



M&A Impetus: Analyzing Motivation and Synergy Determinants
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Accepted September 2023

ABSTRACT

We focus on two issues related to the US M&As from 1990 to 2014. First, we investigate the motivation of acquirers concerning different firm characteristics, operational performances, and corporate governance. Second, we analyze the long-term market performance after M&As and find factors affecting its long-term performance. The empirical results show that the acquirer's capital expenditure significantly affects the decision positively. In addition, we also find evidence that horizontal M&As positively impact acquiring firms' long-term performance significantly. This evidence implies that business-related M&As can create synergy. Finally, we find that the higher the major institutional shareholder's holding percentage, the better its long-term abnormal performance after M&As. In contrast, the higher the major institutional shareholder's holding density, the worse its long-term abnormal performance after the M&As.

Keywords: mergers and acquisitions, corporate governance, synergy

JEL classification: G34

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1. Introduction

Recent corporate mergers and acquisitions (M&As, henceforth for brevity) have resulted in a substantial industrial restructuring in different industries. Academic scholars extensively analyze the causes and consequences of M&As. Management consultants also spend much time on the synergies of M&As. Intuitively, M&As are initiated for similar reasons, and the important one is that the combined value is greater than the sum of the separate ones. Synergies may be the key factors that can explain why M&As occur in the first place. They come from different business sources, such as economy of scale, cost saving in production or operational management, or marketing strategies. How do these synergies motivate M&As? How does the market react to realizing these synergies in the long run? We fill in this research flow and analyze the impact of synergies before and after M&As.

Firms find ways to reduce the negative impact of economic shocks, especially when a shock is industry-specific or market-wide, such as deregulation, tax rate increases, technological innovation, or significant changes in key input prices (Andrade, Mitchell, & Stafford, 2001; Jarrad Harford, 2005; Mitchell & Mulherin, 1996). Normally, firms with small size, weak financial positions, and inefficient operations may find it optimal to sell their businesses to more significant, financially more robust, and efficient firms. M&As occur under this circumstance. The firm characteristics should be major determinants that affect the initiation of M&As. In addition, different firm characteristics may also affect the firm's performance after M&As. First, based on the expectation, we test M&As' motivation and future performance of M&As from the angle of different firm characteristics.

The decision to acquire other firms may substantially change from the acquirer's management due to different types of M&As. Whether the managers of the acquiring firm make the decision based on the optimal financial goal depends on the corporate governance of the acquiring firm. In addition to the composition of the board of directors, institutional ownership plays an important role in corporate governance. Institutional investors may have different preferences in M&As and may also play roles, active or passive, on a board. We will test how these investors affect the decision of M&As, and how they influence the long-term performance after M&As.

The performance of M&As, on the other hand, is relatively poor on average, as shown in the related research. For example, Jensen and Ruback (1983) and Andrade et al. (2001) find that acquirers have negative average abnormal announcement returns when they acquire public targets. In addition, Moeller, Schlingemann, and Stulz (2005) also state that M&As have "wealth destruction on a massive scale." Many acquirers may suffer a decrease in value from M&As. There are some possible reasons for these results, such as inefficient execution after M&As (Chakrabarti, 1990; Fang, Fridh, & Schultzberg, 2004; Ivancevich, Schweiger, & Power, 1987; Nahavandi & Malekzadeh, 1988; Schweiger & Denisi, 1991), improper allocation of human capital and resources (Fang et al., 2004; Schweiger & Denisi, 1991) and strategic incapacities (Chakrabarti, 1990). Even the top executives involved in the M&As integration phase sometimes have no clear picture regarding these issues during the deal process (Schoenberg, 2006; Very & Schweiger, 2001).

This study employs diverse control variables to address fragmented evidence in prior research, clarify unclear M&A motivations, and provide a comprehensive view of factors influencing M&A outcomes. By analyzing firm characteristics, operational performance, and corporate governance, the study aims to reveal synergies, predict M&A results, and offer valuable insights to investors for assessing M&A prospects.

