregulation that allowed for greater bank concentration and conglomeration increased systemic risk. A prudent and more alert regulator could have prevented the 2008 financial crisis and the subsequent macroeconomic catastrophe. Focussing on the investment decisions of banks and the managerial incentives behind bank mergers, the second objective of this study, we expect to shed light on whether the governance safeguards of banks are adequate or regulatory changes are required to curb the creation of enormous financial institutions through mergers with the potential to put the entire banking system at risk.

Despite the fact that, on average, bank mergers do not create value, the question is why they continue to occur? That is, what motivates overvalued acquirers to purchase less-overvalued targets if there is no shareholder value creation? Following the CEO compensation literature (Grinstein and Hribar, 2004; Harford and Li, 2007; Fich *et al.*, 2010), which argues that executive compensation schemes often motivate CEOs to engage in mergers and acquisitions, the second intent of this study is to examine whether executive compensation incentives are associated with bank mergers.

In this study we examine first whether US bank mergers are motivated by stock overvaluation using alternative overvaluation metrics to make sure that the results are not driven by the choice of an overvaluation measure[6]. Addressing this question, of course, requires us to account for the growth opportunities of acquirers. The need to control for the growth opportunities of acquiring banks arises from the *Q* theory of investment (Martin, 1996) which holds that high *Q*-banks are likely to have high growth opportunities, traded at high stock prices, and invested more. Second, we investigate whether bank acquisitions by overvalued acquirers, that fail to create shareholder wealth, are related to top management enrichment subsequent to the acquisition.

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The empirical results of this study are largely consistent with the predictions of the overvaluation hypothesis. Specifically, both relative valuation measures (*P/V*) employed in our analysis indicate that bidders have higher relative valuations (*P/V*) than their targets in the full sample, especially among equity offers. In addition, we find that highly valued bidders: are more likely to use stock than cash; are willing to pay more relative to the target market price; are more likely to acquire private targets than public targets; and earn lower announcement-period returns. Higher valued targets receive lower premiums relative to market prices, are more likely to receive equity offers, and experience lower announcement-period returns. Finally, our evidence shows that overvalued bidders reward their top managers with large compensation increases subsequent to mergers. This result seems to suggest that compensation incentives play a key role in periods of overvalued bank merger activity.

This study contributes to the existing literature in several ways. First, we examine the motives of bank mergers from the equity misvaluation perspective. Second, we investigate whether bank acquisitions by overvalued acquirers are motivated by management compensation incentives. To the best of our knowledge, this is the first study to address bank mergers from these two perspectives with the intent of adding quantitative results to this body of the literature. Third, the advantage of focussing on a specific industry minimizes the inter-industry disturbances that exist in cross-industry studies and provides industry-specific insights. Finally, evidence in support of the overvaluation and management compensation motives behind bank mergers, as overvalued bidders attempt to take advantage of their temporary overvaluation rather than create value, has practical implications about the role of the regulatory supervisory powers.

The remainder of the paper is organized as follows. Section 2 discusses the related literature and develops our hypotheses. Section 3 describes the measures of overvaluation, the methodological design and the data. Section 4 describes the univariate results in the light of the misvaluation hypothesis. Section 5 reports the multivariate results. Section 6 examines the magnitude of management compensation increases during the post-acquisition period as a measure of the management compensation effect. The final section concludes the paper.

2. Literature review and hypothesis development

2.1 Misvaluation-driven mergers

The fundamental assumption behind the theory of "stock market-driven acquisitions" is that the market is inefficient, and some firms are thus incorrectly priced. Moreover, managers are completely rational, understand stock market inefficiencies, and take advantage of them, in part through merger decisions. The misvaluation hypothesis holds that bidders try to profit either by buying undervalued targets for cash at a price below fundamental value, or by paying equity for targets that, even if overvalued, are less overvalued than the bidder.

From the perspective of the acquiring firm, stock-financed mergers can be viewed as two simultaneous transactions, both a merger and an equity issue (Andrade *et al.*, 2001). Myers and Majluf (1984) assert that managers with superior information, acting in the best interests of old shareholders, will issue equity when the equity is overpriced. Moreover, managers will pass up positive net present value investments if the equity necessary to finance them is sufficiently underpriced by the market. The Myers and Majluf model illustrates that a firm will invest, if and only if, the value of its

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growth opportunities, captured by the old shareholders, is greater than the value of the assets in place that they must give up to new shareholders. Thus, in this framework, the decision to issue equity and invest conveys negative information to the market about the value of firm's assets in place causing its stock price to decline.

In the Shleifer and Vishny (2003) context, rational managers tend to take advantage of the less rational market. Bidder and target misvaluation should affect expropriation opportunities and managerial incentives, and therefore transaction characteristics including the method of payment (stock vs cash), the form of the offer (merger vs tender offer), bid premium, hostility of the target to the offer, success of the bid, and event-period returns. Stock acquisitions occur when there is a supply of highly overvalued bidders as well as relatively less-overvalued targets. When industry valuation is high (low), mergers are more likely to be executed with stock (stock). However, target overvaluation encourages target management to voluntarily accept expropriation offers in order to cash out. Shleifer and Vishny (2003) assume that acquirers are overvalued, and the motive for acquisitions is not to gain synergies, but to preserve some of their temporary overvaluation for long-term shareholders. Specifically by acquiring less-overvalued targets with overvalued stock, acquirers can cushion the fall for their shareholders by leaving them with more hard assets per share. Or if the shareholders perceive the deal as synergistic, then they would overvalue the combined entity. In such a case, the acquirer can still enjoy a long-run cushion effect, while offering a large premium to the target. Since, private targets are more likely to be undervalued acquiring banks are expected to acquire private than public targets. This propensity has its roots in the belief that private target banks, like illiquid assets, are more likely to trade at lower valuations than public targets which, in turn, allows bidders to avoid losses in the short run. In sum, the Shleifer and Vishny (2003) model sheds light on who acquires whom, the mode of payment and the valuation consequence of mergers.

Similarly, the model of Rhodes-Kropf and Viswanathan (2004) predicts that periods of stock merger activity are correlated with high market valuations. To test the hypothesis that valuation errors affect merger activity, Rhodes-Kropf *et al.* (2005) decompose the market-to-book ratio (*M/B*) into three components: the firm-specific pricing deviation from short-run industry pricing; sector-wide, short-run deviations from firms' long-run pricing; and long-run value-to-book. Their empirical analysis provides strong support for the misvaluation hypothesis of mergers and acquisitions which predicts that equity mispricing affects merger activity.

Dong *et al.* (2006) also test the overvaluation hypothesis and provide evidence in support of the misvaluation theory of Shleifer and Vishny (2003). Specifically, they examine the misvaluation hypothesis of mergers and acquisitions and the *Q* hypothesis using contemporaneous measures of bidder and target valuations, including price-to-book (*P/B*) and the ratio of price-to-residual income valuation (*P/V*). Their evidence is broadly consistent with both hypotheses. The results for the *Q* hypothesis appear to be stronger in the pre-1990 period than in the 1990-2000 period, whereas the analysis indicates that the misvaluation hypothesis gains more support during the 1990-2000 period[7].

Motivated by the previous literature, especially the theoretical model of Shleifer and Vishny (2003), we explore first whether stock market misvaluation is an important driver of US bank takeover activities, with the potential to influence takeover characteristics, such as the means of payment, the magnitude of premium, and the wealth creation for bidders and targets.

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2.2 Management compensation incentives

While the overvaluation hypothesis makes a compelling argument about merger activity, it assumes that managers act as rational agents that are not driven by economic incentives. Jensen (2004, 2005), however, argues that equity overvaluation generates substantial agency costs for shareholders and suggests that acquisitions driven by stock overvaluation are motivated by the economic incentives of acquiring managers. Bliss and Rosen (2001), examine the association between managerial incentives and acquisitions and report that CEO compensation increases after large bank mergers even if the bidder's stock price declines. Grinstein and Hribar (2004) find that acquiring CEOs who have the power to influence board decisions receive significantly larger merger bonuses. Harford and Li (2007) investigate the acquiring CEOs' compensation change and document that acquiring CEOs in overvaluation-driven acquisitions obtain substantial pecuniary benefits following these transactions. Moreover, Fu *et al.* (2010) find that acquiring CEOs in overvaluation-driven acquisitions increase agency costs and the resulting acquisition transactions benefit managers more than shareholders. Collectively, prior literature suggests that acquisitions by firms with overvalued equity are motivated by the compensation incentives of acquiring firm managers.

In the context of this study, we also examine Jensen's conjecture that managers benefit at the expense of shareholders by carrying out acquisitions with overvalued equity. That is, according to this view overvaluation serves to advance managers' economic incentives and our investigation is designed to shed light on this issue by investigating the compensation changes of top managers of acquiring banks after the completion of acquisitions.

3. Empirical approach and data

3.1 Overvaluation measures

To address the question of whether bank mergers and acquisitions are motivated by stock market mispricing, it requires an appropriate misvaluation measure. However, there is no consensus in the empirical literature how to measure stock misvaluation (Ang and Cheng, 2006)[8]. Dong *et al.* (2006) employ two empirical proxies in their study: the *P/B* ratio of equity and the *P/V* derived from the model of Ohlson (1995). Although *B* and *V* are both proxies for fundamental value, residual income value (*V*) contains forward-looking information, namely, analysts' forecasts of future earnings. *P/V* filters out the extraneous information about growth and managerial agency problems much better than *P/B* (Dong *et al.*, 2006). As noted in Rhodes-Kropf *et al.* (2005), *P/B* is a noisy misvaluation measure. Conversely, *P/V* tends to be a more appropriate measure of misvaluation, and is used by several authors for this purpose, including Frankel and Lee (1998), Lee *et al.* (1999), D'Mello and Shroff (2000), Ali *et al.* (2003), and Doukas *et al.* (2010).

We use *P/B* ratio two years before a merger, however, to capture the growth prospects of merging banks[9]. The rationale for the choice of the two-year lag *P/B* is that the use of *P/B* ratio near the acquisition announcement date is more likely to be a noisy measure of growth.

3.1.1 Residual income misvaluation measure. According to Ohlson (1995), the intrinsic value (*V*) of a stock includes two parts: the book value of equity and the present value of its forecasted excess income. Excess income is based on analysts' forecasts of future earnings prospects. For each stock in month *t*, its *V* is

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expressed as:

$$V(t) = B(t) + \sum_{i=1}^{\infty} \frac{E_t\left[\{ROE(t+i) - r_e(t)\}B(t+i-1)\right]}{[1+r_e(t)]^i}$$

where E_t is the expectations operator, $B(t)$ is the book value at time t (only positive $B(t)$ observations are kept), $ROE(t+i)$ is the return on equity for period $t+i$, and $r_e(t)$ is the firm's annualized cost of equity capital. For practical purposes, we follow Lee *et al.* (1999) and Dong *et al.* (2006) and adopt a three-period forecast horizon:

$$V(t) = B(t) + \frac{\left[f^{ROE}(t+1) - r_e(t)\right]B(t)}{1+r_e(t)} + \frac{\left[f^{ROE}(t+2) - r_e(t)\right]B(t+1)}{[1+r_e(t)]^2} + \frac{\left[f^{ROE}(t+3) - r_e(t)\right]B(t+2)}{[1+r_e(t)]^2 r_e(t)}$$

where $f^{ROE}(t+i)$ is the forecasted return on equity for period $t+i$, the length of a period is one year, and the last term discounts the period $t+3$ residual income as a perpetuity.

Forecasted *ROEs* are calculated as:

$$f^{ROE}(t+i) = \frac{f^{EPS}(t+i)}{\overline{B}(t+i-1)}$$

where:

$$\overline{B}(t+i-1) \equiv \frac{B(t+i-1) + B(t+i-2)}{2}$$

and $f^{EPS}(t+i)$ is the forecasted earnings per share (*EPS*) for period $t+i$ obtained from I/B/E/S. Future book value of equity is computed as:

$$B(t+i) = B(t+i-1) + (1-k)f^{EPS}(t+i)$$

where k is the dividend payout ratio $k = \frac{D(t)}{EPS(t)}$. Following Lee *et al.* (1999), we delete observations where $k > 1$.

The annualized cost of equity, $r_e(t)$, is determined as a firm-specific rate using the capital asset pricing model (CAPM), where the time-t β is estimated using the trailing three years of monthly return data.

3.1.2 Perpetual residual income misvaluation measure. Similar to the residual income model of Ohlson (1995) and Dong *et al.* (2006), we construct another V measure, which does not rely on analysts' forecasts of future earnings prospects. This is mainly motivated by two reasons. First, it permits the estimation of V for a considerably larger sample of banks. Second, it can be used as a robustness check in testing the overvaluation hypothesis. The actual $EPS(t)$ is used as the perpetual income of the firm, and the retained earnings $EPS(t) \times (1-k)$ is treated as the excess income of the firm. The V is expressed as:

$$V = B(t) + \frac{EPS(1-k)}{r_e(t)},$$

where k is the dividend payout ratio $k = \frac{D(t)}{EPS(t)}$.

