**The Value Added by Private Equity in Mergers and Acquisitions by Financial Institutions**

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**Abstract**:

We compare and contrast (i) mergers and acquisitions (M&As) by financial institutions (FIs) that had the involvement of one or more private equity firms (PE) with (ii) acquisitions with no private equity involvement. We find that the M&A announcement abnormal stock returns are higher for acquisitions with- than without private equity involvement. Likewise, the post-announcement long-term annual stock returns are higher for deals with PE involvement. These deals also produce higher operating performance, and their stocks exhibit less volatility in the months following the announcement after controlling for a host of confounding variables. Our results are robust to year fixed effects, industry (i.e., business line) effects, and self-selection bias.

Keywords: Financial Institutions; Banks; Mergers and Acquisitions in The Financial Industry; Private Equity.

JEL Classification: G20, G21, G34

1. **Introduction**

The CFA Institute defines private equity as “*the entire asset class of equity investments that are not quoted on stock markets. Private equity stretches from venture capital (VC)—working with early-stage companies that may be without revenues but that possess good ideas or technology—to growth equity, providing capital to expand established private businesses often by taking a minority interest, all the way to large buyouts (leveraged buyouts, or LBOs), in which the private equity firm buys the entire company. When the target is publicly traded, the private equity fund performs a public-to-private transaction, removing the target from the stock market.*”[[1]](#footnote-1)

Private equity (PE) capital has come to the rescue of financial institutions (FIs) at the most critical of times, and in many instances, they were the only viable options for a brief period. For example, two of the largest bank failures in the 2007-2008 subprime mortgage crisis were BankUnited, F.S.B., and IndyMac Bank, F.S.B., and both were resurrected by private equity buying directly from the Federal Deposit Insurance Corporation (FDIC). The international law firm White & Case LLP writes that "*After stepping into the space vacated by traditional banks and strategic investors following the financial crisis, private equity has established itself as a force to be reckoned with in financial services deal making*."[[2]](#footnote-2) PE firms have to navigate significant regulatory hurdles to establish their financial industry presence, such as the Bank Holding Act of 1956, the Change in Bank Control Act, and numerous guidance issued by the Federal Reserve and the FDIC. Although the 2007-2008 subprime mortgage crisis has also made regulators realize that changes in legislation and regulations are required to open the investor base financial institutions (FIs) can rely upon to shore up capital, especially during crises. This motivates us to explore the value PEs add to financial institution mergers and acquisitions in this study.

We contribute to the limited research on PE involvement in financial institution mergers and acquisitions by examining the value that PEs add to these transactions through profitability, performance, and risk. The results of better performance in the M&As involving PEs stem from the enhanced competition from consortiums, which can allow PEs to combine resources (Cho et al., 2002), information (Debrock and Smith, 1983), and develop synergies with consortium members (Song, 2004). The added value from PEs may come from the ability to pool finances (Cho et al. 2002) and information to provide more accurate estimates (DeBrock and Smith, 1983). Glanfrate and Gouigoux (2015) find that private equity funds' investments lead to improvements in banks' operating performance using a sample of PE firms around the world. The value drivers include reductions in loan loss provisions, the selloff of non-performing loans (NPLs), improvement in the banks' asset quality, and gains realized on asset sales. The banks are left on more solid grounds following the exit of private equity funds. Glanfrate and Gouigoux (2015) focus on post-investment performance and operating metrics, examining banks throughout the world. Our paper differs from theirs in that we focus on a U.S. sample.

Furthermore, we examine long-term buy and hold abnormal returns, which may have implications for long-term investors. Graf, Kaser, and Schmidt (2012) investigate the market timing ability of PEs investing in the financial institutions industry. The authors focus on the financial institutions industry, which is large, heterogeneous and includes mortgage bank, depository and trading services, and consumer financing products, while our paper focuses on banks which are subject to specific regulations.

Lower risk with PE involvement stems from the experience PEs have with M&As. They are well-versed in acquiring investments, using the buy and build strategies; they create synergies and improve operational efficiency, which in turn reduces firm risk. White & Case LLP. (2017) discuss how private equity implements the buy and build strategy in order to add value to target firms. PE-involved acquisitions may also be a quality signal of the deal because of the experience of PE firms in implementing the buy and build strategy, which could reduce perceived risk associated with the acquisition by investors. PE investments are mainly LBOs, because they invest in companies, subsequently, building expertise in making these types of investments. PEs use of the buy and build strategy implies that they are turning around companies, thereby improving underutilized or inefficiently managed assets, operations, and resources of the target company. The experience and expertise from PEs would also improve long-term and operating performance.

Our primary research question is whether mergers with private equity involvement perform better than mergers without private equity involvement. A series of tests are conducted looking at the cumulative abnormal returns for the bidder firm around the M&A announcement of a deal involving PE. We also consider the post-announcement long-term stock returns, the operating performance, and the volatility in the stock price. Based on a sample of financial institutions (FIs) from 2005-2017, we find that acquisitions with PE involvement perform better around the announcement date (yielding positive cumulative announcement abnormal stock returns), in the long term (yielding positive long-run buy and hold abnormal returns of the acquiring FI's stock). The positive effects seem justified as the acquiring FI's operating performance improves post-acquisition. There is also a lower variability in the stock returns of acquirers post-acquisition, which points to lesser uncertainty in the firm's stock value.

1. **Literature Review**

PE presence in the financial sector is not solely due to external factors. The value-added by PE is well documented in Meuleman, Amess, Wright, and Scholes, 2009; Wood and Wright, 2009; Axelson, Stromberg, and Weisbach, 2009; Cumming, and Walz, 2010; and Gompers et al., 2016. PE firms can add value to startup (Fintech startups, the likes of Circle Internet Financial Group LLC, Motif Investing Inc. and Square Inc) or challenger banks (for example, Pollen Street Capital and BC Partners’ takeover of Shawbrook) or those in distress (U.S. private equity firms were involved in 81% of distressed-loan transactions in Europe in 2015 (KPMG, 2016)).[[3]](#footnote-3) They can push for the bank to improve its efficiency, such as improving the banks' back office, moving more of its businesses online, diversifying the bank offerings, and harnessing technology's disruptive power to upend the traditional business models. Advent International and BC Partners have successfully targeted payment processing as the primary subsector to focus on Nets and WorldPay, two payment processing companies. There is also little evidence that private equity firms systematically target cost-cutting retrenchments to increase short-term profitability. Anecdotal evidence suggests that sometimes PE investors want a bank to add to its resource base to fuel growth, and some banks have doubled in size with the help of PE investors. Many PE firms are proponents of the buy-and-build strategy (White & Case, 2017).

PEs provide monitoring as they sit on boards and oversee stringent loan covenants to reduce adverse selection (Thompson and Wright, 1995; Gompers et al., 2016). The international law firm White & Case LLP reports that Private equity houses (including the likes of AnaCap, Apollo, Bain Capital, Fortress, and Pimco) now represent the largest universe of buyers for NPLs. The evidence suggests that private equity has filled an important void in the financial industry as an investor and will now have a more established presence. Henceforth, they build specialist financial services skills and target specific niches within the sector.

The fact that a PE alone is unlikely to secure a sizeable share of a FI if it is not a bank holding company (BHC) in bank acquisitions, for example, leads to questions as to how they will be able to create value in such acquisitions.[[4]](#footnote-4) They can achieve that by forming a consortium and submitting a joint bid. Joining forces and submitting joint bids for the same target (i.e., forming a group and submitting a single bid) would tantamount to collusive practices that secure a lower price for the consortium. Boone and Mulherin (2011) examine this issue but do not find evidence that private equity consortiums facilitate collusion. Anecdotal evidence also does not corroborate with price exploitation by joint bids. For example, the *Financial Times* report that one in two equity deals is priced at over 11 times the target company's EBITDA, deals fueled by much leverage.[[5]](#footnote-5)

Despite the finding, Boone and Mulherin (2011) note that government agencies and several class-action lawsuits against major private equity firms (such as Bain Capital, Blackstone Group, Texas Pacific, Kohlberg Kravis Roberts, and Goldman Sachs Private Equity) argue that they engage in collusive behavior that reaps them supra-competitive, inflated, and monopolistic returns. However, a consortium allows the pooling of resources and information, with each party focusing on the deal's critical aspects. More importantly, reducing information costs allows greater competition than a setting that does not allow joint bidding. Both the collusion and competition hypotheses of Boone and Mulherin point to value-added by private equity firms in the M&A market. Value in M&A is further preserved if we consider the findings that the premiums paid are lower in private equity deals (Billett, Jiang, and Lie, 2010).

As per the CFA Institute, PE funds may account for 15%-18% of all mergers and acquisitions' value. Metrick and Yasuda (2010) report that buyout funds account for about 25% of global M&A activities. Archya, Franks, and Servaes (2007) report acquisitions of $27.4 billion (for Harrah's entertainment) and $17.4 billion (for Freescale SemiConductor) by Apollo and Texas Pacific, and Blackstone, Carlyle, Permira, and Texas Pacific, respectively. M&A is a complex undertaking in terms of value creation for the bidding firm, and a study of PE involvement will add to our understanding of the sources of value in M&As. Private equity reach is broadening, and they are active in markets outside the US, like Europe (for example, Blackstone's €1 bn purchase of 60% stake in Luminor, a Baltic bank, in 2018) and Asia. There is much money flowing into private equity with considerable growth in their assets under management (AUM) (for example, AnaCap Financial Partners, Corsair Capital of J.P. Morgan, Blackfin and JC Flowers), and consequently, their involvement in the financial sector is expected to grow. Press reports suggest that with unprecedented levels of capital at their disposal, PE is searching for new sectors such as banking. In 2015, private equity buyouts accounted for almost 20% of all European financial services M&A by deal value (White & Case, 2017), and the number of buyout houses actively pursuing financial services deals globally increased from 1,449 in 2014 to 1,728 in 2015 reports research firm Preqin.