This paper holds important implications for scholars and professionals in the field and significantly contributes to the existing literature in several key ways. First, our research delves into the driving forces behind mergers and acquisitions (M&As) within the United States. By examining these factors, we gain valuable insights into the critical determinants that prompt companies to expand through M&A activities. Second, we extend our inquiry to explore whether the post-M&A operational changes made by acquiring firms have a lasting impact on their long-term performance. These operational adjustments often revolve around the realization of synergies, and our examination sheds light on their significance. Lastly, we investigate whether a meaningful relationship exists between the motivations behind M&As and the subsequent long-term performance of these transactions. This aspect of our study seeks to connect the dots between M&A intentions and the tangible outcomes they produce.

Our empirical findings yield several noteworthy discoveries. First, it becomes apparent that acquirers tend to experience poor market performance and diminished growth prospects following M&A activities. Furthermore, our research highlights a tendency among acquirers to finance these transactions through debt. In corporate governance, we uncover compelling evidence that institutional shareholders generally favor M&As, mainly when they are familiar with the respective industries and companies involved. Conversely, institutions with higher shareholding concentrations often display resistance toward such mergers. One intriguing finding from our analysis suggests that larger acquirers tend to underperform in the aftermath of M&A deals, failing to deliver significant synergistic benefits to their acquired entities. In terms of M&A types, our evidence indicates that horizontal mergers, in particular, have an enormously positive and significant impact on the acquiring firms' long-term performance, signaling the potential for synergistic benefits in business-related M&As.

Finally, we uncover an exciting correlation between major institutional shareholders' ownership percentage and their post-M&A abnormal performance. Specifically, a higher ownership percentage by major institutional shareholders appears to correlate with better long-term performance. Conversely, when major institutional shareholders hold a higher density of shares, the post-M&A abnormal performance tends to be poorer. In sum, our study not only provides valuable insights into the motivations behind M&As and their subsequent impact but also offers practical implications for corporate decision-makers. It enriches the existing literature on this subject by shedding light on the intricate relationships among various factors influencing M&A outcomes and long-term performance.

The remainder of the paper is as follows: Section 2 reviews the related literature and identifies the important factors of synergetic sources in M&As from the existing findings. The empirical data and methodological aspects concerning the empirical tests are discussed in section 3. Finally, we summarize the empirical results in section 4 and conclude the evidence in section 5.

2. Literature Review

The evidence shows several reasons a company could create its value through M&As. For example, Larsson and Finkelstein (1999) find that operational synergies would increase the probability of successful M&As. In addition, Pangarkar and Lim (2003) shows that economies of scope and scale are essential in the initiation stage of M&As. Market monopoly is also an important driver of M&As (Lubatkin, 1983; Sharma & Ho, 2002). However, in general, many firms destroy their firm value in the M&As activities because they encounter several obstacles that prevent acquiring firms from obtaining these synergies (Chakrabarti, 1990; Fang et al., 2004; Schweiger & Denisi, 1991).

The research question of post-M&As performance has received much attention in academia and practice for a long time (Healy, Palepu, & Ruback, 1992; Papadakis & Thanos, 2010; Seth, 1990; Tuch & O'Sullivan, 2007). The conclusion about the post-M&As performance, however, is inconclusive. On the one hand, acquirers experience negative or no gains from M&As. On the other hand, some research finds that acquirers can improve performance after M&As. Therefore, this question will be given more attention in this paper.

Finance literature has paid much attention to those factors that affect the success of M&As. Acquiring firms in M&As have their strategic and financial objectives in selecting an appropriate target firm. To meet these goals, acquirers must do their due diligence for some potential targets in the early stage of the process. Even though outside investors cannot get the inside information in the evaluation process, they still can observe some objective characteristics of target firms. In this study, we investigate the motivations behind M&As and further the understanding of acquirers' concern of target firms' characteristics at the initial stage of the M&As process. Weber (1996), Larsson and Finkelstein (1999), and Zollo and Meier (2008) show that integration of the decision-making process after M&As can help to transfer acquirers' capabilities, cut costs and achieve synergy. In addition, the integration can be beneficial in managing functions such as marketing, inventory, and others.

Based on the above findings, we expect that acquiring firms' characteristics, such as firm size, book-to-market ratio, capital expenditure, and capital structure, would significantly impact the motivation of M&As. In addition, the firm's operational performance, such as total assets turnover, profit margin, and corporate governance, would also affect the motivation. Therefore, we construct the following hypothesis.

Hypothesis 1: Acquiring firms' characteristics, operational performance, and corporate governance would significantly influence the motivation of M&As.