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One caveat is that over the sample period banking has gone through regulatory changes that might have downward (upward) affected EPS resulting into a much lower (higher) V than the one estimated by the perpetual residual income approach. For the same reasons, the return on equity, ROE, might have also been affected. Unreported results, show that bidders' EPS improve from year (t) to the sixth year ($t+6$) after the merger[10]. However, their ROE appears to remain relatively stable, ranging from 11.66 percent (t) to 12.76 percent ($t+6$). Hence, the actual P/V is relatively higher than the estimated one based on the constant earnings model implying that in reality bidders are likely to be more overvalued than the constant earnings model estimates would indicate. Consequently, our second misvaluation measure could be somewhat downward biased. However, if this measure yields similar results with those generated by our residual income misvaluation measure, it would imply that our second misvaluation measure is not a substandard relative valuation proxy. In addition, it would indicate that the regulatory changes during our sample period did not have a material impact on the banking industry's relative valuations. Following Lee *et al.* (1999), we delete observations where $k > 1$. ($r_e(t)$) is the annualized cost of equity, determined as a firm-specific rate using the CAPM, where the time-t β is estimated using the trailing three years of monthly return data.

To verify the robustness of our main findings, we also use the alternative constant discount rate of 12.5 percent (following D'Mello and Shroff, 2000; Dong *et al.*, 2006) for both P/V measures. Both P/B (two years before) and P/V ratios are winsorized at the 1 and 99 percent tails. Higher (lower) values of P/B (two years before) indicate higher (lower) growth prospects while higher (lower) P/V values represent relative overvaluation (undervaluation). Previous studies have reported that the predictive ability of P/V is robust to the cost of capital used in the model (Lee *et al.*, 1999; Dong *et al.*, 2006) and to whether the discount rate is allowed to vary across firms (D'Mello and Shroff, 2000).

3.2 Announcement-period returns

Announcement-period returns are obtained by subtracting the normal or expected return in the absence of the event, $AR_{it} = R_{it} - E(R_{it})$, from the actual return in the event period. There are several ways to measure the expected return, $E(R_{it})$. The frequently used benchmarks for expected returns include the returns predicted by the market model, market returns, and firm-specific average returns from the past period. Among these, the market model is likely the most frequently used approach (Kallunki *et al.*, 2002)[11]. The market model used in the present study is expressed as follows:

$$R_{it} = \alpha_i + \beta_i R_{mt} + \varepsilon_{it}, \text{where } t = -274, \ldots, -20$$

The Center for Research in Security Prices (CRSP) equal-weighted return is used as the market return, and the market model parameters are estimated over the 255-day period from event day -274 to event day -20. R_{it} is the rate of stock return for firm i on day t, R_{mt} is the market index rate of return on day t, and ε_{it} is an error term. Thus, the abnormal returns are calculated from actual returns during the event period and the estimated coefficients from the estimation period:

$$AR_{it} = R_{it} - \hat{\alpha}_i - \hat{\beta}_i R_{mt}, \text{where } t = -10, \ldots, +10$$

Cumulative Abnormal Returns (CAR) are also calculated during different event windows, encompassed by event days ($-n$, $+n$), where event day 0 is the acquisition announcement date.

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We also estimate long-term abnormal returns based on the Fama and French three-factor model with an estimation period of five years:

$$R_{jt} = \alpha + \beta_j R_{mt} + s_j SMB_t + h_j HML_t + \varepsilon_{jt}$$

The monthly abnormal return for the common stock of the jth firm on month t is estimated by:

$$AR_{jt} = R_{jt} - \left(\widehat{\alpha_j} + \widehat{\beta_j} R_{mt} + \widehat{s_j} SMB_t + \widehat{h_j} HML_t\right)$$

The Cumulative Average Abnormal Returns (CAAR) are analogous to those defined in the market model.

3.3 Data

The sample of US bank takeover bids is obtained from Thomson ONE Banker Database between 1985 and 2006. The sample period ends at the end of 2006 in order to assess the performance of bidders two years after the merger announcements. The financial crisis is another reason for restricting the sample to 2006[12]. The sample originally included 2,148 complete deals, of which the bidding firms' stocks are traded on the NYSE, AMEX, or NASDAQ, with CRSP data available around the announcement. Each offer is announced between January 1, 1985 and December 31, 2006. The sample excludes deals with of less than ten million dollars. We use this cut-off point to avoid results being generated by small deals. In addition, we require the acquirer to purchase at least 50 percent of the targets' shares as a result of the takeover. Further restrictions, following the previous literature, exclude leverage buyouts, recapitalization, self-tenders, subsidiary acquisitions, spin-offs, exchange offers, repurchases, minority stake purchases, and remaining interest acquisitions. In addition, we exclude from the analysis clustered acquisitions in which an acquirer announced two or more deals 15 days around the original announcement in an attempt to isolate the overlapping effects among deals on acquirer returns. We also drop from the sample mixed payment acquisitions. Our analysis is restricted to stock and cash acquisitions. Furthermore the sample is restricted to those banks for which Compustat accounting data are available for the last fiscal year prior to the merger announcement. The final sample reduces to 776 (Table II, panel A) and 817 (Table II, panel B) announcements using alternative relative valuation measures, respectively. Despite losing a large number of observations relative to the original sample the sample of this study is considerably larger than those used in previous studies. Accounting data for calculating book value, payout ratio and earning per share are taken from Compustat. Earnings forecasts for calculating the residual income intrinsic values are obtained from I/B/E/S. To maintain sample size, we do not exclude a transaction from the overall sample if accounting or earnings forecast data items are missing. Panel A of Table I reports the annual breakdown of the sample by method of payment, type of target bank and geographic diversification (cross-state). It also reports the nominal and inflation-adjusted average deal value (2005 as the base year) and the market value of bidders and targets by calendar year. Panel B of Table I classifies bank mergers by method of payment, type of target bank, geographic diversification (cross-state), activity diversification and reports the median deal size of each type.

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Table I. Descriptive statistics for US bank merger bids

Panel A: frequency description

Year	Bank mergers	Stock payment	Public targets	Private targets	Cross-state bids	Average deal size ($mil) Nominal	Average deal size ($mil) Inflation adjusted	Average market value of bidders ($mil) Nominal	Average market value of bidders ($mil) Inflation adjusted	Average market value of targets ($mil) Nominal	Average market value of targets ($mil) Inflation adjusted
1985	18	12	11	7	9	96.17	155.91	na	na	na	na
1986	93	48	23	70	29	110.25	174.75	860.89	1364.56	307.57	487.52
1987	53	31	22	31	23	54.34	83.63	656.99	1011.11	176.42	271.51
1988	39	17	25	14	16	51.93	77.07	1084.10	1608.84	144.59	214.58
1989	65	39	34	31	21	62.38	89.38	1286.72	1843.57	201.62	288.87
1990	60	19	40	20	9	17.24	23.75	242.62	334.22	295.54	407.12
1991	66	39	39	27	22	197.61	263.24	1566.45	2086.68	269.80	359.40
1992	96	61	57	39	37	99.01	129.07	1866.97	2433.71	413.16	538.58
1993	161	95	85	76	51	91.43	116.62	2209.89	2818.77	310.21	395.68
1994	195	106	102	93	71	45.68	57.03	1624.04	2027.67	445.90	556.72
1995	205	88	137	68	57	238.34	291.69	2289.86	2802.42	496.44	607.56
1996	207	69	175	32	43	46.77	56.23	2215.41	2663.42	460.75	553.93
1997	190	122	122	68	71	408.17	482.08	2962.03	3498.36	799.88	944.71
1998	205	125	126	79	56	696.83	813.52	2713.81	3168.27	942.03	1099.78
1999	152	71	117	35	38	242.58	279.07	5907.92	6796.65	1410.62	1622.82
2000	130	45	114	16	34	398.27	447.98	7796.45	8769.61	1179.89	1327.17
2001	71	22	58	13	16	414.86	456.52	3916.51	4309.82	2994.44	3295.16
2002	22	6	13	9	6	31.97	34.64	3326.41	3604.54	95.38	103.35
2003	37	12	22	15	11	1466.50	1555.08	4120.34	4369.21	769.22	815.68
2004	40	16	22	18	12	306.26	315.31	4816.64	4958.91	1371.37	1411.88
2005	28	12	10	18	13	195.23	194.33	5732.18	5705.88	424.17	422.22
2006	25	8	15	10	16	170.54	164.37	12164.84	11724.47	264.16	254.60
Total	2,148	1,063	1,369	779	661						
Average						247.38	284.6	3302.91	3709.56	655.86	760.9

(*continued*)

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Table I.

Panel B: median size of mergers, by type

Merger type	Number of mergers	Median deal value ($mil)	Median market value of bidders ($mil)	Relative deal size (Deal value/bidder MV) (%)
All mergers	2,148	19.40	650.70	2.98
Mergers with stock payment	1,063	44.90	768.40	5.84
Mergers with cash payment	1,085	6.89	308.80	2.23
Mergers with public targets	1,369	22.01	1,261.91	1.74
Mergers with private targets	779	17.95	395.33	4.54
Geographic and activity diversification	143	65.00	1617.50	4.02
Geographic and activity focus	1,286	9.85	302.38	3.26
Geographic focus and activity diversification	199	31.78	249.30	12.75
Geographic diversification and activity focus	520	50.40	1,786.79	2.82

Notes: This table provides descriptive statistics for the entire sample, including all 2,148 US banking bids during 1985-2006. Panel A reports the number of bank merger bids, number using stock payment, number of bids aiming at public targets, cross-state bids, nominal and inflation-adjusted average deal value, nominal and inflation-adjusted average market value of bidders/targets, by calendar year. "Inflation adjusted" means that the deal value and the market prices have been adjusted to the Gross Domestic Product: Implicit Price Deflator composed by the US Department of Commerce: Bureau of Economic Analysis (www.bea.gov/national/nipaweb), 2005 as the base year. Panel B reports the number of bank mergers and median deal size for each type of merger, classified by method of payment, type of target bank, geographic diversification (cross-state), and activity diversification

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Panel A shows that the number of bank merger transactions peaks in the 1990s, with 67 percent of the transactions taking place during 1993-2000. Merger activity is somewhat subdued in the early 1980s and early 2000s. The average transaction value also peaks in late 1990s. The average market value of target banks is about five times smaller than the average market value of bidders. About half of the bank mergers, as shown in Panel B, are paid with stock, more than half of the mergers aim at public targets, and one-third of the mergers cross-state borders. Among all the US bank mergers, more than half are characterized as geographic and activity focussed deals.

4. Relative valuations and takeover characteristics

This section reports univariate results on the association between valuation measures and takeover characteristics.

4.1 Relative bidder-target valuations and method of payment

As discussed earlier, the misvaluation hypothesis claims that rational managers understand stock market inefficiencies, and take advantage of them through merger activities. The models of Shleifer and Vishny (2003) and Rhodes-Kropf and Viswanathan (2004) predict that overvalued firms use stock to buy relatively undervalued target firms; cash targets are more undervalued than stock targets; cash acquirers are less overvalued than stock acquirers; bidders buying private targets are more overvalued than their peer banks purchasing public targets.

Table II reports how the two valuation measures are related to the type of target (public vs private) and method of payment (cash vs stock) used. Panel A reports mean values of *P/B* (two years before) and *P/V* calculated using the three-period forecast horizon residual income model, and their differences between acquirer and target banks, and across method of payment. Panel B reports the results based on *P/B* (two years before) and *P/V* values calculated using the perpetual residual income model.

The evidence appears to be consistent with the prediction of the misvaluation hypothesis. From the entire sample (All), the mean values of *P/V* ratios, in Panel A of Table II, indicate that acquiring banks have higher relative valuations than their public targets. Specifically, the average *P/V* ($k = 12.5$ percent) and *P/V* ratios for acquirers of public targets are 5.56 and 6.23, and 3.64 and 6.17 for target banks, respectively. For the 198 transactions for which we are able to calculate the misvaluation measures, the acquirer–target *P/V* ($k = 12.5$ percent) and *P/V* ratio differences are 1.92 and 0.06, respectively, statistically significant when the cost of equity is estimated using the constant discount rate of 12.5 percent (column (1)-(2)). Hence, the evidence, based on the entire sample, suggests that overvalued banks tend to acquire public banks that are less overvalued than they are. In addition, bidders with higher growth prospects, as indicated by the *P/B* (two years before) ratio, tend to acquire targets with lower growth prospects. The average *P/B* (two years before) ratio for acquirers of public targets is 3.55 and 2.42 for target banks, respectively. Interestingly, bidders purchasing private targets are more overvalued than their peers acquiring public targets. The average *P/V* ($k = 12.5$ percent) and *P/V* ratios for acquirers of public targets are 5.56 and 6.23, whereas the corresponding relative valuation ratios for acquirers of private banks are 7.54 and 9.68, respectively. The growth prospects of bidders buying public vs private banks, as revealed by the *P/B* (two years before) ratio, do not seem to be dramatically different.

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Table II.
Mean acquirer and target valuation ratios by method of payment

		Acquirer of public targets				Acquirer of private targets				
		(1) Acquirer	(2) Target	(1)-(2) [*t*-Statistic]	*n*	(3) Acquirer	*n*	(1)-(3) [*t*-Statistic]	(4) All Acquirers	*n*
Panel A: P/V based on three-period forecast horizon residual income model										
Cash	*P/B* (2 years before)	2.74	2.78	−0.05 [−0.17]	341	1.09	99	1.64*** [5.31]	2.26	440
	P/V ($r_e(t) = 12.5\%$)	5.24	3.90	1.34* [1.662]	137	6.77	57	−1.53 [−1.31]	5.71	194
	P/V	5.52	6.62	−1.1 [−0.489]	137	9.02	57	−3.50* [−1.77]	6.54	194
Stock	*P/B* (2 years before)	4.49	1.94	2.55*** [9.80]	188	4.64	158	−0.15 [−0.42]	4.56	346
	P/V ($r_e(t) = 12.5\%$)	6.28	3.97	2.31** [3]	61	7.95	97	−1.67** [−2.17]	7.31	158
	P/V	7.82	4.63	3.19*** [2.7]	61	10.08	97	−2.26* [−1.70]	9.21	158
All	*P/B* (2 years before)	3.55	2.42	1.12*** [5.64]	529	3.36	247	0.19 [0.81]		
	P/V ($r_e(t) = 12.5\%$)	5.56	3.64	1.92*** [3.38]	198	7.54	154	−1.98*** [−2.73]		
	P/V	6.23	6.17	0.06 [0.03]	198	9.68	154	−3.45*** [−2.89]		

(*continued*)

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Table II.