There exists a significant complementarity between private equity and banks. Since the subprime mortgage crisis of 2007-2008, traditional banks have been forced to recapitalize and build larger capital buffers while pulling out of risky lending. Consequently, many bankers left to join or set up private equity firms that raise funds, among others, from high net worth individuals, pension funds, insurance companies, endowments to explore and lend to borrowers that traditional banks have deserted. Because private equity firms are lightly regulated, they are able to take advantage of the void left by traditional banks in the private debt market.[[6]](#footnote-6) Besides, private equity firms are partners in many businesses to which they lend. Overall, private equity firms (e.g., Oaktree Capital Management, HPS, Blackstone, Apollo, and Ares) are developing specialist lending skills in niche markets that complement traditional banks. A deal to acquire a private equity business would assist a more traditional bank even if it is to leverage the learned skills in a less risky undertaking (for example, leasing and business contract purchase of specialized capital equipment) but returns higher yields or provides diversification prospects than the bank can achieve presently.[[7]](#footnote-7) Banks' returns have dwindled as interest rates get closer to zero. In their drive to create value and wealth, many look at private equity managers whose pedigree would assist them in exploiting new avenues while not running afoul of the regulatory requirements at the same time. As mentioned earlier, private equity managers develop specialist skills in niche finance sectors and are more adept at producing double-digit annual returns.

1. **Hypothesis Development**

Studies document superior performance of investment with PE involvement. Specifically, for M&As with PE involvement where superior performance is observed, reasons cited include competition hypothesis (Boone and Mulherin, 2001), synergies (Song, 2004), market timing (Graf, Kaser, and Schmidt , 2012) and monitoring (Jensen, 1989; Kaplan and Stromberg, 2009). PE investments are mainly LBOs and create expertise from investing in companies. While studies are limited about the role of PEs in financial institutions, the sparse evidence suggest positive effects such as superior operating performance (Graf, Kaser, and Schmidt , 2012). Some reasons for value additivity from PE involvement include enhanced competition from consortiums, which can allow PEs to combine resources such as capital (Cho et al., 2002), information and skill to provide more accurate estimates (Debrock and Smith, 1983) and development of synergies with consortium members (Song, 2004).

Many financial institutions (FIs) are experts in restructuring activities and help companies in making deals. Prior studies have shown the role of PE in company restructuring activities. This role creates experienced investing in companies. In our case, we are examining whether the PE role is still valid when the acquirer is the "expert in dealing." Against this backdrop, we also need to account for the fact that private investment funds complement FIs in areas too risky for FIs to venture on their own. For example, lending to subprime borrowers, where funds like D.E. Shaw Group and Oaktree Capital Management have the requisite expertise and benefit from more lax oversight from the regulators. The stringent regulations in FIs industry make it interesting avenue to examine the effect of PE involvement. For example, PEs are limited in the amount of leverage allowed to engage in mergers and acquisitions. Another restriction is that PEs cannot hold controlling interest in banks except when they are bank holding companies (BHCs). Hence examining how the involvement of PEs may affect value and operating efficiency of these financial institutions in M&As is necessary. This is because they may not be able to influence decisions in FIs as they would traditional corporations. However, the experience and expertise from PEs, along with strong evidence of a positive effect makes it most likely that the skills would translate similarly for investments in FIs. Despite the regulatory hurdles PEs face in the financial industry, PEs have performed well when involved in non-bank financial institution investments (Graf, Kaser, and Schmidt. 2012). Thus, we examine how PE involvement affects investor perception through market performance, as well as the risk and operating performance.

We expect for a positive effect on returns to deals involving PEs because of evidence of positive performance from investment experience and expertise and expected improvement in operational efficiency of PEs (Glanfrate and Gouigoux, 2015). Subsequently, the market should respond positively to the news of PE involvement. Therefore, we predict that PE-involved acquisitions have higher values of short term and long-term performances. Similarly, for operating performance we would expect a positive effect.

In addition to the investment expertise, PEs tend to use a buy-and build strategies that change organizational structure and culture (White and Case, 2017). These strategies tend to generate positive synergies and improve operational efficiency, which can be perceived as reducing risk in traditional M&As (Kim and Palia, 2013). Previous research shows how strategic alliances help organizations share the costs and benefits from endeavors that are mutually beneficial (Robinson, 2008). PEs build strategic alliances when they work together on M&As Therefore, PE-involved acquisitions may be a quality signal of the deal and of reduced perceived risk. Consequently, we predict that PE-involved acquisitions have lower volatility due to increases in efficiency and expert monitoring.

1. **Data**

We obtain the sample of mergers and acquisitions involving financial institutions from Standard and Poor's Global Market Intelligence SNL database from 1990-2018. Since our focus is on the impact of private equity (PE) in mergers and acquisitions (M&As) by financial institutions (FIs), we retain only the years in which there are records of private equity involvement. Thus, our sample period is from 2005 through 2017. We include in the final sample only deals for which we can identify the acquirer firms in CRSP. We report the sample distribution in Table I. Acquisitions with PE involvement comprise about 14% of the sample.

[INSERT TABLE 1]

There is not much data reported on the size of PE firms' involvement in M&As of FIs. The SNL database indicates whether a given deal, offering, funding, or transaction has private equity involvement and no more. It is rare for PEs to singly bid on a FI or assume control of a FI. In most cases, acquisitions of more than a quarter of the voting rights will be met with regulators’ disapproval; as such, most PE involvement is limited to a low percentage of voting acquired by an individual PE firm. As explained by the law firm Hunton & Williams, most transactions (i.e., private equity investments in financial institutions) involve acquiring a minority interest to avoid the ramifications of "control" of a financial institution.[[8]](#footnote-8) So we know that the regulation does not allow private equity to acquire a controlling stake in a FI. Thus, the possibilities reflected by the SNL data would include (i) deals in which FIs join forces with PE to acquire a target (which is less likely), and (ii) deals in which FIs are purchasing targets that are backed by private equity (which is more likely).

As discussed earlier, PE firms follow a buy-and-build strategy with FIs. Once the FI business prospects are enhanced, the PE investors may either list the FI or sell it. The anecdotal evidence reviewed suggests that many exit deals are coveted by more established FIs (for example, the sale of WorldPay). Following the exit of PE, the firms (Klarna, Nets and WorldPay, for example) are subsequently subject to more bids. This demonstrates that private equity firms have the ability to create enduring value at FIs. We test the hypothesis that the investors' reactions to deals involving FIs are overwhelmingly positive.

The M&A landscape among FIs is quite rugged. For instance, and especially before the 2007-2008 subprime mortgage crisis, banks were heavy investors in private equity. However, with pressure to shed non-core businesses from the regulators in the post-crisis era, many banks have started to dispose of their private equity interests. Our sample period's starting point precedes the onset of the subprime mortgage crisis, and as such, some of our M&A deals will include banks acquiring private equity assets. Having said that, we do observe a lull in M&As between 2007 and 2013 only for the market to gather momentum and increase annually until the end of the sample period.

We present the distribution of acquirer business lines in Table 1. Banks dominate the sample, i.e., 87% of the sample size. However, we had broadened the sample size to cover all financial institutions, including asset manager (0.51%), broker-dealer (2.95%), Fintech (0.34%), underwriting (1.43%), savings banks, thrifts, and mutual (6.4%), and specialty lenders (1.18%). Given each business line's uniqueness on specific dimensions, despite all of them being highly regulated, we account for these fixed effects in the multivariate regressions, as we explain later.

First, we report the summary statistics in Table II. Results for the full sample and private equity subsample are presented in Panels A and B, respectively. The average (median) deal size is $521 million ($51 million) for the full sample and $297 million ($78 million) for the private equity subsample. About 20% of deals are financed with cash in both the full sample and the private equity sample compared with 10.8% stock financing for the full sample and 14.1% for the private equity sample. Profitability is higher in the full sample at 1.04% and 0.928% for the private equity sample.

[INSERT TABLE 2]

1. **Methodology and Results**
   1. ***Acquirer’s Cumulative Abnormal Returns (CARs)***

Our first variable of interest is how do investors react to a deal in which PE is involved. To gauge investors' interest, we calculate the acquirer's announcement period cumulative abnormal returns (CARs). Day 0 represents the day of the deal announcement. Relative to that day, we obtain the acquirer’s daily returns in the (-255, -31) days window to estimate the following four alternative models.

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

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

Fama-French 3-factor model with industry returns as market benchmark:

Fama-French 4-factor model with industry returns as market benchmark:

In the above equations, is the excess return of firm i on day t. is the excess return on the CRSP equally-weighted index on day t. , and are the size premium factor, book-to-market premium factor and momentum factor from Professor Kenneth French website. Since banks and financial institutions are regulated, we calculate the excess returns of the industry portfolios (using Fama-French 48 sector classification) as the alternative market benchmark in equations (3) and (4) instead of CRSP equally-weighted index.