Whether the acquirers can manage the post-M&As integration process would affect the realization of synergies (Haspeslagh & Jemison, 1991; Jemison & Sitkin, 1986). Therefore, the appropriate integration approach should consider the types of synergy and implementation problems due to different firm characteristics. There are many possible changes in operations after acquisitions, and we expect that at least three changes could have a significant impact on acquirers' long-term performance; these are (1) profit margin, (2) capital expenditures, and (3) costs of goods sold. Changes in these variables may indicate that acquirers improve operations by reducing costs, increasing production capacity, using new or complementary techniques, and/or increasing market shares after M&As. Therefore, another issue in this paper is how these changes affect post-M&A performance.

Acquirers that take the same industry targets, horizontal M&As, usually try to fit their needs for crucial resources for industry-wide competitive advantage and firm profitability. Haleblan, Devers, McNamara, Carpenter, and Davison (2009) find that horizontal M&As would change the competitive environment for surviving firms in that industry. For example, acquiring firms can create more value by reducing the price competition in inputs and/or outputs. In addition, Berger, Saunders, Scalise, and Udell (1998) show that reducing commitment from newly created firms to customers might impact the firms' profitability after M&As activity. These findings on horizontal M&As imply that non-horizontal M&As would perform poorer than horizontal M&As (Healy et al., 1992; Jensen, 1986). In contrast, Kruse, Park, Park, and Suzuki (2007) find the opposite results that non-horizontal M&As perform better after the events. Therefore, we take the type of M&As, which are horizontal or non-horizontal, into account in the analysis.

Several studies of domestic M&As, such as Maquieira, Megginson, and Nail (1998) and Morck, Shleifer, and Vishny (1990), show that acquirers exhibit higher announcement returns

when the acquirer and the target operate in a related business line. Business-related M&As can create synergy in different ways, such as increased buying power and economies of scale (Bhattacharyya & Nain, 2011; Fee & Thomas, 2004; Shahrur, 2005), targets with similar products that can increase differentiation to acquirers' products (Hoberg & Phillips, 2010), and the combination of two competitors in a product market getting their quality brands to converge (Sheen, 2014). Therefore, the horizontal type of M&As should have a specific impact on the long-term performance of the acquiring firms. Based on the above findings, we expect the horizontal type of M&As to perform better than the non-horizontal type of M&As. Therefore, we construct the following hypotheses.

Hypothesis 2: When acquiring firms realize the operational synergies after M&As, the long-term market performance should also reflect these improvements in the three years starting from the previous year of the announcement of M&As, such as increases in profit margin, reduction in capital expenditure, or reduction in the cost of goods sold.

Hypothesis 3: Due to the economies of scale, horizontal M&As should perform better than the non-horizontal type of M&As.

Corporate governance should have a substantial influence on M&As. Many variables can proxy for a firm's corporate governance, and institutional ownership is very important. Shareholder activism argues that institutional investors use the proxy fight and/or other approaches to impel executive managers to make decisions favoring shareholder interest. Some institutional investors are long-term investors, like TIAA CREF and CalPERS in the United States (Gillan & Starks, 2007) and Hermes in the UK (Becht, Franks, Mayer, & Rossi, 2009). Some mutual or hedge funds have recently played active roles in corporate governance (Brav, Jiang, Partnoy, & Thomas, 2008; Greenwood & Schor, 2009; Klein & Zur, 2009). Andriosopoulos and Yang (2015) find that institutional investors increase the likelihood of M&As. Therefore, we analyze the impact of institutional ownership on M&As in this paper.

Institutional investors with long-term, active investors will commit to monitoring firm governance and managerial decision-making (Chen, Harford, & Li, 2007). For example, Elyasiani and Jia (2010) find that institutional investors have an information advantage and exert more effort on corporate governance, which can eliminate information asymmetry. In contrast, acquirers with short-term institutional investors have more conflicts of interest between managers and shareholders, contributing to less pressure from institutional investors (Gaspar, Massa, & Matos, 2005). Andriosopoulos and Yang (2015) show that across all three types of institutional investors, categorized by their holding periods, a negative relationship exists between the holding horizon and the likelihood of cross-border M&As. In addition, the authors also find evidence that institutional investors with medium- and long-term investment horizons are more actively involved in a firm's decision-making to avoid reducing the value of their investments.