		(5) Acquirers of public targets	(6) Public targets			(7) Acquirers of private targets			(8) All acquirers		
Stock-cash	*P/B* (2 years before)	1.75***	−0.84***			3.55***			2.30***		
(*t*-Statistic)		[6.1]	[−3.51]			[9.60]			[10.69]		
Stock-cash	*P/V* ($K = 12.5\%$)	1.04	0.07			1.18			1.60**		
(*t*-Statistic)		[1.25]	[1.00]			[1.01]			[2.30]		
Stock-cash	*P/V*	2.3**	−1.99			1.06			2.67***		
(*t*-Statistic)		[2.19]	[−0.96]			[0.49]			[2.59]		
Panel B: P/V based on perpetual residual income model											
Cash	*P/B* (2 years before)	2.74	2.78	−0.05 [−0.17]	341	1.09	99		1.64*** [5.31]	2.26	440
	P/V ($r_e(t) = 12.5\%$)	3.44	1.61	1.42*** [8.51]	341	4.35	99		−0.91 [−1.26]	3.64	440
	P/V	3.69	1.39	2.05*** [6.13]	341	4.92	96		−1.23* [−1.80]	3.99	337
Stock	*P/B* (2 years before)	4.49	1.94	2.55*** [9.80]	188	4.64	158		−0.15 [−0.42]	4.56	346
	P/V ($r_e(t) = 12.5\%$)	4.00	1.84	2.17*** [4.08]	187	8.27	190		−4.26*** [−4.09]	6.15	346
	P/V	4.66	1.61	3.33*** [6.03]	183	9.5	180		−4.84*** [−4.12]	7.05	346
All	*P/B* (2 years before)	3.55	2.42	1.12*** [5.64]	529	3.36	257		0.19 [0.81]		
	P/V ($r_e(t) = 12.5\%$)	3.64	1.96	1.67*** [5.2]	528	6.92	289		−3.29*** [−3.47]		
	P/V	4.08	1.55	2.53*** [8.54]	524	7.98	276		−3.90*** [−3.71]		

(*continued*)

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Table II.

		(5) Acquirers of public targets	(6) Public targets	(7) Acquirers of private targets	(8) All acquirers
Stock-cash	*P/B* (2 years before)	1.75***	−0.84***	3.55***	2.30***
(*t*-Statistic)		[6.10]	[−3.51]	[9.60]	[10.69]
Stock-cash	*P/V* ($r_e(t) = 12.5\%$)	0.57	0.23	3.92***	2.50***
(*t*-Statistic)		[1.10]	[1.38]	[3.37]	[3.81]
Stock-cash	*P/V*	0.96*	0.22*	4.58***	3.06***
(*t*-Statistic)		[1.75]	[1.84]	[3.68]	[4.32]

Notes: Panels A and B report two valuation measures, the price-to-book ratio *P/B* (2 years before) and the price-to-intrinsic income value ratio *P/V*, by type of target (public vs private) and method of payment. The intrinsic value is estimated using a 3-period forecast horizon residual income model, when the cost of capital ($r_e(t)$) is estimated using the firm-specific CAPM and when we assume that $r_e(t)$ is 12.5 percent. The *t*-statistic of differences between acquirer and target and between stock and cash offers are reported in brackets. The sample includes successful merger bids for both public and private targets during 1985-2006. *n* refers the number of bidders with valuation measures available. *,**,***Difference in means is significant at the 10, 5 and 1 percent levels, respectively

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For the 137 cash transactions for which *P/V* can be calculated, the bidder-target *P/V* ($k = 12.5$ percent) and *P/V* differentials are 1.34, and −1.10, respectively[13] (only marginally significant for *P/V* where $k = 12.5$ percent). The bidder-target *P/B* (two years before) difference is −0.05 and statistically insignificant. The cash acquisition results suggest that cash consummated bank acquisitions are not motivated by bidders' overvaluation or growth prospects. In contrast to cash offers, bidder valuations tend to exceed public target valuations significantly in equity offers. Among the 61 stock offers with data available, the bidder-target *P/B* (two years before), *P/V* ($k = 12.5$ percent) and *P/V* differential is 2.55, 2.31 and 3.19, respectively (all three measures are highly significant). For stock payment deals, the *P/V* ($k = 12.5$ percent) and *P/V* differentials between bidders acquiring public targets and bidders acquiring private targets are −1.67, and −2.26, respectively, and significant. The bidder-target *P/B* (two years before) gap, however, between bidders acquiring public targets and bidders acquiring private targets for stock payment deals is −0.15 and statistically insignificant. This indicates that the growth prospects of bidders acquiring public or private targets with stock are similar. As shown earlier for the full sample, bidders acquiring private targets with stock or cash are consistently more overvalued than their peer banks acquiring public targets.

Consistent with the overvaluation hypothesis, which postulates that cash acquirers are less overvalued than stock acquires, the results show that equity offers are associated with higher bidder valuations than cash offers, and the bidder-target difference in valuation is, on average, greater among equity offers than cash offers. Columns (5) and (6) show that for all three relative valuation measures, bidders using stock payment to acquire public targets have higher growth prospect/valuation than bidders using cash payment, with *P/B* (two years before), *P/V* ($k = 12.5$ percent) and *P/V* differentials of 1.75, 1.04 and 2.30. Similarly, column (7) shows that for all three relative valuation measures, the bidders offering equity to acquire private targets also have higher growth prospect/valuation than bidders offering cash, with *P/B* (two years before), *P/V* ($k = 12.5$ percent) and *P/V* differentials of 3.55, 1.18 and 1.06. These results seem to offer some support for the misvaluation hypothesis, which predicts that highly overvalued bidders are more likely to use stock payment. Comparing bidder valuations for the entire sample, the evidence in column (8) indicates that bidders offering cash have significantly lower growth prospects than their bidder peers offering stock; the *P/B* (two years before) ratio is 4.56 for stock offers and 2.26 for cash offers, with a mean difference of 2.30 (statistically significant at the 1 percent level). Similarly, *P/V* ($k = 12.5$ percent) is 5.71 for cash vs 7.31 for stock, and *P/V* is 6.54 for cash vs 9.21 for stock (both differences are statistically significant). This suggests that stock acquirers are overvalued banks, confirming the prediction of the overvaluation hypothesis, which claims that overvalued bidders are more likely to use overvalued equity than cash in acquiring targets. Furthermore, for all three relative valuation measures, the mean valuation difference between bidders and targets is significantly larger in equity offers than cash offers ($p < 0.01$; tests not reported, but available upon request).

To ensure that the results thus far, reported in panel A, are not sensitive to the relative valuation measure used, we replicate the previous analysis using our second relative valuation measure, *P/V*, based on the perpetual residual income model that does not depend on analysts' forecasts of future earnings prospects. The results for this considerably larger sample, reported in panel B of Table II, are consistent with those reported in panel A.

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Overall, regardless of which relative valuation measured is used, the evidence is consistent with the view that overvalued bidders use stock to buy relatively undervalued targets.

4.2 Target valuation effects and takeover characteristics

In Section 4.2 (Section 4.3), we examine the link between pre-offer valuation measures of targets (bidders) to the characteristics of the takeover. Panels A1 and A2 (B1 and B2) of Table III, report the relation between target (bidder) valuations and takeover characteristics (i.e. *P/B*, *P/V*, probability of stock payment, bid premium, and announcement returns). Due to the effects of severe sample size reduction, caused by I/B/E/S database availability in estimating *V* the results based on the three-period forecast horizon residual income model are not offered to make meaningful inferences[14]. Therefore, we will focus on the empirical results that rely on *V* estimates obtained from the perpetual residual income model.

For all deals with data available, bidders and targets in each month are ranked based on their respective valuation ratios and quintile groups are formed. The monthly sorting process ensures that any effects we detect are cross-sectional, and thus not influenced by time-series fluctuations in valuation and takeover characteristics. Quintile 5, the top valuation quintile, has the highest bidder and target *P/B* (two years before) and *P/V* ratios; quintile 1 represents the lowest valuation ratios. We also report differences across the top and bottom valuation quintiles (5-1) to illustrate whether higher market valuations are related to transaction characteristics.

As shown in panel A1, targets with higher growth prospects, measured by *P/B* (two years before) ratio, are more likely to be associated with stock offers. Specifically, the mean difference in the probability of using stock between high and low growth targets is 18.34 percent. Interestingly, high growth targets realize a much smaller bid premium than their peers with low growth prospects with a mean 5-1 quintile difference of −48.46 percent (statistically significant at the 1 percent level). On the other hand, target banks with low growth realize considerably higher cumulative announcement-period abnormal returns than their high growth counterparts with a mean 5-1 quintile difference of −5.63 percent (statistically significant at the 5 percent level). Contrary to previous evidence (Hannan and Rhoades, 1987; Lang *et al.*, 1989) which shows that the likelihood of acquisition is positively related to the growth prospects of the target, this pattern seems to be consistent with Moore (1996) who suggests that slower growing banks are more attractive to buyers looking to increase the target's growth rate. Furthermore, targets with low growth prospects appear to realize higher abnormal returns than high growth targets. The quintile difference for target announcement-period returns is −5.63 percent (significant at the 5 percent level for *P/B* (two years before)).

The results in panel A2 demonstrate that overvalued targets are consummated with stock offers. The 5-1 quintile difference in the probability of using stock is 13.24 percent (highly statistically significant). As before, bidders pay a considerably larger premium for undervalued targets and the latter realize larger cumulative announcement-period abnormal returns, than their high growth peers. The quintile difference for the bid premium is −12.92 percent (significant at the 1 percent level for *P/V*) and for the target announcement-period returns is −6.39 percent (significant at the 1 percent for *P/V*), respectively. These results are also consistent with the evidence of Walkling and Edmister (1985) who find that relatively lower-valued firms command significantly higher bid premiums. In general, these results provide supplemental support for the overvaluation hypothesis.

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Table III.
Mean bank merger characteristics by target and bidder valuation ratio quintiles

			Probability of stock payment (%)	Probability of merging with a public target (%)	Bid premium	Target announcement CAAR (%)	Bidder announcement CAAR (%)
Panel A1: mergers sorted by target P/B ratio estimated 2 years before the acquisition announcement							
Target *P/B* Rank	*n*	Target *P/B* (*t*-2 years)					
1 (Low growth prospect)	55	0.86	21.09		52.83	11.45	0.82
2	55	1.21	37.27		21.24	10.18	−1.03
3	55	1.63	54.55		23.05	11.47	0.26
4	56	2.47	60.71		21.96	9.54	0.07
5 (High growth prospect)	56	5.89	39.43		4.37	5.82	1.00
Difference 5-1		5.02***	18.34		−48.46*	−5.63**	0.18
Panel A2: mergers sorted by target P/V ratio based on the perpetual residual income model							
Target *P/V* Rank	*n*	Target *P/V*					
1 (Undervalued)	68	0.50	19.12		19.78	10.06	0.73
2	68	0.78	20.59		10.11	6.70	1.23
3	68	1.08	32.35		16.83	10.56	0.39
4	68	1.65	39.71		16.03	10.04	0.97
5 (Overvalued)	68	3.56	32.35		6.86	3.67	1.40
Difference 5-1		3.06***	13.24*		−12.92***	−6.39***	0.67
Panel B1: mergers sorted by bidder P/B Ratio estimated 2 years before the acquisition announcements							
Bidder *P/B* rank	*n*	Bidder *P/B* (*t*-2 years)					
1 (Low growth prospect)	157	0.94	5.38	46.92	5.42	3.28	1.24
2	157	1.52	33.08	63.85	15.65	9.36	0.67
3	157	2.53	70.77	70.77	21.76	12.16	−0.25
4	157	3.90	75.00	65.91	46.25	10.48	−0.18
5 (High growth prospect)	158	8.45	80.15	62.60	32.03	13.46	−0.47
Difference 5-1		7.51***	74.77***	15.67**	26.61***	10.18***	−1.71***

(*continued*)

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Table III.