We obtain the parameter estimates from the above equations using the pre-event period's daily returns and use the parameter estimates to calculate the predicted returns for the acquirers in the event period. We subtract the acquirers' actual returns in the event period from the predicted returns to obtain the abnormal returns. We then calculate the cumulative abnormal returns (CARs) over several alternative windows (-2,+1), (-1,+1), and (0,+1), which capture the market reactions to the acquisition news in the event period.

We compare the CARs accrued to the acquirers between acquisitions with private equity involvement and acquisitions without such involvement in Table III. Regardless of the estimation method and the measured windows, a consistent result stands out; acquirers experience statistically and economically significantly higher CARs when there is private equity involvement in the deals. This finding supports Humphery-Jenner, Suatner, and Suchard (2017) who find positive CARs for PE involvement in cross-border M&As.

[INSERT TABLE 3]

Consistent with the literature on bidder CARs (Bradley, Desai and Kim, 1998; Mulherin and Boone, 2000), we find that the mean and median CARs are all negative. However, when we compare PE involvement to the deals without PE involvement, we find that both the mean and median CARs for any window are higher for deals with PE involvement. For example, using mean figures, the (-2, +1) window CARs are higher by a figure ranging between 0.764% and 0.98% (depending on the method) for acquisitions with PE involvement than without. A similar trend is observed using median figures irrespective of the windows in days surrounding the announcement.

The announcement period returns could reflect the manifestation of a host of factors—both deal and bidder characteristics, including PE involvement. As such, we run multiple regression on the acquirer CARs controlling for several factors known to influence the returns and a dummy variable representing deals with PE involvement. In Table IV, we report the OLS regressions of the acquirers’ CARs using the following model.

The dependent variables () are the acquirers’ CARs in (-2, +1) and (-1, +1) days windows, alternatively. The CARs are estimated from the Fama-French 4-factor model with the CRSP EW index as the market benchmark (in Panel A) and from the Fama-French 4-factor model with Fama-French 48-Sector Returns as the market benchmark (in Panel B).[[9]](#footnote-9) The independent variable of interest is the dummy variable for deals with private equity involvement (*PRIVATE EQUITY*). We control for the ratio of the deal value to the acquirer total asset (), the dummy variable for acquisitions by acquirers and targets in the same business (), the dummy variable for acquisitions of publicly-traded targets (), the dummy variable for acquisitions of U.S. targets (), the dummy variable for cash-only acquisitions (, the dummy variable for stock-only acquisitions (, the natural log of the acquirer total asset before the acquisition (), the acquirer return on asset percentage (, the acquirer liquidity ratio ( ), and its equity-to-asset percent ().

[INSERT TABLE 4]

Consistent with the univariate results in Table III, the variable's coefficient is positive and significant at the 5% level. In Panel A of Table IV, we observe that PE-backed acquisitions outperform non-PE-backed acquisitions by 9% and 9.1% in models 1 and 2, respectively. The results hold in Panel B using Fama-French 48-Sector Returns as a market benchmark. Regarding the other variables affecting the announcement period CARs, we find that investors' reception of acquisitions of public targets is underwhelming. The coefficient of the dummy variable representing public targets is negative and highly significant across all four models.

* 1. ***Acquirer’s Buy and Hold Abnormal Returns (BHARs)***

The analysis of the announcement period returns suggests that investors' reaction to FI acquisitions involving PE is met more favorably than acquisitions without PE involvement. Various studies document that the effect is not complete at the time of the announcement. For instance, should the acquisition prove to be more successful than initially thought, then the stock returns following the announcement would continue to stay positive in the long-run, ceteris paribus. Conversely, overreactions to the announcement will be corrected in the form of long-term negative returns. Therefore, it is imperative to consider the post-acquisition long-run stock returns of acquirers in line with Agrawal, Jaffe, and Mandelkar (1992), and Moeller, Schlingemann, and Stulz (2003). This section examines the impact of PE involvement on the acquirers' long-run stock price performance. We calculate the acquirers' 12-, 24-, and 36-month buy-and-hold returns. We then subtract the buy-and-hold returns on the CRSP equally-weighted index from the acquirer's BHR. We refer to the difference as the acquirer's buy-and-hold abnormal returns (BHARs).

We compare the BHARs accrued to the acquirers in deals with private equity involvement and deals without such involvement in Table V. We provide statistics for the 12, 24, and 36 months following the M&A announcement, respectively. In each window, the acquirers in deals with PE involvement outperform acquirer in deals not involving PE. The differences in mean BHARs are 6.57%, 9.14%, and 14.76%, respectively, and all significant at the 5% level or beyond. The corresponding median differences are 4.76%, 2.53%, and 3.48%, respectively. Overall, the BHARs are significantly higher among acquirers in deals with private equity involvement compared to acquirers in deals without such involvement. The hypothesis that PE involvement leaves behind an enduring legacy of strong performance to investors' satisfaction is valid.

[INSERT TABLE 5]

In Panel B of Table V, we report the OLS regressions of the acquirers’ BHARs using the same independent variables as in Model (5). The dependent variable is either the 12, 24- or 36-month post-announcement BHAR of the acquirer in alternate regressions. The independent variable of interest is the dummy variable for deals with private equity involvement (*PRIVATE EQUITY*).

Consistent with the univariate result in Panel A of Table V, the coefficient on the variable is positive and significant at the 5% level in the (+1, +36) month window and significant at the 10% level using (+1, +24) month window. PE-backed acquisitions have about 4.0% and 3.8% increase in BHARs over 3 and 2 years, respectively, relative to non-PE backed acquisitions post-announcement. Overall, we interpret the results as a more significant long-term value generation for PE-backed acquisitions than non-PE backed acquisitions, consistent with our prediction. The long-run abnormal stock returns are also positively related to the target being a domestic firm, cash-financed acquisition, the acquirer's profitability (ROA), and liquidity. Conversely, the stock returns are inversely related to target size and acquirer's leverage (ratio of FI's equity-to-total asset).

* 1. ***Acquirer’s Stock Returns Volatility***

High average returns in favor of deals with PE involvement as opposed to deals without PE does not establish the consistency with which investors can rely on those gains. In other words, if there is high volatility in the returns, then the high average returns observed could be compensation for the high volatility. To disentangle reliably positive returns due to PE involvement as opposed to stock return volatility, we calculate the standard deviations of the daily returns (TOTRETVOL) of the acquirers in the pre-event period (e.g., from day -255 to day -31) and in the post-event period (e.g., from day +31 to day -255). We then subtract the pre-event TOTRETVOL from the post-event TOTRETVOL to compute the change in the total return volatility (TOTRETVOL\_CHANGE). To the extent that PE involvement makes gains more certain and enduring, we hypothesize that the change in volatility from before to after announcement would be lower for acquisitions involving PE than the other acquisitions.

We compare the change in the daily stock returns' volatility between the acquirers in deals with private equity involvement and deals without such involvement in Table VI. In Panel A, we report the mean and median total return volatility for each of the acquirers' groups in the pre-event period, post-event period, and the change. While acquirers in deals with private equity involvement experience a reduction in total stock return volatility (from 1.82% to 1.74% using mean figures, or from 1.60% to 1.57% using median figures), acquirers in deals without such involvement experience an increase in total stock return volatility (0.14% and 0.02% using mean and median figures, respectively); the difference in the total return volatility change is statistically significant at the 5% level. The difference in the volatility shifts between PE and non-PE deals is statistically significant at the 0.01 level. It shows a decline in PE deals instead of an increase in volatility in non-PE deals.

[INSERT TABLE 6]

In Panel B of Table VI, we test for the decline in daily stock return volatility between PE and non-PE deals using OLS regressions following model (5). The dependent variable is the change in the acquirers’ risk from the pre-event period to the post-event period. *RISK CHANGE* is total return volatility change. Consistent with the univariate results in Panel A of Table VI, the coefficient on the variable is negative and significant at the 1% level. Acquisitions with PE involvement exhibit about 8% less risk relative to the reference group, i.e., acquisitions with no PE involvement. The stock returns post-announcement is sustainable and less volatile in PE deals than non-PE deals. The change in stock return volatility is also inversely related to the acquirer's liquidity and leverage (i.e., the ratio of FI's equity-to-total assets). However, deals financed with the acquirer's stock as well as the acquirer size add to post-announcement stock return volatility.

* 1. ***Acquirer’s Operating Performance Changes***

Healy, Palepu, and Ruback (1992) find that post-acquisition performance is driven by improvements in asset productivity relative to their industries, leading to higher operating cash flow returns. The authors further find that these improvements are more significant for firms with highly overlapping businesses. Since we are focused on financial institutions, most acquisitions are of a related target, i.e., a firm operating in the financial industry. As such, the findings of Healy et al. (1992) may manifest in our sample. Simultaneously, the positive market reaction and higher stability in stock prices for deals with PE involvement suggest that the positive effect on operating performance may positively correlate with PE involvement. In this section, we examine the impact of private equity involvement on the acquirers' operating performance. We look at three operating performance measures, including ROA, NET INTEREST MARGIN, and YIELD / COST SPREAD. ROA is the ratio of net income to average assets. NET INTEREST MARGIN is the ratio of net interest income to average earning assets. YIELD / COST SPREAD is the yield on earning assets (which is the ratio of total interest & dividend income to average earning assets) minus the cost of interest-bearing liabilities (which is the ratio of total interest expense to average interest-bearing liabilities). We calculate the change in each of the three measures as the differences between the post-event and pre-event periods.