Based on the information advantage and the role in the active corporate governance mechanism, we expect institutional ownership to affect the acquirers' long-term performance after M&As. Therefore, we construct the following hypothesis.

Hypothesis 4: Institutional investors or blockholders should play an important role in corporate governance. Therefore, the mechanism would affect the motivation of M&As and their long-term performance after M&As.

3. Research Methodology and Data

3.1 The measures

This subsection discusses the three sets of variables used in the tests, including performance measures, a proxy of corporate governance, and acquirers' operational ratios and characteristics.

There are three changes in operational efficiency: profit margin (CHG_PM), capital expenditures (CHG_CAPX), and cost of goods sold (COGS), which are scaled by sales. We denote a variable as X_k and calculate its changes as follows:

$$\Delta X_k = \frac{1}{3} \sum_{t=0}^2 X_{k,t} - X_{k,t-1}, \quad (1)$$

where ΔX_k represents the k^{th} variable's difference between the post- and pre-M&As operating performance, and t is the year relative to the announcement of M&As. We discuss the possible impacts of the three variables on acquirers' long-run performance as follows.

- (1) Profit margin measures a firm's accounting performance and the indicator of its profitability. If firms can improve their profitability after M&As, we expect the investors' appreciation to increase their market values.
- (2) Previous studies (Devos, Kadapakkam, & Krishnamurthy, 2009; Maksimovic, Phillips, & Prabhala, 2011) find that US domestic acquirers can improve performance by curtailing capital investment and excess capacity. However, Andrade and Stafford (2004) show that M&As in the US played a contractionary role in the 1970s and 1980s due to firms' excess capacity but an expansionary role in the 1990s because firms had peak capacity utilization. In this way, firms can improve operations by increasing or decreasing capital expenditures after cross-border M&As.
- (3) M&As allow firms to realize economies of scale by lowering average fixed costs, production costs, and materials expenses. This effect could be more pronounced for cross-border M&As than domestic ones when the costs of fixed assets, labor, and materials are substantially lower in the target country. If firms move all or part of their production and operation to foreign targets, they would additionally save trade costs, such as transportation fees, tariffs, and expenses incurred by border-related barriers. In this case, acquirers' post-M&As average cost of goods sold should decrease, increasing profitability.

Horizontal M&As is a transaction in which the acquirer and the target have the same 3-digit SIC code. This variable captures the effect that business-related M&As are more likely to create synergy than unrelated M&As. In addition, studies show that private target M&As perform better than those of public targets due to the transfer of new block holders (J. Harford, Humphery-Jenner, & Powell, 2012) and a low likelihood of overpayment (Fuller, Netter, & Stegemoller, 2002). We construct a public dummy if the target lists on a foreign stock exchange.

We use the acquirer's characteristics as control variables: SIZE, BM, hi-tech industries, and the level of industry competition. A hi-tech acquirer is identified by the 3-digit SIC codes of technological industries reported by the US Department of Commerce (28 industries) for M&As in the 1990s and by Kile and Phillips (2009) categories (11 hi-tech industries) for M&As in the 2000s.

The level of an industry's competition is measured by the Herfindahl-Hirschman Index (HHI). We use Fama and French (1997) categories of 49 sectors to classify industries and calculate an industry's HHI as follows:

$$HHI_y = 100 \times \sum_{j=1}^n w_{j,y}^2, \quad (2)$$

where $w_{j,y}$ is the firm j 's market share in year y , defined as its sales divided by the total sales of the industry that it operates in ($w_{j,y} = Sales_{j,y} / \sum_{j=1}^n Sales_{j,y}$) and n is the number of firms in the industry. We assume that the higher the HHI of an industry, the lower the level of its product competition in the market.

We use both buy-and-hold abnormal returns (BHARs) and the Fama and French (2016) model to evaluate a portfolio's long-run performance. Three-year BHAR of a portfolio (BHAR_p) is calculated as follows:

$$BHAR_p = \frac{1}{N} \sum_{j=1}^N \left[\prod_{\tau=1}^T (1 + R_{j,\tau}) - \prod_{\tau=1}^T (1 + R_{matching,\tau}) \right], \quad (3)$$

where $R_{j,\tau}$ and $R_{matching,\tau}$ denote firm j 's return and its matching firm's return on the day τ , respectively, and N is the number of firms. Return is calculated from M&A announcement day to day T ($T = 756$ for three years by the convention of 252 trading days per annum). If a firm is delisted, returns are compounded until the delisting date.