			Probability of stock payment (%)	Probability of merging with a public target (%)	Bid premium	Target announcement CAAR (%)	Bidder announcement CAAR (%)
Panel B2: Mergers sorted by bidder P/V ratio based on the perpetual residual income model							
Bidder *P/V* rank	*n*	Bidder *P/V*					
1 (Undervalued)	160	0.71	19.86	76.71	10.6	6.36	2.27
2	160	1.41	37.67	71.92	19.16	11.16	0.51
3	160	2.51	64.63	60.54	44.77	11.62	−0.54
4	160	5.17	63.95	64.63	26.25	11.18	0.05
5 (Overvalued)	160	17.7	61.9	40.82	22.36	6.95	0.13
Difference 5-1		16.99***	42.04***	−35.89***	11.76***	0.59	−2.14***

Panel C1: mergers sorted by bidder P/V ratio based on the perpetual residual income model						
Bidder *P/V* rank	1 (Undervalued)	2	3	4	5 (Overvalued)	Difference 5-1
n	160	160	161	161	161	
Synergy (−1,+1)	1.564%*	1.867%	−0.023%	0.681%	−0.220%	−1.784%*
(*t*-Statistic)	[1.717]	[0.849]	[−0.032]	[1.076]	[−0.321]	[−1.775]

Panel C2: mergers sorted by bidder P/V ratio based on the perpetual residual income model ($k = 12.5\%$)						
Bidder *P/V* rank	1 (Undervalued)	2	3	4	5 (Overvalued)	Difference 5-1
n	163	163	163	164	164	
Synergy (−1,+1)	2.813%***	1.237%	−0.034%	1.090%*	0.178%	−2.635%**
(*t*-Statistic)	[2.666]	[0.659]	[−0.057]	[1.867]	[0.245]	[−2.042]

Notes: This table reports mean acquisition characteristics for each of the quintiles and difference in means between ranks 1 and 5. For the entire sample, acquirer and target firms are ranked by valuation ratios (*P/B* (2 years before) and *P/V*) and separated into quintiles and assigned a rank between 1 and 5, with 1 being the lowest ratio quintile (most undervalued). *P/B* (2 years before) is the price-to-book ratio. *P/V* is the price-to-value ratio, where the intrinsic value is estimated using the perpetual residual income model when the cost of capital ($r_e(t)$) is estimated using the firm-specific CAPM. In panels A2 and B2; Premium is defined as the bid price over the target's stock price, 4 weeks before the takeover announcement, minus 1, times 100 [(bid price/target's stock price)-1] × 100]. Acquirer and target Cumulative Abnormal Returns (*CAR*) are measured over the 3 days (−1, +1) around the announcement (day 0) of the acquisition using the market model. Cumulative average abnormal return (CAAR) is the average of all *CAR* in one quintile. Panel C: overvaluation and synergy – in panels C1 and C2, *Synergy* (−1,+1) is defined as weighted sum (by market capitalization) of the bidder and target cumulative abnormal announcement returns following Bradley *et al.* (1988), which equals to ($\$ACAR(-1, +1) + \$TCAR(-1,+1))/(BidderMCAP(-2) + (1\text{-}Toehold) \times TargetMCAP(-2)$). $\$ACAR(-1,+1)$ refers to change of bidding bank stockholders' wealth during window (−1,+1); $\$TCAR(-1,+1)$ refers to change of target bank stockholders' wealth during window (−1,+1); $(BidderMCAP(-2)+(1\text{-}Toehold) \times TargetMCAP(-2))$ refers to the combined market value of bidder and target. *n* is the total number of acquisitions with valuation ratios available in each quintile. The sample includes merger announcements where the bidding bank is listed on the NYSE, AMEX, or NASDAQ during 1985-2006. *,**,***Difference in means between ranks 1 and 5 is significant at the 10, 5 and 1 percent levels, respectively, based on the two-sample *t*-test

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4.3 Bidder valuation effects and takeover characteristics

The relation between bidder valuations and takeover characteristics are described in panels B1 and B2 of Table III. First, these results indicate that higher bidder valuations are associated with greater use of equity and less use of cash as a means of payment. The differences in the probability of using stock between the top and bottom bidder valuation quintiles are 74.77 percent (*P/B* (two years before)) and 42.04 percent (*P/V*) (both significant at the 1 percent level).

Second, higher bidder valuation is associated with higher bid premium. Using the *P/B* (two years before) measure in panel B1, the 5-1 quintile difference in premium is 26.61 percent for the entire sample (significant at the 1 percent level). This suggests that bidder banks with high growth prospects are more likely to pay a higher bid premium than their counterparts with low growth prospects. Using the *P/V* measure in panel B2, the quintile difference in premium is 11.76 percent for the entire sample (significant at the 1 percent level). Hence, the evidence suggests that acquirers with high valuations pay higher bid premiums.

Third, bidders with higher growth prospects are associated with higher target stock returns. Specifically, as shown in panel B1, the *P/B* (two years before) quintile difference in target announcement-period stock returns is 10.18 percent for the entire sample (significant at the 1 percent level). However, prior studies (Lang *et al.*, 1989; Servaes, 1991), indicate that (depending on subsequent offer success), there is no significant relation between bidder *Q* and target announcement return.

Fourth, higher bidder valuation is associated with lower bidder announcement-period returns. The mean acquirer announcement-period returns are significantly lower when the acquirer has a high valuation, based on either *P/B* (two years before) or *P/V*. The mean quintile differences in bidder abnormal returns around offer announcements are −1.71 percent (sorted by *P/B* (two years before)) and −2.14 percent (sorted by *P/V* in panel B2), both significant at the 1 percent level.

Moreover, the evidence in panel B2 of Table III points out that overvalued bidders are less (more) likely to successfully merge with public (private) targets. The quintile difference in the probability of merging with public targets is −35.89 percent (*P/V*) (significant at the 1 percent level). This difference, results primarily from equity offers (see Table II), where the valuation of bidders (for all three measures) targeting public banks (column (1)) is significantly lower than the valuation of bidders targeting private targets (column (3)). Hence, in accord with the overvaluation hypothesis, bidding banks with higher valuations are more likely to engage in acquisitions of private than public banks.

Finally, as discussed earlier, the overvaluation hypothesis implies that overvalued stock driven acquisitions are unlikely to be associated with any gains arising from synergies of the merging parties. To shed light on this issue, we next assess the synergy gains of bidders in order to determine if their acquisition deals are beneficial to shareholders. Following Bradley *et al.* (1988), we estimate *Synergy* (−1,+1) as the weighted sum (by market capitalization) of the bidder and target cumulative abnormal announcement returns. Panel C of Table III reports the synergy results. The evidence shows that bidders with higher valuations fail to realize synergy gains. In panels C1 and C2, the majority of synergy values from quintile 2 to5, seven out of the eight, are not significantly different from zero, indicating no synergy gains from mergers. In quintile 1, however, the synergies from mergers are significantly positive suggesting that less-overvalued bidders engage in deals resulting in synergy gains. The difference between quintiles 5 (overvalued) quintile 1 (undervalued) is −1.784 percent (significant

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at the 5 percent level) when the cost of equity ($r_e(t)$) is estimated using firm-specific CAPM (panel C1 of Table III), and −2.635 percent (significant at the 1 percent level) when the cost of equity ($r_e(t)$) is assumed to be 12.5 percent (panel C2 of Table III). In sum, the results demonstrate that overvalued bidding banks fail to realize synergy gains.

4.4 Short-term announcement returns

In this section we focus on the market's reaction to bank merger announcements. Table IV reports announcement returns for bidders acquiring private and public targets with different methods of payment. Panel A of Table IV shows the short-term wealth effects for deals settled with stock payment while panel B reports the wealth effects for deals carried out with cash payment.

First, merger announcements for deals with equity payment cause bidders' stock price to decline when they merge with public targets, but there is no negative impact on the bidders' stock price when they merge with private targets. For equity deals, CAAR for bidders, for different interval windows around the announcement day ($t = 0$), are negative and highly significant at conventional levels. For example, the *CAAR* (−1, 1) for banks acquiring public targets is −1.86 percent (significant at the 1 percent level)[15]. Column (3) in panel A shows that bidders' CAAR for the same window interval is 0.01 percent and not significantly different from zero when they acquire private targets with stock. The difference between the CAAR of bidders acquiring public targets vs private targets (column (1)-(3)) is −1.39 percent and significant at the 1 percent level. A similar pattern is observed for the five-day window intervals. These results suggest that acquisition of private banks is more beneficial to the shareholders of bidder banks and appear to be consistent with the monitoring hypothesis, which predicts that acquirers of private banks using stock benefit from the concentrated ownership of targets because private targets are owned by a small group of shareholders who are expected to exert monitoring on bidders (Demsetz, 1983; Shleifer and Vishny, 1986)[16]. To gain more insights about the importance of monitoring we will appraise it by analyzing its impact on the long-term performance of acquirers when they purchase private bank targets through stock.

Second, merger announcements for deals with equity payment cause the target's stock price to increase. The abnormal return of targets is considerably higher than that of bidders in these deals. For deals settled with equity, the *CAAR* (−1, 1) of public targets is 14.98 percent and significant at the 1 percent level, indicating that the shareholders of the target bank benefit at the expense of their bidder counterparts. These results are not driven by outliers, as 362 of 492 announcements are positive. Similar evidence is observed for the five-day window intervals.

Third, merger announcements for cash deals cause bidders' stock price to increase when they acquire public targets, but there is no significant influence on the bidders' stock price when they acquire private targets. As reported in panel B (see column (1)), the three-day CAAR for bidders is 1.74 percent when they acquire public targets and significant positive at the 1 percent level; among the 877 announcements, 537 are positive. Column (3) shows that the three-day CAAR for the bidders is 0.36 percent when they acquire private banks, but not significantly different from zero. The difference between the three-day CAAR of bidders for public targets and private targets (column (1)-(3)) is 1.38 percent and significant at the 1 percent level. This pattern also holds for the five-day window intervals.

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Table IV. Daily CAAR around bank merger announcements

Panel A: CAAR for stock payment deals

Window (day1, day2)	(1) Bidders of public targets (492 deals)	(2) Targets that are publicly listed firms (492 deals)	(3) Bidders of private targets (571 firms)	(1)-(2)	(1)+(2)	(1)-(3)
(−1,0)	−1.38%***	10.62%***	0.01%	−12.00%***	9.24%***	−1.39%***
	[−13.49]	[75.23]	[−0.09]	[−68.83]	[53.00]	[−9.57]
(−1, +1)	−1.86%***	14.98%***	0.04%	−16.84%***	13.12%***	−1.90%***
	[−15.19]	[86.24]	[−0.14]	[−79.25]	[61.74]	[−6.11]
(−2, 0)	−1.21%***	11.53%***	0.07%	−12.74%***	10.32%***	−1.28%***
	[−10.16]	[66.40]	[0.22]	[−60.52]	[49.02]	[−3.75]
(−2, +2)	−1.94%***	15.84%***	0.03%	−17.78%***	13.90%***	−1.97%***
	[−12.47]	[70.93]	[−0.29]	[−65.34]	[51.08]	[−10.58]
(−10, 0)	−1.53%***	14.91%***	−0.23%	−16.44%***	13.38%***	−1.30%***
	[−6.40]	[44.02]	[−0.97]	[−39.66]	[32.28]	[−3.87]
(−10, +10)	−2.65%***	19.34%***	−0.74%*	−21.99%***	16.69%***	−1.91%***
	[−7.94]	[41.47]	[−1.76]	[−38.35]	[29.11]	[−3.56]

Panel B: CAAR for cash payment deals

Window (day1, day2)	(1) Bidders of public targets ($n=874$)	(2) Public Targets ($n=874$)	(3) Bidders of Private Targets ($n=211$)	(1)-(2)	(1)+(2)	(1)-(3)
(−1, 0)	1.20%***	3.38%***	0.40%*	−2.18%***	4.58%***	0.80%***
	[12.20]	[28.36]	[1.92]	[−14.10]	[29.63]	[2.88]
(−1, +1)	1.74%***	4.80%***	0.36%	−3.06%***	6.54%***	1.38%***
	[14.62]	[33.93]	[1.53]	[−16.55]	[35.37]	[5.07]
(−2, 0)	1.20%***	3.52%***	0.34%	−2.32%***	4.72%***	0.86%***
	[9.89]	[24.05]	[1.20]	[−12.20]	[24.82]	[2.71]
(−2, +2)	2.04%***	5.14%***	0.38%	−3.10%***	7.18%***	1.66%***
	[13.09]	[28.30]	[1.35]	[−12.95]	[30.00]	[4.93]

(*continued*)

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Table IV.

(−10, 0)	1.40%***	4.21%***	−0.42%	−2.81%***	5.61%***	1.82%***
	[5.34]	[14.50]	[−1.30]	[−7.18]	[14.34]	[3.27]
(−10, +10)	2.39%***	6.01%***	−0.16%	−3.62%***	8.40%***	2.55%***
	[6.41]	[15.26]	[−0.50]	[−6.68]	[15.49]	[3.82]

Notes: This table presents cumulative average abnormal return (CAAR) for both acquirers and targets for stock (panels A) and cash (panels B) deals, using the market model. The sample of the bidders paying in stock (cash) consists of 1, 063 (1, 085) successful acquisition deals completed over the 1985-2006 period for short-term analysis, as identified in the Thomson ONE Banker Database. We estimate CAAR using the market model with the following regression:

$$R_{jt} = \alpha_j + \beta_j R_{mt} + \varepsilon_{jt}$$

The abnormal return for the stock of firm j on day t is defined as the difference between the actual return on day t and the estimated return from the estimation period:

$$AR_{jt} = R_{jt} - \left(\hat{\alpha}_j + \hat{\beta}_j R_{mt}\right)$$

AAR_t is the sample mean on trading day t:

$$AAR_t = \frac{\sum_{j=1}^{N} AR_{jt}}{N}$$

Over an interval of two or more trading days beginning with day T_1, and ending with day T_2, the CAAR are:

$$CAAR_{T_1,T_2} = \frac{1}{N}\sum_{j=1}^{N}\sum_{t=T_1}^{T_2} AR_{jt}$$

Standardized cross-sectional t-statistics are reported in brackets. *,**,***Statistical significance at the 10, 5 and 1 percent levels, respectively, using a one-tailed test

Moreover, merger announcements for deals with cash payment cause the target's stock price to increase; the stock return of the targets is higher than that of the bidders. As shown in column (2) of panel A, for deals executed using cash payment, the three-day CAAR for public targets is 4.80 percent and statistically significant at the 1 percent level; among the 877 announcements, 584 are positive. The difference between the CAAR of the bidders and the targets (column (1)-(2)) is −3.06 percent and significant at the 1 percent level. Similar results are obtained for the five-day window interval. The difference between the CAARs of bidders buying public vs private targets over the (−2,+2) interval period (column (1)-(3)) is −3.10 percent and statistically significant at the 1 percent level[17].