We compare the change in the operating performance between the acquirers in deals with private equity involvement and deals without such involvement in Table VII. In Panel A, we report the mean and median operating performance for each of the acquirers' groups in the pre-event period, post-event period, and the change. Acquirers in deals with private equity involvement experience significantly better operating performance change than acquirers in deals without such involvement. Looking at M&As with PE involvement, we observe increases in ROA using median figures and increases in Net Interest Margin using mean figures. The benefits of PE involvement are more evident when the deals are compared to those without PE involvement. Irrespective of the measure used, the change in the operating performance measures for deals involving PE is always higher than the deals not involving PE by 11.3%, 11.6%, and 11.6% using mean figures representing changes in ROA, Net Interest Margin, and Yield/Cost spread, respectively. The corresponding median changes are 13.5%, 8%, and 9%, respectively.

[INSERT TABLE 7]

In Panel B of Table VII, we report the OLS regressions of the acquirers’ operating performance change using Model (5). The dependent variables are the changes in the acquirers’ operating performance, i.e., change in ROA (in model 1), change in NET INTEREST MARGIN (in model 2), and change in YIELD / COST SPREAD (in model 3), from the pre-event period to the post-event period. Consistent with the univariate results in Panel A of Table VII, the coefficient on the PRIVATE EQUITY variable is positive and significant at the 5% level in all three models. In the multivariate setup, deals with PE involvement yield improvements in operating performance relative to deals without PE by 5.8%, 9.5%, 8.4% in ROA, Net Interest Margin, and the ratio of yield-to-cost spread, respectively. The acquirer's liquidity and leverage continue to be related to the performance measures following the M&A. In this case, they are positively related to the changes in operating performance.

* 1. **Robustness checks**

We conduct several robustness checks to ensure that our results are not driven by self-selection bias and other confounding effects.

* + 1. ***Self-Selection Bias***

We account for self-selection bias, i.e., the possibility that private equity investors select to invest in better deals in the first place, using the Heckman two-stage regressions. In the first stage, we estimate a logistic regression for the probability of private equity involvement. We obtain the predicted probabilities from the first stage regression to calculate the inverse Mills ratios. We include them in the second stage regressions of CARs, BHARs, changes in stock return volatility and operating performance, respectively.

In Panel A of Table VIII, we report the logistic regression results for the probability of private equity involvement. The outcome variable takes a value of 1 in mergers with PE involvement, else it takes a value of 0. The model is based on the following predictor variables, i.e., the natural log of lagged tier 1 capital (LN(L.TIER 1 CAPITAL)), lagged returns on asset (L.ROAA), lagged liquidity ratio (L.LIQUIDITY), the logarithm of firm age (LOG(AGE)), and the logarithm of the number of financial institutions in the same state (LOG(FIRM SAME STATE)). The results from Panel A of Table 8 suggest that acquisitions involving PE are positively related to the acquirer's Tier 1 capital and that the acquirer and target are from the same state. Acquirers also tend to be younger firms.

[INSERT TABLE 8]

In Panel B of Table VIII, we repeat the regressions of CARs (in models 1 & 2), BHARs in (+1,+12) months window (in model 3), BHARs in (+1,+36) months window (in model 4), change in stock return volatility (in model 5) and operating performance change (in models 6, 7 and 8) but controlling for the inverse Mills ratios obtained from the logistic regression in Panel A of Table VIII. For brevity, we report the coefficients on the main variables of interest, PRIVATE EQUITY only. The results are qualitatively similar to the preceding tables, confirming the consistency of the results even after controlling for potential self-selection issues. In other words, private equity is positively associated with announcement period CARs, long-term BHARs, positive changes in operating performance, and negative changes in stock return volatility when compared to deals with no private equity involvement.

* + 1. ***Detangling the Effects of Bank Size – Large vs. Small Acquirers***

A few large institutions dominate the financial landscape, and the financial sector is the one where the phrase "too big to fail" sprung to emphasize how important and systemic are some of the largest FIs. Their size also yields them considerable influence in the M&A market. For example, the *American Banker* reports that most M&As in the banking sector involve smaller sellers relative to buyers. In 2019, for instance, 75% of the targets had less than $500 million in assets, with a majority among them under $250 million.[[10]](#footnote-10) As such, the effectiveness of PE involvement in M&A deals may be subject to the acquirer size. Table IX performs the regressions of CARs, BHARs, changes in stock return volatility, and operating performance changes separately for the subsample of acquisitions by smaller acquirers and the subsample of acquisitions by larger acquirers based upon whether the lagged asset of the acquiring firm is smaller or larger than the median sample value. We report the coefficients on the primary variable of interest for brevity, PRIVATE EQUITY.

[INSERT TABLE 9]

The coefficient of the dummy variable representing deal with PE involvement is of the expected sign and statistically significant in large banks' subsample only. The positive association between the various performance measures and deals involving PE and the inverse association between such deals and acquirer’s post-announcement stock return volatility is statistically significant only in the subsample of large banks. Our findings suggest that large FIs continue to generate the most wealth in M&As in the financial sector. We note that managers' pay is positively linked to the size of the FI (Rosen, 2004) as well as size confers considerable power to the firm in dealing with PE-backed targets, in buying targets to chase growth, and buying the competition to pursue a "quiet life' (also see Berger and Hannan, 1998). For reasons like these, large banks reap the benefits of M&A deals involving PE.

1. **Conclusion**

This paper examines whether mergers and acquisitions (M&As) with private equity (PE) involvement perform better than mergers without private equity involvement. The sample of acquirers is financial institutions, mostly banks and other types of lenders. A series of tests are conducted looking at the cumulative abnormal returns for the bidder or acquirer firm around the M&A announcement of a deal involving PE. We also consider the post-announcement long-term stock returns, the operating performance, and the volatility in the stock price. Based on a sample of financial institutions (FIs) from 2005 to 2017, we find that acquisitions with PE involvement perform better around the announcement date (yielding positive cumulative announcement abnormal stock returns), in the long term (yielding positive long-run buy and hold abnormal returns of the acquiring FI's stock. The positive effects seem justified as the acquiring FI's operating performance improves post-acquisition. There is also a lower variability in the stock returns of acquirers post-acquisition, which points to lesser uncertainty in the firm's stock value. Our findings are robust to the self-selection bias. Nonetheless, these effects are statistically significant among large acquirers than smaller ones. Given their resources, we conclude that large banks have more opportunities to harness the benefits borne through PE involvement. Our findings support the previous literature on the benefits PE involvement have in M&As in the finance industry (2012; Graf, Kaser, and Schmidt; Glanfrate and Gouigoux, 2015).

Our study has some data limitations. First, we cannot observe the types of PE firms and consequently, cannot differentiate BHC companies that can hold a majority position in banks. Second, we cannot observe magnitude of the holdings by PE firms and this could inform us on how the types and level of PE involvement can affect bank M&A. Last but not the least, we cannot observe how a consortium affects value therefore we do not examine its effects. While these do not detract from our main results, they present further avenues for future research.

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|  |  |  |  |
| --- | --- | --- | --- |
| **Table 1 - Sample Distribution** | | | |
| ***Year*** | ***Full Sample*** | ***Percent*** | ***Private Equity Subsample*** |
| 2005 | 134 | 11.28 | 2 |
| 2006 | 117 | 9.85 | 0 |
| 2007 | 95 | 8.00 | 4 |
| 2008 | 48 | 4.04 | 3 |
| 2009 | 40 | 3.37 | 3 |
| 2010 | 47 | 3.96 | 3 |
| 2011 | 72 | 6.06 | 8 |
| 2012 | 75 | 6.31 | 17 |
| 2013 | 80 | 6.73 | 18 |
| 2014 | 119 | 10.02 | 21 |
| 2015 | 121 | 10.19 | 21 |
| 2016 | 110 | 9.26 | 25 |
| 2017 | 130 | 10.94 | 24 |
| Total | 1,188 | 100 | 149 |
|  |  |  |  |
| ***Acquirer business line*** | ***Full Sample*** | ***Percent*** | ***Private Equity Subsample*** |
| Asset Manager | 6 | 0.51 | 1 |
| Bank | 1,036 | 87.21 | 132 |
| Broker-Dealer | 35 | 2.95 | 4 |
| Financial Technology | 4 | 0.34 | 0 |
| Insurance Underwriter | 17 | 1.43 | 1 |
| Savings Bank/Thrift/Mutual | 76 | 6.4 | 7 |
| Specialty Lender | 14 | 1.18 | 4 |
|  |  |  |  |
| ***Diversifying acquisitions*** | ***Full Sample*** | ***Percent*** | ***Private Equity Subsample*** |
| No | 486 | 40.91 | 52 |
| Yes | 702 | 59.09 | 97 |
|  |  |  |  |
| ***Public targets*** | ***Full Sample*** | ***Percent*** | ***Private Equity Subsample*** |
| No | 949 | 79.88 | 105 |
| Yes | 239 | 20.12 | 44 |
|  |  |  |  |
| ***Cash only*** | ***Full Sample*** | ***Percent*** | ***Private Equity Subsample*** |
| No | 951 | 80.05 | 120 |
| Yes | 237 | 19.95 | 29 |
|  |  |  |  |
| ***Stock only*** | ***Full Sample*** | ***Percent*** | ***Private Equity Subsample*** |
| No | 1,060 | 89.23 | 128 |
| Yes | 128 | 10.77 | 21 |