We further construct the empirical models based on the summary statistics results in Tables 2, 3, and 4. The following equations state that the empirical models control firm characteristics, operation performance, and institutional ownership, such as SIZE, BM, PM, and other variables. In addition, we also control for yearly and industrial dummies, and these dummies variables control for differences among the years and industries. Three empirical models in this paper test different research questions.

To analyze the motivation of M&As, we utilize the following logistic regression model.

$$y_{i,t} = \alpha_0 + \beta_1 BM_{i,t-1} + \beta_2 DR_{i,t-1} + \beta_3 PR_{i,t-1} + \beta_4 ROA_{i,t-1} + \beta_5 TOT_{i,t-1} + \beta_6 PM_{i,t-1} + \beta_7 CAPX_{i,t-1} + \beta_8 COGS_{i,t-1} + \beta_9 H_PERCT_{i,t-1} + \beta_{10} H_HHI_{i,t-1} + \sum_j \beta_j Year\ Dummies + \sum_k \beta_k Industry\ Dummies + \varepsilon_{i,t}, \quad (4)$$

the variables of firm's characteristics in Eq.(4) are BM, DR, and PR. The measures of operational efficiency are ROA, TOT, PM, CAPX, and COGS. As to corporate governance, we include the characteristics of institutional holdings, such as H_PERCT and H_HHI. We analyze the motivation of M&As by conducting the dummy variable as a dependent variable that $y_{i,t} = 1$ for the firm engaging the M&As, 0 for the matching firm of corresponding M&As.

To test the long-term performance, we report three-year buy-and-hold raw returns (BHRs) and buy-and-hold abnormal returns (BHARs) of these US acquirers that completed M&As during 1990-2014. Each acquirer is matched with a non-M&A firm with the highest propensity matching score (Li & Zhao, 2006) and operates in the same industry (2-digit SIC code) as the acquirer. BHAR is the difference in raw returns between acquirers and their matching firms. Horizontal M&As are deals where the acquirer and the target have the same 3-digit SIC code. The public indicates that the target firm lists on a foreign stock exchange. We divide the sample firms into two groups by changes in their cost of goods sold, capital expenditures, and R&D expenses scaled by sales after M&As, respectively.

This regression uses 3-year BHARs (calculated from M&A announcement day to day 756) as the dependent variable and includes the yearly and industrial effects. The empirical model

is as follows.

$$\begin{aligned}
BHAR_{i,t+3} = & \alpha_0 + \beta_1 SIZE_{i,t} + \beta_2 BM_{i,t} + \beta_3 DR_{i,t} + \beta_4 PR_{i,t} + \beta_5 ROA_{i,t} + \beta_6 TOT_{i,t} \\
& + \beta_7 PM_{i,t} + \beta_8 CHG_PM_{i,t} + \beta_9 CAPX_{i,t} + \beta_{10} CHG_CAPX_{i,t} + \beta_{11} COGS_{i,t} \\
& + \beta_{12} CHG_COGS_{i,t} + \beta_{13} CHG_PERCT_{i,t} + \beta_{14} CHG_HHI_{i,t} \\
& + \beta_{15} HORIZON_{i,t} + \sum_j \beta_j Year\ Dummies + \sum_k \beta_k Industry\ Dummies \\
& + \varepsilon_{i,t}, \tag{5}
\end{aligned}$$

the variables of firm's characteristics in Eq. (5) are SIZE, BM, DR and PR. The measures of operational efficiency are ROA, TOT, PM, CHG_PM, CAPX, CHG_CAPX, COGS, and CHG_COGS. As to corporate governance, we include the characteristics of institutional holdings, such as CHG_PERCT and CHG_HHI. Furthermore, we add HORIZON into regression model to test the impact on BHARs.