Overall, the evidence from Table IV suggests that stock bidders experience negative abnormal returns when they acquire public targets, but do not realize losses when they purchase private targets. Compared with cash bidders of public targets, cash bidders of private targets do not realize higher returns, suggesting that, in the absence of additional monitoring, illiquidity of the target plays a role in affecting the bidder's shareholder value.

4.5 Post-acquisition performance

Because stock is more likely to be utilized as the method of payment in mergers when the bidders' valuations are high (Shleifer and Vishny, 2003) and merged banks will eventually face price corrections from their elevated levels (Loughran and Vijh, 1997; Rau and Vermaelen, 1998; Ang and Cheng, 2006), it is expected that bidders will experience negative long-run returns in stock acquisitions, and positive returns in cash acquisitions.

Table V reports the long-term post-acquisition performance of the bidders, measured by long-term CAAR using the market model and Fama and French (1993) three-factor model[18]. Panels A1 and A2 of Table V report the long-term performance of bidders associated with stock acquisitions. The results based on the market model appear in panel A1. The two-year CAAR for bidders acquiring public targets with stock is −0.50 percent, and the two-year CAAR for bidders buying private targets is −6.96 percent (significant at the 1 percent level). The results based on the Fama and French three-factor model, reported in panel A2, show that the two-year CAAR for bidders purchasing public targets with stock is −1.83 percent, and the two-year CAAR for bidders buying private targets with stock is −6.37 percent (both statistically significantly). Jointly, acquisitions of private banks appear to destroy more bidder shareholder value than acquisitions of public banks. To the extent that stock acquisitions may enhance the monitoring of bidders (Bouwman *et al*,. 2009), this difference also suggests that the monitoring power of private targets relative to public targets is inconsequential. In addition, this evidence demonstrates that bidders' expected synergy gains from mergers with private targets are considerably overstated and gratuitous by the premiums paid. Taking into account that bidders' performance one year prior to such acquisitions was positive and statistically significant, these results imply that the value loss to shareholders of acquiring banks is substantial.

Panels B1 and B2, report the long-term performance of bidders consummating mergers with cash payment. The results based on the market model, shown in panel B1, indicate that the two-year post-acquisition performance for bidders buying public targets with cash is 0.80 percent, and the two-year CAAR for bidders acquiring private targets with cash is 2.76 percent. The results based on the Fama and French three-factor model, shown in panel B2, reveal that the two-year CAAR for bidders purchasing

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Window (month1, month2)	Bidder CAAR (1) Public Targets ($n = 492$)	(2) Private Targets ($n = 571$)	Diff (1)-(2)
Panel A1: Long-term CAAR for stock payment deals using the market model			
(−12, −1)	8.13%***	5.28%***	2.85%
	[6.47]	[3.72]	[1.61]
(−1, 0)	−0.81%*	0.23%	−1.04%*
	[−1.56]	[0.29]	[−1.75]
(−1, +1)	−0.85%	0.44%	−1.29%*
	[−1.25]	[0.99]	[−1.83]
(+1, +12)	0.63%	−5.45%***	6.08%***
	[0.15]	[−7.74]	[4.76]
(+1, +24)	−0.50%	−6.96%***	6.46%***
	[−0.86]	[−6.93]	[3.60]
Panel A2: long-term CAAR for stock payment deals using the Fama and French 3-factor model			
(−12, −1)	7.92%***	5.45%***	2.47%
	[5.75]	[4.14]	[1.00]
(−1, 0)	−1.15%**	0.30%**	−1.45%***
	[−2.93]	[1.97]	[−2.58]
(−1, +1)	−1.52%***	0.46%	−1.98%
	[−3.23]	[0.99]	[−0.21]
(+1, +12)	−0.59%**	−5.20%***	4.61%***
	[−2.40]	[−3.88]	[5.70]
(+1, +24)	−1.83%*	−6.37%***	4.54%***
	[−1.33]	[−4.71]	[3.26]
Panel B1: long-term CAAR for cash payment deals using the market model			
Window (month1, month2)	Bidder CAAR (1) Public targets ($n = 874$)	(2) Private targets ($n = 211$)	Diff (1)-(2)
(−12, −1)	−5.98%***	2.98%	−8.96%***
	[−6.04]	[1.11]	[−3.56]
(−1, 0)	0.43%	0.59%*	−0.16%
	[1.26]	[1.34]	[−0.21]
(−1, +1)	−0.03%	1.25%**	−1.28%
	[−0.06]	[1.97]	[−1.46]
(+1, +12)	−0.71%	2.26%	−2.97%*
	[−0.89]	[0.91]	[−1.82]
(+1, +24)	0.80%*	2.76%*	−1.96%
	[1.54]	[1.38]	[−0.94]
Panel B2: long-term CAAR for cash payment deals using the Fama and French 3-factor model			
(−12, −1)	−10.26%***	0.50%	−10.76%***
	[−4.73]	[0.23]	[−3.04]
(−1, 0)	0.24%	0.40%	−0.16%
	[0.69]	[0.59]	[−0.73]
(−1, +1)	−0.26%	1.42%**	−1.68%***
	[−0.66]	[1.81]	[−3.70]

Table V.
Bank merger long-term Cumulative Abnormal Returns

(*continued*)

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(+1, +12)	−0.72%	0.90%	−1.62%
	[−0.90]	[0.60]	[−1.17]
(+1, +24)	2.98%***	3.40%*	−0.42%
	[2.34]	[1.60]	[−0.13]

Notes: This table presents long-term Cumulative Average Abnormal Returns (CAAR), calculated using the market model and Fama and French (1993) 3-factor model, for bidders using stock and cash payment. The sample of the bidders paying stock (cash) consists of 1,063 (1,085) successful acquisition deals completed over the 1985-2006 period for 1- and 2-year analysis, as identified in the Thomson ONE Banker Database. Panels A1 and A2 report abnormal returns for acquirers for stock deals. Panels B1 and B2 report abnormal returns for acquirers in cash deals. In panels A1 and B1, we estimate CAAR using the market model with the following regression:

$$R_{jt} = \alpha_j + \beta_j R_{mt} + \varepsilon_{jt}$$

The abnormal return for the stock of firm j on day (month) t is defined as the difference between the actual return on day (month) t and the estimated return from the estimation period:

$$AR_{jt} = R_{jt} - \left(\hat{\alpha}_j + \hat{\beta}_j R_{mt}\right)$$

Over an interval of two or more trading days beginning with day (month) T_1, and ending with day (month) T_2, the CAAR are:

$$CAAR_{T_1,T_2} = \frac{1}{N}\sum_{j=1}^{N}\sum_{t=T_1}^{T_2} AR_{jt}$$

We also estimate long-term CAAR using the Fama and French 3-factor model with the following regression:

$$R_{jt} = \alpha + \beta_j R_{mt} + s_j SMB_t + h_j HML_t + \varepsilon_{jt}$$

The abnormal return for the common stock of firm j in month t is:

$$A_{jt} = R_{jt} - \left(\widehat{\alpha_j} + \hat{\beta}_j R_{mt} + \hat{s}_j SMB_t + \hat{h}_j HML_t\right)$$

Over an interval of two or more trading months beginning with month T_1, and ending with month T_2, the CAAR are:

$$CAAR_{T_1,T_2} = \frac{1}{N}\sum_{j=1}^{N}\sum_{t=T_1}^{T_2} AR_{jt}$$

Panel A: long-term CAAR for bidders using stock payment – this panel reports the long-term CAAR for acquirers using stock payment. In Panel A1, we estimate CAAR using the market model. In Panel A2, we estimate CAAR using the Fama and French 3-factor model. We report CAAR by the type of target (public or private). Panel B: Long-term CAAR for bidders using cash payment – This panel reports long-term CAAR for acquirers using cash payment. In Panel B1, we estimate CAAR using the market model. In Panel B2, we estimate CAAR using the Fama and French 3-factor model. In Panels A1 and B1, standardized cross-sectional t-statistics are reported in brackets. *,**,***Statistical significance at the 10, 5 and 1 percent levels, respectively, using a one-tailed test

Table V.

public targets with cash is 2.98 percent, and the two-year CAAR for bidders buying private targets with cash is 3.40 percent (both statistically significant).

Overall, consistent with the predictions of the Shleifer and Vishny (2003) overvaluation model, the long-term post-acquisition performance is significantly negative for stock bidders, but significantly positive for cash bidders[19].

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5. Multivariate analysis

Misvaluation proxies are likely to be correlated with growth prospects for both psychological and measurement reasons. First, investors may overvalue growing firms (Lakonishok *et al.*, 1994). Second, measurement error in the misvaluation proxies may be correlated with growth opportunities, as market price in *P/B* and *P/V* manifests investors' rational judgment of future growth opportunities, not just pricing errors. For example, although a firm's Tobin's *Q* (*P/B*) is a common proxy for mispricing, only some of the variation in *Q* comes from errors in investors' beliefs. Much of the variation stems from the rational anticipation of varying firm productivity. As discussed earlier, the superiority of *P/V* is that it takes into account analyst forecasts of future earnings and hence addresses the measurement limitation of mispricing. However, in reality mispricing can be much larger than the *P/V* measure suggests simply because firm productivity is unobservable (Alti and Tetlock (2011)). Therefore, our analysis is more likely to understate the role of misvaluation on key aspects of mergers and acquisitions, such as bid premiums and abnormal returns.

To address these effects, we conduct multivariate tests designed to assess the effect of misvaluation, *P/V*, while we control for growth prospects by using the *P/B* (two years before) instead of the *P/B* ratio. Since *P/B* (two years before) is distant from the merger announcement, it is unlikely to reflect misvaluation. Hence, investigating the effects of *P/V* after controlling for *P/B* (two years before) allows for a more rigorous test for misvaluation.

Consequently, we perform multivariate tests with additional controls as described in Tables VI and VII. The regressions include geographic and activity diversification dummies, size variables, and leverage as control variables. The rationale for including leverage as a control variable stems from theories of financing and capital structure, which predict that leverage levels are likely to be related to a firm's growth opportunities. Therefore, it is possible that leverage and financing constraints influence bidder behavior.

Table VI reports logistic regression results relating bidder and target valuation measures to the method of payment. The dependent variable, stock, is a dummy that takes the value of 1 when the deal is paid with stock and zero otherwise. We run regressions both on *P/V* and *P/V* ranks. First, we regress stock on bidder and target *P/B* (two years before). Second, we regress stock on bidder and target *P/V* ratios (columns (2) and (3)). Third, we include both *P/B* (two years before) and *P/V* ranks (columns (4) and (5)) to examine whether there is incremental explanatory power for the acquirer's misvaluation, *P/V*, given its growth prospects, *P/B* (two years before).

The multivariate findings for target valuations in Table VI are generally consistent with those of the univariate analysis. The regression results demonstrate that a higher target *P/B* (two years before) is associated with more frequent use of stock than cash. This holds in all three types of regression specifications, suggesting that bidders viewing targets as having valuable growth options use stock. Since growth prospects are subject to uncertainty, this explains why bidders are more likely to use their overvalued equity rather than cash for the right to exercise such options. It is interesting to note that the significance and magnitude of the coefficient of the target *P/B* (two years before) is substantially higher than that of the bidder *P/B* (two years before). This indicates that the use of stock in bank mergers is influenced more by the growth prospects of targets than those of bidders.