We report sample distribution for acquisitions involving PE involvement in Table I. The table reports frequency for the full sample and subsample analyses. The final sample with PE is obtained from S&P Global Market Intelligence SNL database from 2005-2017.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Table 2 - Sample Descriptive Statistics** | | | | | |
| ***Panel A - Full Sample*** | | | | | |
| ***variable*** | ***Mean*** | ***Median*** | ***25th pctl*** | ***75th pctl*** | ***Stdev*** |
| *DEAL VALUE ($ million)* | 521.409 | 51.313 | 16.667 | 154.605 | 3,020.226 |
| *ACQ.ASSET ($ million)* | 95,700.000 | 4,970.240 | 1,964.397 | 13,800.000 | 323,000.000 |
| *RELSIZE (%)* | 0.002 | 0.001 | 0.000 | 0.003 | 0.004 |
| *RELATED TARGETS* | 0.591 | 1.000 | 0.000 | 1.000 | 0.492 |
| *PUBLIC TARGET* | 0.201 | 0.000 | 0.000 | 0.000 | 0.401 |
| *DOMESTIC TARGET* | 0.953 | 1.000 | 1.000 | 1.000 | 0.212 |
| *CASH ONLY* | 0.199 | 0.000 | 0.000 | 0.000 | 0.400 |
| *STOCK ONLY* | 0.108 | 0.000 | 0.000 | 0.000 | 0.310 |
| *L.ACQ.ROA (%)* | 1.043 | 1.000 | 0.790 | 1.250 | 0.426 |
| *L.ACQ.LIQUIDITY RATIO (%)* | 19.260 | 15.130 | 9.930 | 22.390 | 14.368 |
| *L.ACQ.EQUITY/ASSET (%)* | 10.767 | 10.285 | 8.980 | 12.135 | 2.688 |
|  |  |  |  |  |  |
| ***Panel B - Private Equity Subsample*** | | | | | |
| ***variable*** | ***Mean*** | ***Median*** | ***25th pctl*** | ***75th pctl*** | ***Stdev*** |
| *DEAL VALUE ($ million)* | 297.002 | 78.260 | 29.691 | 243.872 | 656.280 |
| *ACQ.ASSET ($ million)* | 60,700.000 | 5,529.355 | 2,598.879 | 12,000.000 | 249,000.000 |
| *RELSIZE (%)* | 0.004 | 0.002 | 0.001 | 0.004 | 0.005 |
| *RELATED TARGETS* | 0.651 | 1.000 | 0.000 | 1.000 | 0.478 |
| *PUBLIC TARGET* | 0.295 | 0.000 | 0.000 | 1.000 | 0.458 |
| *DOMESTIC TARGET* | 1.000 | 1.000 | 1.000 | 1.000 | 0.000 |
| *CASH ONLY* | 0.195 | 0.000 | 0.000 | 0.000 | 0.397 |
| *STOCK ONLY* | 0.141 | 0.000 | 0.000 | 0.000 | 0.349 |
| *L.ACQ.ROA (%)* | 0.928 | 0.890 | 0.670 | 1.090 | 0.455 |
| *L.ACQ.LIQUIDITY RATIO (%)* | 18.438 | 14.630 | 10.970 | 21.140 | 13.191 |
| *L.ACQ.EQUITY/ASSET (%)* | 11.131 | 10.530 | 9.540 | 12.660 | 2.607 |

We present sample descriptive statistics for the full sample (in Panel A) and the sample with PE involvement (in Panel B)

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Table 3 - Univariate Comparisons of CARs** | | | | | | | | | |
| ***CAR Estimation method*** | ***Windows*** | ***Private equity involvement*** | | ***Private equity involvement*** | | ***Difference*** | | | |
| ***Mean*** | ***Median*** | ***Mean*** | ***Median*** | ***Mean*** | ***Median*** | ***t-stats*** | ***Wilcoxon-stats*** |
| Market-adjusted CARs | (0,+1) days | -0.06% | -0.04% | 0.81% | 0.16% | 0.87% | 0.20% | 2.76\*\*\* | 2.06\*\* |
| (-1,+1) days | -0.05% | -0.08% | 0.95% | 0.34% | 1.00% | 0.42% | 3.05\*\*\* | 2.6\*\*\* |
| (-2,+1) days | -0.02% | -0.05% | 0.92% | 0.56% | 0.93% | 0.60% | 2.7\*\*\* | 2.38\*\* |
|  |  |  |  |  |  |  |  |  |  |
| Market-model CARs | (0,+1) days | -0.08% | -0.06% | 0.82% | 0.33% | 0.89% | 0.39% | 2.86\*\*\* | 2.3\*\* |
| (-1,+1) days | -0.07% | -0.10% | 1.00% | 0.29% | 1.07% | 0.40% | 3.21\*\*\* | 2.81\*\*\* |
| (-2,+1) days | -0.07% | -0.07% | 0.91% | 0.36% | 0.98% | 0.42% | 2.82\*\*\* | 2.29\*\* |
|  |  |  |  |  |  |  |  |  |  |
| Fama-French 3-factor model CARs – CRSP | (0,+1) days | -0.07% | -0.05% | 0.84% | 0.38% | 0.91% | 0.43% | 2.9\*\*\* | 2.27\*\* |
| (-1,+1) days | -0.06% | -0.09% | 0.99% | 0.42% | 1.06% | 0.50% | 3.22\*\*\* | 2.8\*\*\* |
| (-2,+1) days | -0.06% | -0.08% | 0.91% | 0.36% | 0.97% | 0.44% | 2.79\*\*\* | 2.33\*\* |
|  |  |  |  |  |  |  |  |  |  |
| Fama-French 4-factor model CARs - CRSP | (0,+1) days | -0.049% | -0.001% | 0.795% | 0.242% | 0.844% | 0.243% | 2.58\*\*\* | 1.99\*\* |
| (-1,+1) days | -0.066% | -0.098% | 0.825% | 0.333% | 0.891% | 0.431% | 2.71\*\*\* | 2.17\*\* |
| (-2,+1) days | -0.086% | -0.011% | 0.820% | 0.400% | 0.907% | 0.411% | 2.75\*\*\* | 2.32\*\* |
|  |  |  |  |  |  |  |  |  |  |
| Fama-French 3-factor model CARs - Sector | (0,+1) days | -0.039% | 0.035% | 0.725% | 0.427% | 0.763% | 0.392% | 2.48\*\* | 2.15\*\* |
| (-1,+1) days | -0.030% | -0.046% | 0.749% | 0.387% | 0.779% | 0.433% | 2.49\*\* | 1.99\*\* |
| (-2,+1) days | -0.021% | 0.036% | 0.810% | 0.711% | 0.831% | 0.674% | 2.6\*\*\* | 2.3\*\* |
|  |  |  |  |  |  |  |  |  |  |
| Fama-French 4-factor model CARs - Sector | (0,+1) days | -0.040% | 0.024% | 0.688% | 0.408% | 0.727% | 0.383% | 2.34\*\* | 2.05\*\* |
| (-1,+1) days | -0.031% | -0.074% | 0.682% | 0.295% | 0.713% | 0.369% | 2.25\*\* | 1.73\* |
| (-2,+1) days | -0.029% | 0.030% | 0.734% | 0.629% | 0.764% | 0.599% | 2.37\*\* | 2.11\*\* |