To further analyze the impact of corporate governance from institutional ownership, we set up the empirical model as follows.

$$\begin{aligned}
BHAR_{i,t+3} = & \alpha_0 + \beta_1 SIZE_{i,t} + \beta_2 BM_{i,t} + \beta_3 DR_{i,t} + \beta_4 PR_{i,t} + \beta_5 ROA_{i,t} + \beta_6 CHG_PM_{i,t} \\
& + \beta_7 CHG_CAPX_{i,t} + \beta_8 CHG_COGS_{i,t} + \beta_9 CHG_PERCT_{i,t} + \beta_{10} H_HHI_{i,t} \\
& + \beta_{11} Top10_{i,t} + \beta_{12} TOP10_PERCT_{i,t} + \beta_{13} BLOCK_{i,t} + \beta_{14} HORIZON_{i,t} \\
& + \sum_j \beta_j Year\ Dummies + \sum_k \beta_k Industry\ Dummies + \varepsilon_{i,t}, \tag{6}
\end{aligned}$$

the additional variables in Eq.(6) relative to Eq.(5) are TOP10, TOP10_PERCT, and BLOCK.

Based on the empirical results, we can find which factors have stronger predictive power for the long-term impact of M&As, initiated by US firms, on their long-term stock return and explore possible synergy sources.

3.2 Empirical data

We obtain transaction data from the Thomson Reuters SDC Worldwide Mergers and Acquisitions database. Data items include announcement dates, effective dates, means of payments, names and SIC codes of the acquirers and the targets, and the listing status of target companies. The sample period covers 1990 to 2014. We screen the data by the following criteria:

- (1) The acquirers must be of common stocks of firms (share codes 10 and 11) listed on NYSE, AMEX, and NASDAQ. American depository receipts (ADRs), real estate investment trusts (REITs), closed-end mutual funds, and partnerships are eliminated from the samples.
- (2) The deals are mergers, exchange offers, and acquisitions of a majority interest, and the transactions must be completed.
- (3) The financial (2-digit SIC code 60-69) and utility (SIC code 49) industries are excluded since firms in these industries are subject to more regulatory restrictions. Also, the accounting items of these two industries are distinct from those of other industries, which can complicate empirical tests.
- (4) Cases of multiple M&As that cover less than three years are excluded. In other words, only acquirers with no other important M&As within the previous and subsequent three years are included in the samples. This criterion is used to avoid severe dependence on statistical tests (e.g., multiple M&As conducted by one firm can have the same explanatory variables in regressions). Also, firms with frequent M&As will likely have high growth or

potential financial problems. Including such firms may yield biased inferences since their performance comes from other reasons (e.g., the hot industry effect) rather than M&As.

Daily returns, market indices (CRSP VW), number of outstanding shares, and capitalization of the sample firms come from the Center for Research in Security Prices (CRSP) database. Accounting data are obtained from the Compustat database, including sales, cost of goods sold, R&D expenses, advertising expenses, net income, capital expenditures, assets and debt, and equity book values.

We employ the propensity score matching method proposed by Li and Zhao (2006) to construct the matching sample. Specifically, we use a logistic model by setting the dependent dummy equal to 1 and 0 for M&A and non-M&A firms, respectively. The non-M&A firms must have no M&As three years before and after the M&As announcement year and have the same 2-digit SIC code as the acquirer. The independent variables include firm size, book-to-market ratio, and cumulative excess returns six months before the M&As announcement. We estimate the propensity score model annually and compute each firm's score. The non-M&A firm with the score closest to the cross-border acquirer is included in the matching sample.

We first provide the summary statistics of the number of US firms that completed M&As during 1990-2014 in Table 1. Horizontal M&As are deals where the acquiring and target firms have the same 3-digit SIC codes. Table 1 shows that 33,338 US firms completed M&As from 1990-2014. The wave of M&As is during the period from 1996 to 2001. Overall, the horizontal M&As are greater than non-horizontal ones in most periods.

Table 1. Number of Samples

This table reports the number of US M&As from 1990 to 2014. For each M&As, the samples are further broken down into horizontal and non-horizontal transactions in two-year periods.