Consistent with the univariate analysis, reported in Section 4.2, both bidder and target misvaluation, *P/V*, measures are positively associated with the use of stock,

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	Stock				
	(1)	(2)	(3)	(4)	(5)
Intercept	−2.161*	−8.425***	−6.990***	−0.589**	−0.581**
	[0.076]	[0.002]	[0.002]	[0.021]	[0.028]
Target *P/B* (2 years before)	1.366***	1.864**	1.516**	0.130**	0.120*
	[0.002]	[0.011]	[0.012]	[0.024]	[0.059]
Bidder *P/B* (2 years before)	0.181*	−0.079	−0.032	−0.01	−0.002
	[0.076]	[0.625]	[0.836]	[0.450]	[0.909]
Target *P/V*		1.979**			
		[0.028]			
Bidder *P/V*		0.775***			
		[0.005]			
Target *P/V* ($k = 12.5\%$)			1.006*		
			[0.065]		
Bidder *P/V* ($k = 12.5\%$)			0.741***		
			[0.007]		
Target *P/V* rank				0.012	
				[0.708]	
Bidder *P/V* rank				0.185***	
				[0.000]	
Target *P/V* ($k = 12.5\%$) rank					0.013
					[0.690]
Bidder *P/V* ($k = 12.5\%$) rank					0.132***
					[0.004]
Activity diversification	0.238	1.208	0.724	0.081	0.097
	[0.699]	[0.223]	[0.381]	[0.331]	[0.277]
Geographic diversification	1.100*	0.367	0.229	0.035	0.031
	[0.070]	[0.679]	[0.776]	[0.722]	[0.759]
Log of relative size	2.577*	6.073**	4.759*	0.087**	0.117***
	[0.059]	[0.033]	[0.051]	[0.029]	[0.006]
Log of deal size	2.834**	6.594**	5.102**	0.171**	0.218***
	[0.050]	[0.030]	[0.047]	[0.017]	[0.004]
Leverage	0.009	0.071	0.080	0.003	0.001
	[0.787]	[0.167]	[0.113]	[0.596]	[0.842]
n	109	77	77	77	77
McFadden R^2	0.274	0.547	0.471	0.383	0.324

Notes: This table reports the logistic regression results, which predict the probability of using stock payment for the deals. The sample includes all banking merger announcements during 1985-2006 where need to calculate both *P/B* (2 years before) and *P/V*. *P/B* (2 years before) is price-to-book ratio of the bidder. *P/V* is price-to-value ratio of the bidder, where the intrinsic value is estimated using our constructed perpetual residual income model when the cost of capital (r_e (*t*)) is estimated using the firm-specific CAPM and when we assume that (r_e (*t*)) is 12.5 percent. Acquirer and target firms are ranked by valuation ratios (*P/B* (2 years before) and *P/V*) and separated into quintiles and assigned a rank between 1 and 5, which is referred as *P/V Rank*, with 1 being the lowest ratio quintile (most undervalued). Stock = 1 if the bidder uses stock to pay for the deal; 0 for cash payment. Activity diversification = 1 if the acquirer and target do not share the same first three digits of the COMPUSTAT SIC codes; 0 otherwise. Geographic Diversification = 1 if the acquirer and target are located in the different states; 0 otherwise. Relative size = acquirer market value/target market value. Deal size = announced transaction value. Leverage = acquirer total debt/total assets. For each coefficient, the second row reports the *p*-value. *,**,***Coefficient is significantly different from zero at the 10, 5 and 1 percent levels, respectively

Table VI.
Logistic regressions

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Table VII.
Least squares regressions

Panel A: OLS regression on premium

	Premium									
Intercept	25.846**	11.388	3.359	1.817	2.496	1.111	5.202	4.447	4.893	4.546
	[0.013]	[0.337]	[0.432]	[0.639]	[0.551]	[0.767]	[0.355]	[0.399]	[0.365]	[0.369]
Target *P/B* (2 years before)	−5.72	−2.594	−0.719	0.526	−1.278	0.300	−0.164	0.532	−0.548	0.379
	[0.107]	[0.487]	[0.374]	[0.489]	[0.121]	[0.698]	[0.847]	[0.512]	[0.515]	[0.641]
Bidder *P/B* (2 years before)	3.641	1.100	0.771	−0.179	1.213*	−0.069	0.493	−0.078	0.796	0.003
	[0.192]	[0.710]	[0.264]	[0.781]	[0.081]	[0.915]	[0.492]	[0.909]	[0.260]	[0.997]
Target *P/V* rank			−2.800**	−1.306			−2.500*	−1.019		
			[0.028]	[0.266]			[0.059]	[0.424]		
Bidder *P/V* rank			7.241***	3.550***			5.701***	2.968*		
			[0.000]	[0.010]			[0.000]	[0.051]		
Target *P/V* ($k = 12.5\%$) rank					−1.322	−0.386			−1.313	−0.523
					[0.305]	[0.739]			[0.306]	[0.666]
Bidder *P/V* ($k = 12.5\%$) Rank					5.914***	2.865**			4.703***	2.671*
					[0.000]	[0.033]			[0.001]	[0.061]
Stock		36.498**		21.014***		21.807***		19.103***		18.617***
		[0.017]		[0.000]		[0.000]		[0.000]		[0.000]
Activity diversification							7.905*	3.879	9.239**	5.048
							[0.057]	[0.329]	[0.025]	[0.199]
Geographic diversification							12.737***	4.955	13.750***	6.128
							[0.002]	[0.225]	[0.001]	[0.126]
Leverage							−0.19	−0.199	−0.255	−0.243
							[0.254]	[0.203]	[0.121]	[0.115]
n	241	241	169	169	173	173	158	158	162	162
Adjusted R^2	0.003	0.023	0.200	0.345	0.151	0.320	0.258	0.347	0.244	0.337

Panel B: OLS regression on bidder/target CAR

	Dependent variable					
	Bidder *CAR*(−2, 2)			Target *CAR* (−2, 2)		
Intercept	−0.040***	0.002	0.006	0.175**	0.259***	0.253***
	[0.007]	[0.950]	[0.814]	[0.013]	[0.002]	[0.003]
Target *P/B* (2 years before)	0.002	−0.004	−0.004	−0.006	−0.011	−0.010
	[0.740]	[0.596]	[0.574]	[0.777]	[0.679]	[0.733]
Bidder *P/B* (2 years before)	0.003**	0.004	0.004	0.005	0.007	0.006

(continued)

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	[0.024]	[0.128]	[0.137]	[0.427]	[0.499]	[0.572]
Target *P/V*		−0.002			−0.033	
		[0.753]			[0.171]	
Bidder *P/V*		−0.004*			0.001	
		[0.080]			[0.798]	
Target *P/V* ($k = 12.5\%$)			−0.001			−0.021
			[0.822]			[0.262]
Bidder *P/V* ($k = 12.5\%$)			−0.005*			0.002*
			[0.061]			[0.705]
Activity diversification	0.005	0.011	0.01	0.015	0.014	0.011
	[0.529]	[0.412]	[0.417]	[0.730]	[0.766]	[0.817]
Geographic diversification	−0.004	0.006	0.006	0.040	0.085*	0.082*
	[0.657]	[0.643]	[0.638]	[0.350]	[0.082]	[0.095]
Log of relative size	−0.019**	−0.013	−0.013	0.000	0.016	0.020
	[0.011]	[0.195]	[0.179]	[0.989]	[0.681]	[0.623]
Log of deal size	−0.026***	−0.018	−0.018*	−0.010	0.024	0.027
	[0.002]	[0.110]	[0.100]	[0.792]	[0.580]	[0.536]
Leverage	0.000	−0.002**	−0.002**	−0.003	−0.005*	−0.005*
	[0.939]	[0.032]	[0.026]	[0.182]	[0.069]	[0.070]
N	109	77	77	99	77	77
Adjusted R^2	0.071	0.016	0.022	−0.041	0.012	0.002

Notes: This table reports the ordinary least squares (OLS) regressions on offer price premium, bidder cumulative abnormal return (*CAR*) and target *CAR*. Premium is defined as the bid price over the target's stock price, 4 weeks before the takeover announcement, minus 1, times 100 [(bid price/target's stock price)-1]×100]. Individual acquirer and target announcement-period Cumulative Abnormal Returns (CAR) are measured over the 2-day event window (−1, 0), beginning 1 day before the announcement (day -1) and ending on the announcement day (day 0) of the acquisition. The sample includes all announced banking merger deals in which both the acquirer and target are listed on the NYSE, AMEX, or NASDAQ during 1985-2006 and the data needed to calculate both *P/B* (2 years before) and *P/V* are available. *P/B* (2 years before) is the price-to-book ratio. *P/V* is the price-to-value ratio, where the intrinsic value is estimated using our constructed perpetual residual income model when the cost of capital ($r_e(t)$) is estimated using the firm-specific CAPM and when we assume that ($r_e(t)$) is 12.5%. Acquirer and target firms are ranked by *P/V* ratios and separated into quintiles and assigned a rank between 1 and 5, which is referred as *P/V* Rank, with 1 being the lowest ratio quintile (most undervalued). Stock = 1 if the bidder uses stock to pay for the deal; 0 for cash payment. Activity diversification = 1 if the acquirer and target do not share the same first three digits of the COMPUSTAT SIC codes; 0 otherwise. Geographic diversification = 1 if the acquirer and target are located in the same state; 0 otherwise. Leverage = acquirer total debt / total assets. For each coefficient, the second row reports the *p*-value. *,**,***Coefficient is significantly different from zero at the 10, 5 and 1 percent levels, respectively

Table VII.

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and the results are robust when *P/B* (two years before) and control variables are included in the regression. In regressions (2) and (3), the coefficient of the target *P/B* (two years before) remains positive and statistically significant while that of the bidder *P/B* (two years before) becomes insignificant when we account for the impact of target and bidder *P/V*. This evidence provides supplemental support for the misvaluation view which claims that bidders' growth prospects have no impact on the use of stock in bank mergers. The coefficients for both bidder *P/V* and *P/V* ($k = 12.5$ percent) are 0.775 and 0.741 in the regressions (2) and (3), respectively (both statistically significant at the 1 percent level). These bidder *P/V* regression coefficients are consistent with the view that bidder overvaluation, not its growth prospects, dictates the choice of stock payment. It is worthwhile to highlight that the positive and statistically significant coefficient of target *P/V* overvaluation also increases the probability of using stock in bank merger deals. When we run the regression on bidder and target *P/V* ranks, we obtain similar but somewhat weaker results, as shown in columns (4) and (5), respectively.

Next we examine the relation between bid premiums and *CAR* (−2, 2), for both bidders and targets, and our key overvaluation measures, controlling for other effects as in Table VI. These regression results are reported in Table VII. In line with the univariate findings, the evidence in panel A of Table VII indicates that higher bidder valuations, indicated by a higher rank *P/V* and *P/V* ($k = 12.5$ percent) for bidders, are associated with higher bid premiums[20]. However, bidder growth prospects don't appear to have a significant influence on the premiums paid.

Panel B of Table VII shows that the growth prospects of target and bidder have no bearing on bidder and target abnormal announcement returns. Hence, the market's reaction to bank mergers does not seem to be driven by the growth prospects of the merging banks. In accord with the results of the univariate analysis, we find that higher bidder valuation (*P/V*), which mainly measures the misvaluation component of stock price, is associated with lower bidder returns. This inverse relation implies that the market's negative reaction is influenced by the bidder's overvaluation. The last three regressions in panel B show that the target abnormal returns in response to bank acquisition announcements have a positive, but tenuous association with bidders' overvaluation after controlling for other effects.

6. Management compensation incentives

So far, our evidence demonstrates that overvalued bank bidders in stock acquisitions pay high premiums (panel B of Table III and panel A of Table VII), fail to create synergies (panel C of Table III) and experience poor long-term performance (panel A of Table V) after the completion of acquisitions. This raises the natural question of whether post-merger compensation incentives motivate overvalued acquirer managers to buy less-overvalued targets if there is no shareholder value creation. Jensen (2004, 2005) conjectures that equity overvaluation results in substantial agency costs for shareholders and suggests that acquisitions of overvalued bidders are motivated by the incentives of acquiring firm managers.

Several previous studies have addressed the relation between managerial incentives and acquisitions. For example, Bliss and Rosen (2001), show that CEO compensation increases after large bank mergers even thought the bidder's stock price declines. Grinstein and Hribar (2004) document that acquiring CEOs who have the power to shape board decisions receive significantly larger merger bonuses. Harford and Li (2007) examine the acquiring CEOs' compensation change and report that acquirer

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CEOs in overvaluation-driven acquisitions obtain substantial economic benefits following these transactions. Similarly, Fu *et al.* (2010) find that acquirer CEOs in overvaluation-driven acquisitions realize substantial pecuniary benefits following acquisitions. Jointly, prior literature advocates that acquisitions by firms with overvalued equity are motivated by the compensation incentives of acquiring firm managers. In what follows, we try to shed light on this issue by investigating the compensation changes of top managers of acquiring banks after the completion of acquisitions.

To address this issue, we examine the compensation changes of top managers of bidding banks during the post-acquisition period. Mergers typically take shape with the efforts of the entire top management team, who are responsible for the deal making process, and experience increases in total compensation as a result of the potential synergy gains of completed mergers. Consequently, we examine the increase in the total compensation of the top management team rather than just the CEOs. Table VIII reports the compensation information for top managers of bidding banks one year (two year) after the merger completion.

Panel A of Table VIII shows that top managers of bidding banks experience significant compensation increases after the completion of mergers, especially stock bidders. Panel B of Table VIII shows that there is a positive relation between valuation measures of bidders and compensation increase. The quintile difference in one-year and two-year compensation increases are 30.122 and 27.138 percent (both significant at the 1 percent level) when the cost of equity ($r_e(t)$) is assumed to be 12.5 percent (panel B2 of Table VIII). Similar results are found when the cost of equity ($r_e(t)$) is based on firm-specific CAPM (panel B1 of Table VIII). Hence, top managers of more overvalued banks reap higher wealth increases after the merger completion. Panel C of Table VIII provides multiple regression results on compensation increases and overvaluation, controlling for growth prospects, premium, method of payment, relative firm size, transaction size, and leverage. The evidence confirms that bidder overvaluation has a significant positive association with the top management compensation increases, especially two-year after the merger completion. Both coefficients of Bidder *P/V* Rank are significant at 1 percent level.

7. Conclusion

Although there has been considerable research interest in bank-merger activities, in contrast to earlier studies, in this study we examine for the first time whether inefficient stock market misvaluation and management compensation incentives, subsequent to the acquisition completion, play an important role in bank mergers. While previous papers have examined the merits of the corporate equity overvaluation and management compensation incentives independently, none of the extant research has examined them jointly and, in particular, by focussing on the banking industry. This study fills this niche and documents a positive association between stock market valuation and bank mergers. Moreover, we find that CEOs of overvalued acquiring banks are generally rewarded with large compensation increases subsequent to merger completions.