In Table 3, we present results for CARs using different estimation models for the sample with PE involvement and the sample without PE. We report difference in means and medians test between the samples.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Table 4 - Regressions of Acquirer CARs** | | | | | |
|  | ***Panel A - CARs from Fama-French 4-factor model with CRSP EW index as market benchmark*** | |  | ***Panel B - CARs from Fama-French 4-factor model with Fama-French 48-Sector Returns as market benchmark*** | |
|  | ***Model 1*** | ***Model 2*** |  | ***Model 3*** | ***Model 4*** |
| ***Variables*** | (-2,+1) days | (-1,+1) days |  | (-2,+1) days | (-1,+1) days |
| *PRIVATE EQUITY* | 0.090 | 0.091 |  | 0.085 | 0.080 |
| (2.654\*\*\*) | (2.571\*\*) |  | (2.576\*\*) | (2.339\*\*) |
| *RUNUP* | 0.047 | 0.037 |  | 0.032 | 0.021 |
| (1.286) | (1.016) |  | (0.910) | (0.600) |
| *RELSIZE* | 0.042 | 0.057 |  | 0.045 | 0.052 |
|  | (0.912) | (1.031) |  | (1.002) | (0.952) |
| *LN(L.ACQ.ASSETS)* | 0.019 | 0.026 |  | 0.018 | 0.010 |
|  | (0.456) | (0.591) |  | (0.435) | (0.245) |
| *RELATED TARGETS* | 0.037 | 0.039 |  | 0.032 | 0.030 |
|  | (1.143) | (1.256) |  | (1.066) | (0.992) |
| *PUBLIC TARGETS* | -0.252 | -0.274 |  | -0.270 | -0.285 |
|  | (-6.692\*\*\*) | (-6.837\*\*\*) |  | (-7.262\*\*\*) | (-7.200\*\*\*) |
| *DOMESTIC TARGETS* | 0.041 | 0.045 |  | 0.006 | 0.017 |
|  | (1.179) | (1.533) |  | (0.199) | (0.600) |
| *CASH ONLY* | 0.008 | 0.015 |  | 0.012 | 0.022 |
|  | (0.254) | (0.515) |  | (0.424) | (0.782) |
| *STOCK ONLY* | -0.042 | -0.014 |  | -0.050 | -0.016 |
|  | (-1.237) | (-0.393) |  | (-1.424) | (-0.429) |
| *L.ACQ.ROA* | 0.015 | 0.011 |  | 0.001 | -0.009 |
|  | (0.430) | (0.302) |  | (0.039) | (-0.255) |
| *L.ACQ.LIQUIDITY* | -0.013 | -0.044 |  | -0.019 | -0.034 |
|  | (-0.305) | (-1.029) |  | (-0.419) | (-0.764) |
| *L.ACQ. EQUITY/ASSET* | 0.023 | 0.036 |  | 0.043 | 0.056 |
| (0.661) | (1.013) |  | (1.267) | (1.610) |
| Constant | -0.036\*\* | -0.030\* |  | -0.026 | -0.021 |
|  | (-2.246\*\*) | (-1.779\*) |  | (-1.609) | (-1.337) |
|  |  |  |  |  |  |
| Adj. R-squared | 0.0656 | 0.0763 |  | 0.0671 | 0.0762 |
| Year fixed effects | Yes | Yes |  | Yes | Yes |
| Industry fixed effects | Yes | Yes |  | Yes | Yes |
| Robust std err | Yes | Yes |  | Yes | Yes |
| Observations | 1,132 | 1,132 |  | 1,132 | 1,132 |

We report results from OLS regressions in Table IV using acquirer CARs as the dependent variables. CARs are from (-2, +1) and (-1, +1) days windows using benchmarks of EW (Models 1-2) and FF-48 sector returns (Models 3-4). The independent variable of interest is the dummy variable for deals with private equity involvement (*PRIVATE EQUITY*). We control for year and industry fixed effects. We calculate the t-statistics based upon clustered standard errors. \*\*\*, \*\*, and \* denote significance at 1%, 5%, and 10% levels.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Table 5 – The Impacts of Private Equity Involvement on Acquirer BHARs** | | | | |
| ***Panel A – Univariate Comparison of BHARs*** | | | | |
|  | No private equity involvement | | Private equity involvement | |
| Windows | Mean | Median | Mean | Median |
| (+1,+12) months | -5.012% | -3.913% | 1.555% | 0.852% |
| (+1,+24) months | -11.446% | -7.153% | -2.304% | -4.622% |
| (+1,+36) months | -17.640% | -7.751% | -2.881% | -4.271% |
| Difference |  |  |  |  |
|  | Mean diff. | Median diff | t-stats | Wilcoxon-stats |
| (+1,+12) months | 6.57% | 4.76% | 3.13\*\*\* | 2.61\*\*\* |
| (+1,+24) months | 9.14% | 2.53% | 2.41\*\* | 1.93\* |
| (+1,+36) months | 14.76% | 3.48% | 3.12\*\*\* | 2.08\*\* |
|  |  |  |  |  |
| ***Panel B – BHAR Regressions*** | | | | |
|  |  | Model 1 | Model 2 | Model 3 |
| Variables |  | (+1,+12) months | (+1,+24) months | (+1,+36) months |
| PRIVATE EQUITY |  | 0.034 | 0.038 | 0.040 |
|  |  | (1.487) | (1.654\*) | (2.206\*\*) |
| RELSIZE |  | -0.040 | -0.090 | -0.049 |
|  |  | (-1.085) | (-2.724\*\*\*) | (-1.631) |
| RELATED TARGETS |  | 0.061 | 0.045 | 0.015 |
|  |  | (1.816\*) | (1.570) | (0.585) |
| PUBLIC TARGETS |  | 0.066 | 0.031 | 0.051 |
|  |  | (2.009\*\*) | (1.029) | (1.823\*) |
| DOMESTIC TARGETS |  | 0.014 | 0.050 | 0.044 |
|  |  | (0.407) | (2.062\*\*) | (1.965\*\*) |
| CASH ONLY |  | 0.067 | 0.036 | 0.068 |
|  |  | (2.261\*\*) | (1.243) | (2.664\*\*\*) |
| STOCK ONLY |  | -0.038 | 0.011 | 0.003 |
|  |  | (-1.316) | (0.442) | (0.111) |
| LN(ACQ.ASSETS) |  | -0.036 |  |  |
|  |  | (-0.766) |  |  |
| ACQ.ROA |  | 0.307 |  |  |
|  |  | (3.553\*\*\*) |  |  |
| ACQ.LIQUIDITY |  | 0.133 |  |  |
|  |  | (2.568\*\*) |  |  |
| ACQ. EQUITY/ASSET |  | -0.107 |  |  |
|  |  | (-1.829\*) |  |  |
| LN(ACQ.ASSETS)t+1 |  |  | 0.004 |  |
|  |  |  | (0.091) |  |
| ACQ.ROAt+1 |  |  | 0.461 |  |
|  |  |  | (9.898\*\*\*) |  |
| ACQ.LIQUIDITYt+1 |  |  | 0.124 |  |
|  |  |  | (3.434\*\*\*) |  |
| ACQ. EQUITY/ASSETt+1 |  |  | -0.100 |  |
|  |  |  | (-2.782\*\*\*) |  |
| LN(ACQ.ASSETS)t+2 |  |  |  | 0.015 |
|  |  |  |  | (0.368) |
| ACQ.ROAt+2 |  |  |  | 0.733 |
|  |  |  |  | (11.679\*\*\*) |
| ACQ.LIQUIDITYt+2 |  |  |  | 0.116 |
|  |  |  |  | (2.293\*\*) |
| ACQ. EQUITY/ASSETt+2 |  |  |  | -0.128 |
|  |  |  |  | (-2.280\*\*) |
| Constant |  | -0.885 | -0.861 | -3.098 |
|  |  | (-2.972\*\*\*) | (-4.701\*\*\*) | (-6.214\*\*\*) |
|  |  |  |  |  |
| Adj. R-squared |  | 0.176 | 0.360 | 0.509 |
| Year fixed effect |  | Yes | Yes | Yes |
| Industry fixed effect |  | Yes | Yes | Yes |
| Robust std err |  | Yes | Yes | Yes |
| Observations |  | 1,124 | 1,084 | 920 |

We report univariate results in Panel A, and multivariate results in Panel B of Table V using acquirer BHARs as the dependent variables. BHARs are constructed for 1, 2, and 3 years after acquisitions. The independent variable of interest is the dummy variable for deals with private equity involvement (*PRIVATE EQUITY*). We control for year and industry fixed effects. We calculate the t-statistics based upon clustered standard errors. \*\*\*, \*\*, and \* denote significance at 1%, 5%, and 10% levels.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Table 6 –Private Equity Involvement on Acquirer Total Stock Return Volatility Change** | | | | | | | |
| ***Panel A – Univariate Comparison of Risk*** | | | | | | | |
|  | No private equity involvement | | | Private equity involvement | | | |
| Window | Mean | Median | | Mean | Median | | |
| Before M&A | 1.78% | 1.56% | | 1.82% | 1.60% | | |
| After M&A | 1.91% | 1.58% | | 1.73% | 1.57% | | |
| Change | 0.14% | 0.02% | | -0.09% | -0.04% | | |
| Difference | |  | |  |  | | |
|  | Mean diff. | Median diff | | t-stats | Wilcoxon-stats | | |
| Before M&A | 0.04% | 0.04% | | 0.61 | 1.69\* | | |
| After M&A | -0.18% | -0.01% | | -2.97\*\*\* | -1.14 | | |
| Change | -0.22% | -0.05% | | -3.19\*\*\* | -2.47\*\* | | |
|  |  |  | |  |  | | |
| ***Panel B – Total Stock Return Volatility Change Regression*** | | | | | | | |
| Variables |  | Coefficients | (T-statistic) | | |  |
| *PRIVATE EQUITY* | | -0.080 | (-3.251\*\*\*) | | |
| *RELSIZE* |  | 0.021 | (0.453) | | |
| *RELATED TARGETS* | | 0.004 | (0.127) | | |
| *PUBLIC TARGETS* | | 0.026 | (0.793) | | |
| *DOMESTIC TARGETS* | | -0.045 | (-0.839) | | |
| *CASH ONLY* | | -0.026 | (-0.862) | | |
| *STOCK ONLY* | | 0.066 | (2.166\*\*) | | |
| *LN(ACQ.ASSETS)* | | 0.188 | (3.603\*\*\*) | | |
| *ACQ.ROA* |  | -0.043 | (-0.437) | | |
| *ACQ.LIQUIDITY* | | -0.344 | (-5.297\*\*\*) | | |
| *ACQ. EQUITY/ASSET* | | -0.167 | (-2.960\*\*\*) | | |
| Constant |  | 0.0469 | (3.099\*\*\*) | | |
|  | |  |  | | |
| Adj. R-squared | | 0.0788 |  | | |
| Year fixed effect | | Yes |  | | |
| Industry fixed effect | | Yes |  | | |
| Robust std err | | Yes |  | | |
| Observations | | 1,153 |  | | |