Period	Total	Horizontal	Non-Horizontal
1990-91	445	261	184
1992-93	1,428	859	569
1994-95	2,202	1,260	942
1996-97	7,318	2,651	4,667
1998-99	3,440	1,867	1,573
2000-01	5,955	4,653	1,302
2002-03	1,900	1,028	872
2004-05	2,850	1,680	1,170
2006-07	2,441	1,236	1,205
2008-09	1,459	918	541
2010-11	1,464	811	653
2012-13	1,601	884	717
2014	835	501	334
Total	33,338	18,609	14,729
%	100%	56%	44%

Next, we summarize the statistics of variables for M&As in Table 2. The variables can be classified into firm characteristics, operational efficiency, and corporate governance. The firm

characteristics include Firm Size (SIZE)¹, Book-to-Market Ratio (BM), Debt Ratio (DR), and Payout Ratio (PR). The measures of operational efficiency are Return on Assets (ROA), Total Assets Turnover (TOT), Profit Margin (PM), Scaled Capex (CAPX)², and Scaled COGS (COGS)³. As to corporate governance, we include various characteristics of institutional holdings, such as Institutional Holding Percentage (H_PERCT)⁴, Institutional Holding Competition (H_HHI)⁵, Top 10 Institutional Holdings Density (TOP10),⁶ and Top 10 Institutional Holding Percentage (TOP10_PERCT)⁷.

Table 2. Acquirors' Characteristics

This table summarizes the basic statistics of all empirical variables for the analyses in this paper. The firm characteristics include SIZE, BM, DR, and PR. The operational efficiency measures are ROA, TOT, PM, CAPX, and COGS. Corporate governance includes H_PERCT, H_HHI, TOP10 and, TOP10_PERCT.

Variable	SIZE	BM	DR	PR	ROA	TOT	PM	CAPX	COGS	H_PERCT	H_HHI	TOP10	TOP10_PERCT
Mean	20.155	0.733	0.120	0.224	-0.041	0.673	-0.550	0.194	1.007	0.429	0.159	0.729	0.271
Median	19.951	0.592	0.070	0.000	0.013	0.366	0.078	0.031	0.537	0.406	0.080	0.718	0.260
Standard deviation	2.201	0.759	0.147	4.575	4.885	1.458	36.386	11.110	36.534	0.320	0.193	0.206	0.220
P10	17.494	0.245	0.000	0.000	-0.086	0.059	-0.132	0.006	0.241	0.065	0.031	0.459	0.061
P90	23.251	1.262	0.313	0.541	0.094	1.650	0.192	0.144	0.854	0.812	0.391	1.000	0.470
Q1	18.548	0.406	0.018	0.000	0.005	0.078	0.019	0.015	0.376	0.183	0.044	0.546	0.151
Q3	21.526	0.888	0.164	0.282	0.047	1.030	0.141	0.062	0.732	0.645	0.186	0.944	0.373

Table 2 shows that the acquirers have BM less than one, which implies at least two empirical results of the acquirers' characteristics. First, the acquirers have greater growth opportunities and tend to be growth firms. Second, the acquiring firms have some problems with information asymmetry. Both explanations are consistent with the observations in the market. Because M&As are riskier investments and need to put more resources into the process, the acquirers with more growth opportunities are more capable of merging or acquiring targets, and they tend to have more severe problems of information asymmetry.

Moreover, the acquirers are firms with low leverage, and the mean and median debt ratio is 12% and 7%, respectively. This implies that those acquirers have strong financial flexibility. This observation is consistent with the existing evidence. The median ROA of acquirers is close to 1.3%, which implies that those acquirers may have lower asset utilization efficiency. As to the dividend policy, acquirers pay out about 22% of their earnings on average, which implies that acquirers are willing to share their earnings with stockholders.

Finally, we also observe the characteristics of institutional holdings. Institutional ownership plays a vital role in corporate governance. Therefore, we expect institutional ownership to substantially impact the motivation of M&As and the long-term performance after

¹ Firm Size (SIZE) is the natural log of the firm's market capitalization.

² Scaled Capex (CAPX) is Capex scaled by sales.

³ Scaled COGS (COGS) is COGS scaled by sales.

⁴ Institutional Holding Percentage (H_PERCT) is institutional holdings divided by total outstanding shares.

⁵ Institutional Holding Competition (H_HHI) is institutional holding competition measured by Herfindahl-Hirschman Index (HHI). It is the sum of the squares of the percentage of institutional holdings with respect to outstanding shares. The value of the HHI ranges from zero to one. A higher HHI indicates a lower level of holding competition and vice versa.

⁶ Top 10 Institutional Holdings Density (TOP10) is top 10 institutional holdings divided by total institutional holdings.

⁷ Top 10 Institutional Holding Percentage (TOP10_PERCT) is top 10 institutional holdings divided by total outstanding shares.