To test whether the theoretical mispricing framework of Shleifer and Vishny (2003) fits bank mergers, we conduct empirical tests using two alternative *P/V* measures for bidders and targets while we control for their growth prospects with the *P/B* (two years before) ratio. The *V* is estimated using the three-period forecast horizon residual income model of Ohlson (1995) and perpetual residual income model that does not rely on

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Panel A: mean acquirer compensation increase by method of payment

		(1) Acquirer of public targets	*n*	(2) Acquirer of private targets	*n*	(3) All acquirers	*n*
Cash	*Comp_Chg_1Y*	37.487%***	98	27.402%***	42	34.521%***	141
	(*t*-Statistic)	[5.394]		[2.819]		[6.112]	
	Comp_Chg_2Y	61.107%***	86	74.920%***	41	65.452%***	127
	(*t*-Statistic)	[5.998]		[3.207]		[6.457]	
Stock	*Comp_Chg_1Y*	38.892%***	199	34.161%***	135	36.976%***	334
	(*t*-Statistic)	[7.738]		[5.058]		[9.135]	
	Comp_Chg_2Y	72.189%***	184	68.714%***	126	70.771%***	310
	(*t*-Statistic)	[8.100]		[7.320]		[10.869]	
All	*Comp_Chg_1Y*	38.422%***	297	32.571%***	177	36.246%***	475
	(*t*-Statistic)	[9.448]		[5.778]		[10.983]	
	Comp_Chg_2Y	68.594%***	270	70.218%***	167	69.212%***	437
	(*t*-Statistic)	[9.980]		[7.747]		[12.646]	

Panel B: Mean acquirer compensation increase by bidder valuation ratio quintiles

Panel B1: mergers sorted by bidder P/V ratio based on the perpetual residual income model

Bidder *P/V* rank	*n*	*Comp_Chg_1Y*	*Comp_Chg_2Y*
1 (Undervalued)	160	14.41%	47.74%
2	160	7.36%	24.42%
3	160	34.73%	71.03%
4	160	19.21%	52.92%
5 (Overvalued)	160	36.58%	61.74%
Difference 5-1		22.169%***	14.00%
		[2.938]	[1.315]

Panel B2: mergers sorted by bidder P/V ratio based on the perpetual residual income model ($k = 12.5\%$)

Bidder *P/V* Rank	*n*	*Comp_Chg_1Y*	*Comp_Chg_2Y*
1 (Undervalued)	163	5.81%	34.08%
2	163	15.37%	34.11%
3	163	28.12%	59.20%
4	164	24.17%	76.66%
5 (Overvalued)	164	35.93%	61.22%
Difference 5-1		30.122%***	27.138%***
		[4.097]	[3.469]

Panel C: OLS regression on management compensation increases

	Dependent variable			
	Comp_Chg_1Y		*Comp_Chg_2Y*	
Intercept	−0.976	−0.754	0.309	0.686
	[−1.562]	[−1.169]	[0.357]	[0.737]
Target *P/B* (2 years before)	0.002	0.046	−0.016	0.042
	[0.024]	[0.451]	[−0.103]	[0.258]
Bidder *P/B* (2 years before)	0.099	0.069	−0.211	−0.255
	[1.089]	[0.740]	[−1.421]	[−1.660]
Bidder *P/V_R*	0.133	0.156*	0.355***	0.380***
	[1.526]	[1.757]	[2.693]	[2.848]
Premium	0.004	0.005	−0.003	−0.002
	[0.737]	[0.929]	[−0.393]	[−0.238]

Table VIII.
Overvaluation and management compensation increases

(*continued*)

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Stock		−0.371		−0.527
		[−1.260]		[−1.092]
Log of relative size	−0.064	−0.055	−0.247	−0.231
	[−0.223]	[−0.195]	[−0.530]	[−0.495]
Log of deal size	−0.08	−0.074	−0.185	−0.169
	[−0.269]	[−0.249]	[−0.384]	[−0.351]
Leverage	0.006	0.007	0.008	0.009
	[0.633]	[0.744]	[0.505]	[0.566]
n	51	51	52	52
Adjusted R^2	−0.018	−0.004	0.061	0.065

Notes: This table reports compensation information for top managers of bidding banks 1-year (2-year) after the merger completion. The sample includes all successful banking merger deals in which the acquirer are listed on the NYSE, AMEX, or NASDAQ during 1985-2006 and data are available in ExecuComp. *Comp-Chg_1Y* (*Comp-Chg_2Y*) equals to the "total compensation" of the top management 1-year (2-year) after the merger completion over that of the year before the completion minus 1. Panel A reports increase in compensation for top managers of bidding banks after the completion of mergers, by types of target (public vs private) and method of payment. *n* refers the number of bidders with compensation data available. *t*-Statistics are reported in brackets. *,**,***Percentage of increase in mean is significant larger than zero at the 10, 5 and 1 percent levels, respectively. Panel B reports the relation between valuation measures of bidders and compensation increase. For the entire sample, acquirer banks are ranked by valuation ratios (*P/V*) and separated into quintiles and assigned a rank between 1 and 5, with 1 being the lowest ratio quintile (most undervalued). *P/V* is the price-to-value ratio, where the intrinsic value is estimated using the perpetual residual income model when the discount rate is based on firm-specific CAPM (panel B1) and 12.5% (panel B2), respectively. Differences of *Comp-Chg_1Y* (*Comp-Chg_2Y*) between quintile 5 and quintile 1 are calculated and *t*-statistics are reported in brackets. *n* refers the number of bidders with valuation ratios available.*,**,***Difference in means between ranks 1 and 5 is significant at the 10, 5 and 1 percent levels, respectively, based on the two-sample *t*-test. Panel C reports the ordinary least squares (OLS) regressions on compensation increases of bidders. *P/B* (2 years before) is the price-to-book ratio. *P/V* is the price-to-value ratio, where the intrinsic value is estimated using perpetual residual income model and the discount rate is based on firm-specific CAPM. Acquirer banks are ranked by *P/V* ratios, and separated into quintiles and assigned a rank between 1 and 5, which is referred as *P/V* Rank, with 1 being the lowest ratio quintile (most undervalued). *Premium* is defined as the bid price over the target's stock price, 4 weeks before the takeover announcement, minus 1, times 100 [(bid price/target's stock price)-1] × 100]. Stock = 1 if the bidder uses stock to pay for the deal; 0 for cash payment. Relative size = acquirer market value/target market value. Deal size = announced transaction value. Leverage = acquirer total debt/total assets. For each coefficient, the second row reports the *t*-statistic. *,**,***Coefficient is significantly different from zero at the 10, 5 and 1 percent levels, respectively

Table VIII.

analysts' forecasts of future earnings prospects. The latter measure allows us to estimate *V* for a much larger sample of banks. Hence, unlike previous studies, our analysis uses two *P/V* measures in testing the overvaluation hypothesis. *P/B* (two years before) facilitates to differentiate the *Q* hypothesis (that high-quality bidders improve bad targets more than bad bidders improve good targets) from the misvaluation hypothesis.

The empirical results are generally in support of the misvaluation and management compensation enrichment hypotheses. Alternative relative valuation measures (*P/V*) indicate that bidders are more highly valued relative to their targets in the full sample, especially among deals associated with equity offers. In addition, the evidence reveals

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that highly valued bidders: are more likely to use stock than cash; are willing to pay more relative to the target market price; are more likely to acquire private targets than public targets; earn lower announcement-period returns; fail to create synergy gains; experience long-term underperformance; and reward their top managers with large compensation increases subsequent to mergers.

Notes

1. See the web site of Federal Deposit Insurance Corporation (www2.fdic.gov/SDI/SOB/).
2. Consolidated Reports of Condition and Income, Federal Financial Institutions Examination Council, various years (www.federalreserve.gov/releases/lbr/20101231/default.htm); National Summary Tables of Federal Deposit Insurance Corporation (www2.fdic.gov/sod/sodSumReport.asp?sInfoAsOf = 2010).
3. Hannan and Pilloff (2007) report that less profitable banks in the USA are more likely to be acquired, regardless of the type of acquirer, and find a measure of inefficiency to be positively related to the probability of acquisition for the overall sample. Similarly, Amel and Rhoades (1989), Moore (1997), Knapp *et al.* (2006) and Koetter *et al.* (2007) provide support for the hypothesis that acquisitions serve to transfer assets from poorly managed to better managed banks. Hannan and Rhoades (1987) and Hadlock *et al.* (1999), however, find evidence against the hypothesis of poor managerial performance as measured by ROA. Hadlock *et al.* (1999) suggest that this finding is in agreement with an entrenchment conjecture, where management with significant ownership stakes blocks efforts to be acquired at a reasonable price.
4. Other motives include, the desire to get big to benefit from "too-big-to-fail" government safety nets (Brewer *et al.,* 2007; Brewer and Jagtiani, 2007; Carbó *et al.,* 2008, 2010). On bank size there is some evidence suggesting that big banks benefit from economies of scale. For a review, see DeYoung (2012).
5. Traditional banking is relationship-based: not scalable, long-term oriented, with high implicit capital, and low risk as a result of the law of large numbers. However, trading is transactions based: scalable, short term, capital constrained, and with the ability to generate risk from concentrated positions.
6. Amel and Rhoades (1989), Hannan and Pilloff (2007), and Hernando *et al.* (2009) argue that efficiency gains derived from the acquisition of underperforming targets is the primary motive behind bank mergers. Consistent with Akhigbe *et al.* (2004), Hannan and Pilloff (2007), who argue that probability of being acquired is linked to the target's capital-asset ratio, Hannan and Pilloff's (2007) and Lanine and Vennet (2007) find that banks with higher capital-asset ratios are less likely to be acquired. Hannan and Rhoades (1987), Moore (1997) and Pasiouras *et al.* (2011) show that competition issues play an important role in bank takeover activity. Other factors that been explored in previous studies, include size of a banking institution (Hannan and Pilloff, 2007; Lanine and Vennet, 2007), management incentives (Hadlock *et al.*, 1999), growth prospect (Hannan and Pilloff, 2007; Pasiouras *et al.*, 2011), and economic conditions (Mitchell and Mulherin, 1996), etc.
7. Ang and Cheng (2006) provide direct empirical evidence in support of the market-driven acquisition theory of Shleifer and Vishny (2003) and show that overvaluation increases the probability of firms becoming stock acquirers and the probability of stock mergers being completed, after controlling for other factors.
8. While a firm's Tobin's *Q*, (*P/B*), is a common proxy for misvaluation. Only some of the variation in *Q* comes from errors in investors' beliefs. Much of the variation comes from the rational anticipation of varying firm productivity. Similarly, there is considerable

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controversy about the *P/B* ratio as a mispricing proxy (Rhodes-Kropf *et al.*, 2005). Hence, in this study we use *P/V* as the misvaluation metric.

9. When we use the *P/B* value one year before the merger, we obtain similar results to the reported ones.

10. These results are available upon request. Cornett and Tehranian (1992) also show that acquiring banks experience an increase in EPS during the post-acquisition period (t, t+3years).

11. Following Flannery and James(1984), we also accounted for the interest rate sensitivity of bank stock returns by augmenting the market model with the change in short-term interest rates (i.e. as a second-factor) consisting of US Treasury or US Government guaranteed debt obligations. The returns and abnormal returns are estimated as follows:

$$R_{jt} = \alpha_j + \beta_{j1}\left(R_{mt} - R_f\right) + \beta_{j2}\Delta R_f + \varepsilon_{jt}$$

$$AR_{jt} = R_{jt} - (\hat{\alpha}_j + \hat{\beta}_{j1}\left(R_{mt} - R_f\right) + \hat{\beta}_{j2}\Delta R_f\Big)$$

The results, using this alternative two-factor specification, are qualitatively similar to those reported here and are available upon request.

12. To the best of our knowledge, this is the largest sample that spans a long period of time.

13. The big sample size reduction caused by IBES database availability is likely to influence the consistent of empirical result. So, we also use the constructed perpetual model to estimate the intrinsic values (see panel B of Table II) and provide better result.

14. Mergers shorted by target (bidder) P/V ratio result in quintiles with small number of observations, $n = 14$ ($n = 71$).

15. Among the 492 announcements, not reported but available upon request, 335 are negative suggesting that this result is not driven by outliers.

16. Demsetz (1983) and Shleifer and Vishny (1986) assert that blockholders can serve as effective monitors of managerial performance or facilitate takeovers, so the creation of outside blockholders through mergers can increase firm value.

17. In their review of the post-2000 literature, DeYoung Evanoff and Molyneux (2009) point out that North American bank mergers are (or can be) efficiency improving. When we split the sample into pre- and post-2000 mergers, our results remain unchanged.

18. Estimation of long-run abnormal returns using the control firm approach yields similar results.

19. We have also examined the effects of geographic and business (activity) diversification and the evidence, for brevity not reported here, demonstrates that acquiring banks realize greater abnormal returns when they expand their operations within the same state rather than when they acquire public or private targets in a different state. While target banks reap positive abnormal returns in mergers with bidders from the same state and from different states, they realize higher returns in geographically diversified mergers, suggesting that bidders tend to overpay targets located outside their geographical domain. These results are available upon request.

20. The result concerning the positive relation between bidder's P/V rank and premium is still consistent when we add geographic diversification, activity diversification and leverage as controls. But due to the great reduction of sample size (more than 60 percent smaller), when relative size (the market value of bidder/the market value of target) and deal size are added to the regression, the relation becomes vague, so we do not present here.

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www.

References

Akhigbe, A., Madura, J. and Whyte, A.M. (2004), "Partial anticipation and the gains to bank merger targets", *Journal of Financial Services Research*, Vol. 26 No. 1, pp. 55-71.