We report univariate results in Panel A, and multivariate results in Panel B of Table VI using acquirer BHARs as the dependent variables. BHARs are constructed for 1, 2, and 3 years after acquisitions. The independent variable of interest is the dummy variable for deals with private equity involvement (*PRIVATE EQUITY*). We control for year and industry fixed effects. We calculate the t-statistics based upon clustered standard errors. \*\*\*, \*\*, and \* denote significance at 1%, 5%, and 10% levels.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Table 7 – The Impacts of Private Equity Involvement on Acquirer Operating Performance Change** | | | | | | | | | | | | | | | | | |
| ***Panel A – Univariate Comparison of Operating Performance Change*** | | | | | | | | | | | | | | | | | |
|  |  | | | | Non private equity involvement | | | | Private equity involvement | | | Difference | | | | | |
| Variable | Window | | | | Mean | Median | | | Mean | | Median | Mean | Median | | | t-stats | Wilcoxon-stats |
| *ROA (%)* | Before M&A | | | | 1.060 | 1.015 | | | 0.928 | | 0.890 | -0.132 | -0.125 | | | -3.29\*\*\* | -4.29\*\*\* |
| After M&A | | | | 0.920 | 0.940 | | | 0.915 | | 0.920 | -0.006 | -0.02 | | | -0.13 | -0.81 |
| Change | | | | -0.151 | -0.040 | | | -0.038 | | 0.095 | 0.113 | 0.135 | | | 2.13\*\* | 3.59\*\*\* |
|  |  | | | |  |  | | |  | |  |  |  | | |  |  |
| *NET INTEREST MARGIN (%)* | Before M&A | | | | 3.650 | 3.640 | | | 3.638 | | 3.660 | -0.013 | 0.02 | | | -0.16 | -0.11 |
| After M&A | | | | 3.548 | 3.590 | | | 3.658 | | 3.660 | 0.109 | 0.07 | | | 1.44 | 1.9\* |
| Change | | | | -0.094 | -0.080 | | | 0.022 | | 0.000 | 0.116 | 0.08 | | | 3.2\*\*\* | 3.22\*\*\* |
|  |  | | | |  |  | | |  | |  |  |  | | |  |  |
| *YIELD / COST SPREAD (%)* | Before M&A | | | | 3.392 | 3.420 | | | 3.493 | | 3.530 | 0.101 | 0.11 | | | 1.25 | 1.63 |
| After M&A | | | | 3.299 | 3.380 | | | 3.494 | | 3.515 | 0.195 | 0.135 | | | 2.56\*\*\* | 3.15\*\*\* |
| Change | | | | -0.083 | -0.070 | | | 0.033 | | 0.020 | 0.116 | 0.09 | | | 2.78\*\*\* | 2.92\*\*\* |
| ***Panel B - Regressions of Operating Performance Changes*** | | | | | | | | | | | | | | | | | |
|  | |  |  | Model 1 | | |  |  | |  | Model 2 | | |  | Model 3 | | |
| Variables | |  |  | *ROA CHANGE* | | | |  | | | *NET INTEREST MARGIN CHANGE* | | | | *YIELD / COST SPREAD CHANGE* | | |
| *PRIVATE EQUITY* | | |  | 0.058 | | |  |  | |  | 0.095 | | |  | 0.084 | | |
|  | |  |  | (1.968\*\*) | | |  |  | |  | (3.240\*\*\*) | | |  | (2.790\*\*\*) | | |
| *RELSIZE* | |  |  | -0.015 | | |  |  | |  | 0.036 | | |  | 0.025 | | |
|  | |  |  | (-0.354) | | |  |  | |  | (0.792) | | |  | (0.507) | | |
| *RELATED TARGETS* | | |  | 0.023 | | |  |  | |  | 0.059 | | |  | 0.039 | | |
|  | |  |  | (0.658) | | |  |  | |  | (1.658\*) | | |  | (1.091) | | |
| *PUBLIC TARGETS* | | |  | -0.013 | | |  |  | |  | -0.014 | | |  | -0.003 | | |
|  | |  |  | (-0.365) | | |  |  | |  | (-0.410) | | |  | (-0.087) | | |
| *DOMESTIC TARGETS* | | |  | 0.046 | | |  |  | |  | -0.031 | | |  | -0.066 | | |
|  | |  |  | (1.019) | | |  |  | |  | (-0.821) | | |  | (-1.399) | | |
| *CASH ONLY* | | |  | -0.001 | | |  |  | |  | -0.006 | | |  | -0.012 | | |
|  | |  |  | (-0.024) | | |  |  | |  | (-0.172) | | |  | (-0.326) | | |
| *STOCK ONLY* | | |  | 0.030 | | |  |  | |  | 0.010 | | |  | 0.036 | | |
|  | |  |  | (0.956) | | |  |  | |  | (0.386) | | |  | (1.288) | | |
| *LN(ACQ.ASSET)* | | |  | -0.071 | | |  |  | |  | -0.053 | | |  | -0.024 | | |
|  | |  |  | (-1.455) | | |  |  | |  | (-1.124) | | |  | (-0.479) | | |
| *ACQ.LIQUIDITY* | | |  | 0.435 | | |  |  | |  | 0.087 | | |  | 0.082 | | |
|  | |  |  | (7.030\*\*\*) | | | |  | | | (1.284) | | |  | (1.527) | | |
| *ACQ. EQUITY/ASSET* | | |  | 0.170 | | |  |  | |  | -0.079 | | |  | -0.023 | | |
|  | |  |  | (2.377\*\*) | | |  |  | | | (-1.045) | | |  | (-0.423) | | |
| Constant | |  |  | -4.010\*\*\* | | | |  | | | -0.758 | | |  | -0.477 | | |
|  | |  |  | (-4.243\*\*\*) | | | |  | | | (-1.330) | | |  | (-0.708) | | |
|  | |  |  |  | | |  |  | |  |  | | |  |  | | |
| Adj. R-squared | | |  | 0.0614 | | |  |  | |  | 0.0332 | | |  | 0.0208 | | |
| Year fixed effect | | |  | Yes | | |  |  | |  | Yes | | |  | Yes | | |
| Industry fixed effect | | |  | Yes | | |  |  | |  | Yes | | |  | Yes | | |
| Robust standard errors | | | | Yes | | |  |  | |  | Yes | | |  | Yes | | |
| Observations | | |  | 1,072 | | |  |  | |  | 1,074 | | |  | 1,041 | | |

We conduct tests on operating performance. We report univariate results in Panel A, and multivariate results in Panel B of Table 7. The dependent variables are changes in ROA (Model 1), *NET INTEREST MARGIN* (Model 2) and *YIELD / COST SPREAD* (Model 3). . *ROA* is the ratio of net income to average assets. *NET INTEREST MARGIN* is the ratio of net interest income to average earning assets. *YIELD / COST SPREAD* is the yield on earnings assets (which is the ratio of total interest & dividend income to average earning assets) minus the cost of interest-bearing liabilities (which is the ratio of total interest expense to average interest-bearing liabilities). The independent variable of interest is the dummy variable for deals with private equity involvement (*PRIVATE EQUITY*). We control for year and industry fixed effects. We calculate the t-statistics based upon clustered standard errors. \*\*\*, \*\*, and \* denote significance at 1%, 5%, and 10% levels.

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| **Table 8 – Heckman Self-Selection Two-Stage Regressions** | | | | | | | | | | | | |
| ***Panel A – First-stage Logistic Regression*** | |  | ***Panel B - Second-stage Heckman Self-Selection Regressions*** | | | | | | | | | |
| Variables | Coefficients |  |  | Dependent variables | PRIVATE EQUITY | Constant | Adj. R-squared | Control variables | Year fixed effect | Industry fixed effect | Robust std err | N |
| *LN(ACQ TIER 1 CAPITAL)* | 0.584 |  | (1) | CARs (-2,+1) from Fama-French 4-factor model with CRSP EW index as market benchmark | 0.120 | -0.021 | 0.0874 | Yes | Yes | Yes | Yes | 1,056 |
| (1.739 \*) |  |  | (3.619\*\*\*) | (-0.715) |  |  |  |  |  |  |
| *L.ACQ.ROA* | -0.528 |  | (2) | CARs (-2,+1) from Fama-French 4-factor model with Fama-French 48-Sector Returns as market benchmark | 0.113 | 0.010 | 0.0832 | Yes | Yes | Yes | Yes | 1,089 |
|  | (-1.482 ) |  |  | (3.440\*\*\*) | (0.359) |  |  |  |  |  |  |
| *L.ACQ.LIQUIDITY* | -0.490 |  | (3) | BHAR (+1,+12) | 0.022 | -0.781\*\* | 0.166 | Yes | Yes | Yes | Yes | 1,062 |
|  | (-1.349 ) |  |  |  | (0.933) | (-2.307\*\*) |  |  |  |  |  |  |
| *LOG(AGE)* | -0.676 |  | (4) | BHAR (+1,+36) | 0.048 | -3.470\*\*\* | 0.440 | Yes | Yes | Yes | Yes | 775 |
|  | (-2.369 \*\*) |  |  |  | (2.202\*\*) | (-5.998\*\*\*) |  |  |  |  |  |  |
| *LOG(FIRM SAME STATE)* | 0.444 |  | (5) | Total stock return volatility change | -0.055 | -0.006 | 0.280 | Yes | Yes | Yes | Yes | 947 |
| (1.732 \*) |  |  | (-2.226\*\*) | (-1.494) |  |  |  |  |  |  |
| Constant | -4.191 |  | (6) | ROA Change | -0.018 | 0.028 | 0.0994 | Yes | Yes | Yes | Yes | 946 |
|  | (-4.317 \*\*\*) |  |  |  | (-0.604) | (0.041) |  |  |  |  |  |  |
|  |  |  | (7) | Net interest margin change | 0.074 | -0.587 | 0.106 | Yes | Yes | Yes | Yes | 944 |
| Pseudo R-squared | 0.0841 |  |  | (2.386\*\*) | (-1.196) |  |  |  |  |  |  |
| Chi-squared | 52.89 |  | (8) | Yield-to-cost change | 0.057 | -0.203 | 0.141 | Yes | Yes | Yes | Yes | 920 |
| % correct classification | 85.48% |  |  | (1.841\*) | (-0.474) |  |  |  |  |  |  |
| Observations | 1,095 |  |  |  |  |  |  |  |  |  |  |  |
| The results of first stage regressions for Heckman two-stage regression are reported in Panel A for the probability of private equity involvement. The results of second stage regressions are run where dependent variables are CARs, BHARs, risk change and operating performance changes to control for self-selection. We control for the natural log of lagged tier 1 capital (LN(L.TIER 1 CAPITAL)), lagged returns on asset (L.ROAA), lagged liquidity ratio (L.LIQUIDITY), the logarithm of firm age (LOG(AGE)) , and the logarithm of the number of financial institutions in the same state (LOG(FIRM SAME STATE). The independent variable of interest is the dummy variable for deals with private equity involvement (*PRIVATE EQUITY*). We control for year and industry fixed effects. We calculate the t-statistics based upon clustered standard errors. \*\*\*, \*\*, and \* denote significance at 1%, 5%, and 10% levels. | | | | | | | | | | | | |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Table 9 - Detangling the Effects of Bank Size – Larger Acquirers vs. Smaller Acquirers** | | | | | | | | | | | | |
|  | ***Dependent variables*** | | ***PRIVATE EQUITY*** | | ***Constant*** | | ***Adj. R-squared*** | ***Control variables*** | ***Year fixed effect*** | ***Industry fixed effect*** | | ***N*** |
| (1) | CARs (-2,+1) from Fama-French 4-factor model with CRSP EW index as market benchmark | Smaller banks | 0.078 | (1.566) | -0.021 | (-0.447) | 0.0317 | Yes | Yes | Yes | 548 | |
|  | Bigger banks | 0.093 | (2.071\*\*) | -0.038 | (-1.807\*) | 0.0800 | Yes | Yes | Yes | 535 | |
| (2) | CARs (-2,+1) from Fama-French 4-factor model with Fama-French 48-Sector Returns as market benchmark | Smaller banks | 0.063 | (1.270) | 0.001 | (0.023) | 0.0329 | Yes | Yes | Yes | 569 | |
|  | Bigger banks | 0.106 | (2.429\*\*) | -0.024 | (-1.106) | 0.103 | Yes | Yes | Yes | 563 | |
| (3) | BHAR (+1,+12) | Smaller banks | 0.007 | (0.214) | -1.292 | (-2.345\*\*) | 0.235 | Yes | Yes | Yes | 547 | |
|  |  | Bigger banks | 0.048 | (1.509) | -1.090 | (-2.739\*\*\*) | 0.170 | Yes | Yes | Yes | 562 | |
| (4) | BHAR (+1,+36) | Smaller banks | 0.025 | (0.995) | -5.428 | (-7.447\*\*\*) | 0.569 | Yes | Yes | Yes | 437 | |
|  |  | Bigger banks | 0.049 | (1.945\*\*) | -2.430 | (-2.988\*\*\*) | 0.409 | Yes | Yes | Yes | 460 | |
| (5) | Total stock return volatility change | Smaller banks | -0.015 | (-1.460) | 0.011 | (0.736) | 0.529 | Yes | Yes | Yes | 571 | |
|  | Bigger banks | -0.002 | (-2.60\*\*\*) | .0549 | (2.38\*\*) | 0.758 | Yes | Yes | Yes | 566 | |
| (6) | ROA Change | Smaller banks | 0.075 | (1.814\*) | -1.608 | (-2.166\*\*) | 0.0756 | Yes | Yes | Yes | 526 | |
|  |  | Bigger banks | 0.030 | (0.701) | -0.983 | (-1.345) | 0.0642 | Yes | Yes | Yes | 546 | |
| (7) | Net interest margin change | Smaller banks | 0.009 | (0.225) | -1.332 | (-2.007\*\*) | 0.172 | Yes | Yes | Yes | 528 | |
|  | Bigger banks | 0.093 | (2.253\*\*) | -0.116 | (-0.401) | 0.128 | Yes | Yes | Yes | 546 | |
| (8) | Yield-to-cost change | Smaller banks | -0.008 | (-0.175) | 0.035 | (0.067) | 0.150 | Yes | Yes | Yes | 511 | |
|  | Bigger banks | 0.085 | (2.218\*\*) | -0.404 | (-1.091) | 0.246 | Yes | Yes | Yes | 530 | |
| We report the regressions of coefficients on the independent variables separately for small and large acquirers divided based upon whether the lagged asset of the acquiring firm is smaller or larger than the median sample value. The independent variable of interest is the dummy variable for deals with private equity involvement (*PRIVATE EQUITY*). For brevity, we report the coefficients on the main independent variables only for tests on CARs, BHARs, risk change and operating performance. We control for year and industry fixed effects. We calculate the t-statistics based upon clustered standard errors. \*\*\*, \*\*, and \* denote significance at 1%, 5%, and 10% levels | | | | | | | | | | | | |

1. <https://www.cfainstitute.org/en/membership/professional-development/refresher-readings/private-equity-investments>.   
   The European and Private Equity Venture Capital Association (EVCA) provides a classification of private equity in terms of stage and type of financing they provide to target companies. [↑](#footnote-ref-1)
2. White & Case LLP. (2017). How private equity is powering financial services M&A. [↑](#footnote-ref-2)
3. KPMG International (2016). Banking and private capital: friend or foe?, April. Accessed at: <https://assets.kpmg/content/dam/kpmg/pdf/2016/05/ie-private-capital-friend-or-foe.pdf> [↑](#footnote-ref-3)
4. A Bloomberg Law Report covers these tensions in detail. See Private Equity Investments in Financial Services Firms: Threading the Regulatory Needle, Bloomberg Law. Reports, 2011 [↑](#footnote-ref-4)
5. Financial Times (2018). Private equity buying banks is not a good mix, September 17. Accessed at: <https://www.ft.com/content/3afc2dba-b848-11e8-b3ef-799c8613f4a1>.   
   Note that more leverage cannot be used in US banks' acquisitions as the regulators will not approve such deals.   
   EBITDA stands for earnings before interest, taxes, depreciation and amortization. [↑](#footnote-ref-5)
6. See Financial Times (2018). How the biggest private equity firms became the new banks, 20 September. Accessed at: https://www.ft.com/content/ec43db70-ba8e-11e8-94b2-17176fbf93f5 [↑](#footnote-ref-6)
7. As discussed earlier, PE firms are unlikely to take a significant stake in FIs due to regulations. As such, we do not provide a review of the literature on private equity in non-FIs, where they are the controlling shareholders. Nonetheless, we list several studies that review the vital role played by PE as well as the value their involvement generates: Reid et al., 1995; Thompson and Wright, 1995; Wright and Robbie (1999); Desbrierers and Schatt, 2002; Wright, Renneboog, Simons, and Scholes (2006); Leslie and Oyer (2008); Axelson, Stromberg, and Weisbach, 2009; Kaplan and Stromberg, 2009; Wood and Wright, 2009; Metrick and Yasuda, 2010; Guo, Hotchkiss, and Song, 2011; Ivashina and Kovner (2011); Lerner, Sorensen, and Strömberg, 2011; Muller, 2011; Tykvová and Borell (2012); Acharya, Gottschalg, Hahn, and Kehoe (2013); Axelson, Sorensen, and Strömberg (2013); Harris, Jenkinson, and Kaplan (2014); Gompers, Kaplan, and Mukharlyamov (2016); Lee and Shen, 2016; Sun and Uchida, 2016. Related studies documenting PE's involvement in M&As include Gaughan, 2007; Bargeron, Schlingemann, Stulz, and Zutter (2008); Kim and Palia, 2014; Humphery-Jenner, Sautner, and Suchard (2017); Balasubramaniamy, Gomes, and Lee (2018). [↑](#footnote-ref-7)
8. Hunton & Williams LLP. (2009). Private Equity Investments in Financial Institutions, January. [↑](#footnote-ref-8)
9. We control for year fixed effects and the acquirer’s business fixed effects. We calculate the t-statistics based upon robust standard errors. All the financial variables are measured at end of fiscal year prior to the announcement. They apply to all the regressions included in the paper. [↑](#footnote-ref-9)
10. Source: American Banker (2020). 6 takeaways from bank M&A in 2019, 05 January. Accessed at: https://www.americanbanker.com/list/6-takeaways-from-bank-m-a-in-2019 [↑](#footnote-ref-10)