Ali, A., Hwang, L.S. and Trombley, M.A. (2003), "Residual-income-based valuation predicts future stock returns: evidence on mispricing versus risk explanations", *Accounting Review*, Vol. 78 No. 2, pp. 377-396.

Alti, A. and Tetlock, P.C. (2011), "How important is mispricing?", working paper, Columbia University, New York, NY.

Amel, D.F. and Rhoades, S.A. (1989), "Empirical evidence on the motives for bank mergers", *Eastern Economic Journal*, Vol. 15 No. 1, pp. 17-27.

Andrade, G., Mitchell, M. and Stafford, E. (2001), "New evidence and perspectives on mergers?", *Journal of Economic Perspectives*, Vol. 15 No. 2, pp. 103-120.

Ang, J.S. and Cheng, Y. (2006), "Direct evidence on the market-driven acquisition theory", *The Journal of Financial Research*, Vol. 29 No. 2, pp. 199-216.

Berger, P.G. and Ofek, E. (1995), "Diversification's effect on firm value", *Journal of Financial Economics*, Vol. 37 No. 1, pp. 39-65.

Bliss, R.T. and Rosen, R.J. (2001), "CEO compensation and bank mergers", *Journal of Financial Economics*, Vol. 61 No. 1, pp. 107-138.

Bouwman, C.H.S., Fuller, K.P. and Nain, A. (2009), "Market valuation and acquisition quality: empirical evidence", *Review of Financial Studies*, Vol. 22 No. 2, pp. 633-79.

Bradley, M., Desai, A. and Kim, E.H. (1988), "Synergistic gains from corporate acquisitions and their division between the stockholders of target and acquiring firms", *Journal of Financial Economics*, Vol. 21 No. 1, pp. 3-40.

Brewer, E. and Jagtiani, J.A. (2007), "How much would banks be willing to pay to become 'Too-big-to-fail' and to capture other benefits?", Research Working Paper RWP 07-05, Federal Reserve Bank of Kansas City, Kansas.

Brewer, E., Jackson, W.E. and Jagtiani, J.A. (2007), "Target's corporate governance and bank merger payoffs", Working Paper, RWP 07-13, Federal Reserve Bank of Kansas City, Kansas.

Carbó, S.V., Kane, E.J. and Rodriguez, F.F. (2008), "Evidence of difference in the effectiveness of safety-net management in european union countries", *Journal of Financial Services Research*, Vol. 34 Nos 2-3, pp. 151-176.

Carbó, S.V., Kane, E.J. and Rodriguez, F.F. (2010), "Evidence of regulatory arbitrage in cross-border mergers of banks in the EU", Working Paper, No. 15447, National Bureau of Economic Research, Cambridge, MA.

Coles, J.L., Daniel, N.D. and Naveen, L. (2006), "Managerial incentives and risk-taking", *Journal of Financial Economics*, Vol. 79 No. 2, pp. 431-468.

Cornett, M. and Tehranian, H. (1992), "Changes in corporate performance associated with interstate and intrastate bank acquisitions", *Journal of Financial Economics*, Vol. 31 No. 2, pp. 211-234.

D'Mello, R. and Shroff, P.K. (2000), "Equity undervaluation and decisions related to repurchase tender offers: an empirical investigation", *Journal of Finance*, Vol. 55 No. 5, pp. 2399-2424.

Demsetz, H. (1983), "The structure of ownership and the theory of the firm", *Journal of Law and Economics*, Vol. 26 No. 2, pp. 375-390.

DeYoung, B., Evanoff, D. and Molyneux, P. (2009), "Mergers and acquisitions of financial institutions: a review of the post-2000 literature", *Journal of Financial Services Research*, Vol. 36 Nos 2-3, pp. 87-110.

المنارة للاستشارات

www.

DeYoung, R. (2012), "Modeling economies of scale in banking: simple versus complex models", in Pasiouras, F. (Ed.), *Efficiency and Productivity Growth: Modeling in the Financial Services Industry*, John Wiley & Sons, Hoboken, NJ, pp. 49-76.

Dong, M., Hirshleifer, D., Richardson, S. and Teoh, S.H. (2006), "Does investor misvaluation drive the takeover market?", *The Journal of Finance*, Vol. 61 No. 2, pp. 725-762.

Doukas, J., Kim, C. and Pantzalis, C. (2010), "Arbitrage risk and stock mispricing", *Journal of Financial and Quantitative Analysis*, Vol. 45 No. 4, pp. 907-934.

Fama, E.F. and French, K.R. (1993), "Common risk factors in returns on stocks and bonds", *Journal of Financial Economics*, Vol. 33 No. 1, pp. 3-56.

Fich, E.M., Starks, L.T. and Yore, A.S. (2010), "CEO deal-making activity, CEO compensation and firm value", working paper, Drexel University, Philadelphia, PA.

Flannery, M.J. and James, C.M. (1984), "The effect of interest rate changes on common stock returns of financial institutions", *Journal of Finance*, Vol. 39 No. 4, pp. 1141-1153.

Frankel, R. and Lee, C. (1998), "Accounting valuation, market expectation, and the book-to-market effect", *Journal of Accounting and Economics*, Vol. 25 No. 3, pp. 283-321.

Fu, F., Ling, L. and Officer, M. (2010), "Acquisitions driven by stock overvaluation: are they good deals?", working paper, Singapore Management University.

Gabaix, X. and Lainder, A. (2008), "Why has CEO pay increased so much?", *Quarterly Journal of Economics*, Vol. 123 No. 1, pp. 49-100.

Gorton, G. (2009), "The subprime panic", *European Financial Management*, Vol. 15 No. 1, pp. 10-46.

Grinstein, Y. and Hribar, P. (2004), "CEO compensation and incentives – evidence from M&A bonuses", *Journal of Financial Economics*, Vol. 73 No. 1, pp. 119-143.

Hadlock, C., Houston, J. and Ryngaert, M. (1999), "The role of managerial incentives in bank acquisitions", *Journal of Banking and Finance*, Vol. 23 Nos 2-4, pp. 221-249.

Haldane, A.G. and May, R.M. (2011), "Systemic risk in banking ecosystems", *Nature*, Vol. 469 No. 2011, pp. 351-355.

Hannan, T. and Pilloff, S. (2007), "Acquisition targets and motives in the banking industry", unpublished working paper, Board of Governors of the Federal Reserve System.

Hannan, T. and Rhoades, S.A. (1987), "Acquisition targets and motives: the case of the banking industry", *The Review of Economics and Statistics*, Vol. 69 No. 1, pp. 67-74.

Harford, J. and Li, K. (2007), "Decoupling CEO wealth and firm performance: the case of acquiring CEOs", *Journal of Finance*, Vol. 62 No. 2, pp. 917-949.

Hernando, I., Nieto, M.J. and Wall, L.D. (2009), "Determinants of domestic and cross-border bank acquisitions in the European union", *Journal of Banking & Finance*, Vol. 33 No. 6, pp. 1022-1032.

Jensen, M.C. (2004), "The agency costs of overvalued equity and the current state of corporate finance", *European Financial Management*, Vol. 10 No. 4, pp. 549-565

Jensen, M.C. (2005), "Agency costs of overvalued equity", *Financial Management*, Vol. 34 No. 1, pp. 5-19.

Kallunki, J.-P., Broussard, J. and Boehmer, E. (2002), *Using SAS in Financial Research*, SAS Press, Cary, NC.

Karaian, J. (2008), "A taste of their own medicine", available at: http://cfo.com/blogs/index.cfm/detail/12832334?f=searchS (accessed June 1, 2011).

Knapp, M., Gart, A. and Chaudhry, M. (2006), "The impact of mean reversion of bank profitability on post-merger performance in the banking industry", *Journal of Banking and Finance*, Vol. 30 No. 12, pp. 3503-3517.

المنارة للاستشارات

www.

Koetter, M., Bos, J.W.B., Heid, F., Kolari, J.W., Kool, C.J.M. and Porath, D. (2007), "Accounting for distress in bank mergers", *Journal of Banking and Finance*, Vol. 31 No. 10, pp. 3200-3217.

Lakonishok, J., Shleifer, A. and Vishny, R. (1994), "Contrarian investment, extrapolation, and risk", *Journal of Finance*, Vol. 49 No. 5, pp. 1541-1578.

Lang, L.H.P., Stulz, R. and Walkling, R.A. (1989), "Managerial performance, Tobin's Q, and the gains from successful tender offers", *Journal of Financial Economics*, Vol. 24 No. 1, pp. 137-154.

Lanine, G. and Vennet, R.V. (2007), "Microeconomic determinants of acquisitions of Eastern European banks", *Western European banks. Economics of Transition*, Vol. 15 No. 2, pp. 285-308.

Lee, C.M.C., Myers, J. and Swaminathan, B. (1999), "What is the intrinsic value of the dow?", *Journal of Finance*, Vol. 54 No. 5, pp. 1693-1741.

Loughran, T. and Vijh, A.M. (1997), "Do long-term shareholders benefit from corporate acquisitions?", *Journal of Finance*, Vol. 52 No. 5, pp. 1765-1790.

McCann, D. (2009), "Board to execs: you're not worth it", available at: http://cfo.com/article.cfm/13604912?f = searchS (accessed May 5, 2011).

Martin, K.J. (1996), "The method of payment in corporate acquisitions, investment opportunities, and management ownership", *Journal of Finance*, Vol. 51 No. 4, pp. 1227-1246.

Mishkin, F. (2006), "How big a problem is too big to fail?", *Journal of Economic Literature*, Vol. 44 No. 4, pp. 988-1004.

Mitchell, M.L. and Mulherin, J.H. (1996), "The impact of industry shocks on takeover and restructuring activity", *Journal of Financial Economics*, Vol. 41 No. 2, pp. 193-229.

Moore, R. (1996), "Banking's merger fervor: survival of the fittest?", *Financial Industry Studies*, pp. 9-15.

Moore, R. (1997), "Bank acquisition determinants: implications for small business credit", working paper, Federal Reserve Bank of Dallas, Dallas, TX.

Myers, S.C. and Majluf, N.S. (1984), "Corporate financing and investment decisions when firms have information that investors do not have", Working paper No. W1396, NBER, Cambridge, MA.

Neale, R.F., Drake, P.P. and Clark, S.P. (2010), "Diversification in the financial services industry: the effect of the financial modernization act", *The B.E. Journal of Economic Analysis & Policy*, Vol. 10 No. 1, pp. 1-28.

Ohlson, J.A. (1995), "Earnings, book values, and dividends in equity valuation", *Contemporary Accounting Research*, Vol. 11 No. 2, pp. 661-687.

Pasiouras, F.S. and Tanna, C.G. (2007), "What drives acquisitions in the EU banking industry? The role of bank regulation and supervision framework, bank-specific and market specific factors", Working Paper Series No. 2007-3, Economics, Finance and Accounting Applied Research, Coventry University, Coventry.

Pasiouras, F., Tanna, S. and Gaganis, C. (2011), "What drives acquisitions in the EU banking industry? The role of bank regulation and supervision framework, bank-specific and market specific factors", *Financial Markets, Institutions & Instruments*, Vol. 20 No. 2, pp. 29-77.

Rajgopal, S. and Shevlin, T. (2002), "Empirical evidence on the relation between stock option compensation and risk taking", *Journal of Accounting and Economics*, Vol. 33 No. 2, pp. 145-171.

Rappeport, A. (2008), "Critics call out bailout plan's exec-pay provisions", available at: http://cfo.com/article.cfm/12328654?f = searchS (accessed June 15, 2011).

Rau, P.R. and Vermaelen, T. (1998), "Glamour, value and the post-acquisition performance of acquiring firms", *Journal of Financial Economics*, Vol. 49 No. 2, pp. 223-253.

المنارة للاستشارات

www.

Rhodes-Kropf, M. and Viswanathan, S. (2004), "Market valuation and merger waves", *Journal of Finance*, Vol. 59 No. 6, pp. 2685-2718.

Rhodes-Kropf, M., Robinson, D. and Viswanathan, S. (2005), "Valuation waves and merger activity: the empirical evidence", *Journal of Financial Economics*, Vol. 77 No. 3, pp. 561-603.

Servaes, H. (1991), "Tobin's Q and the gains from takeovers", *Journal of Finance*, Vol. 46 No. 1, pp. 409-419.

Shleifer, A. and Vishny, R. (2003), "Stock market driven acquisitions", *Journal of Financial Economics*, Vol. 70 No. 3, pp. 295-311.

Shleifer, A. and Vishny, R.W. (1986), "Large shareholders and corporate control", *The Journal of Political Economy*, Vol. 94 No. 3, pp. 461-488.

Walkling, R.A. and Edmister, R.O. (1985), "Determinants of tender offer premiums", *Financial Analysts Journal*, Vol. 41 No. 1, pp. 27-37.

Further reading

Houston, J.F., James, C. and Ryngaert, M. (2001), "Where do merger gains come from? Bank mergers from the perspective of insiders and outsiders", *Journal of Financial Economics*, Vol. 60 No. 2, pp. 285-332.

Jovanovic, B. and Rousseau, P.L. (2002), "The Q-theory of mergers", *The American Economic Review*, Vol. 92 No. 2, pp. 198-204.

Lang, L.H.P. and Stulz, R. (1994), "Tobin's q, corporate diversification and firm performance", *Journal of Political Economy*, Vol. 102 No. 6, pp. 1248-1280.

Palia, D. (1993), "The managerial, regulatory, and financial determinants of bank merger premium", *Journal of Industrial Economics*, Vol. 41 No. 1, pp. 91-102.

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