M&As. There are several exciting findings in the acquirers' institutional ownership. First, acquirers have more than 40% in mean and median of H_PERCT. It indicates that the institutional investors of acquirers are highly competitive. This evidence implies that institutional investors of acquirers have a relatively strong institutional monitoring function.

The correlation between any two factors is essential, and we have to check it before the regression analysis for two reasons. First, I would like to determine how these factors are related to the correlation matrix. The simple correlation coefficient provides valuable information about the relationship between any two variables. Second, we eliminate the multicollinearity problem in the regression analysis by avoiding adding the variables with high correlation in the same regression. The correlation matrix can help us to make the judgment in this matter. Next, we summarize the correlation matrix of empirical variables used in the analysis of M&As in Table 3.

Table 3 shows that the correlation between PM and CAPX, COGS are -0.90 and -0.92, respectively. We find that domestic acquiring firms with a higher CAPX or COGS have poor profitability with coefficients very close to -1, which is perfectly negatively correlated. Therefore, these firms invest more when their earnings are relatively low.

Second, the correlation between H_HHI and SIZE is -0.39, which is significantly different from zero. The evidence shows that institutional investors are in a more competitive environment when the firm is a big firm. Moreover, H_HHI has a correlation of -0.55 with H_PERCT. This is also consistent with empirical practice that institutional investors are more dispersed, and the number of institutional investors is greater when the institutional ownership is a large portion of shareholdings. The greater the number of institutional investors, the more competitive the environment in a firm would be.

Finally, we find that the top ten institutional investors play an important role in corporate governance. When institutional ownership is high in a firm, the institutional holding competition is low. The coefficient between H_PERCT and TOP10 is -0.70. However, H_HHI has a positive coefficient of 0.68 with TOP10. This implies that the competitiveness would be lower if the top ten institutional investors are the majority of institutional holdings. We further find reverse correlation results between H_HHI and TOP10_PERCT, with a negative coefficient of -0.37. The coefficient of correlation between H_PERCT and TOP10_PERCT is 0.84.

Table 3. Correlation Matrix for M&As

This table summarizes the coefficient of correlation for all variables in the empirical model. The firm characteristics include SIZE, BM, DR, and PR. The operational efficiency measures are ROA, TOT, PM, CAPX, and COGS. Corporate governance includes H_PERCT, H_HHI, TOP10, and TOP10_PERCT. Superscripts *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Variables	SIZE	BM	DR	ROA	TOT	PM	CAPX	COGS	PR	H_PERCT	H_HHI	TOP10	TOP10_PERCT
SIZE	1.000	-0.260***	-0.070***	0.030	-0.150***	0.020	0.000	-0.010	-0.030**	-0.070***	-0.020	0.050***	-0.060***
BM		1.000	-0.110***	0.130***	-0.180***	0.040***	-0.020**	-0.030***	0.040***	0.310***	-0.390***	-0.570***	0.080***
DR			1.000	-0.230***	-0.140***	-0.080***	0.050***	0.000	-0.010	0.000	0.030***	0.080***	0.060***
ROA				1.000	0.180***	0.200***	-0.070***	-0.090***	0.030**	0.150***	-0.090***	-0.150***	0.100***
TOT					1.000	0.070***	-0.070***	0.01	0.02	0.040**	0.060***	0.060***	0.090***
PM						1.000	-0.900***	-0.920***	0.010	0.030***	-0.050***	-0.030***	0.020***
CAPX							1.000	0.920***	0.000	-0.030***	0.050***	0.020***	-0.020***
COGS								1.000	0.000	-0.030	0.050***	0.030***	-0.020*
PR									1.000	-0.020***	0.020	0.000	-0.020*
H_PERCT										1.000	-0.550***	-0.700***	0.840***
H_HHI											1.000	0.680***	-0.370***
TOT												1.000	0.060***
TOP10													1.000
TOP10_PERCT													

4. Empirical Results

This section has two major parts: univariate analysis and regression analysis. First, we check the long-term market performance, measured by three-year BHARs, of acquiring firms concerning the changes in operational performance, which include profit margin, capital expenditure, and cost of goods sold. Next, we conduct the multivariate analysis by running the regression of long-term market performance.

4.1 Univariate Result

For the univariate analysis, we summarize the buy-and-hold returns for acquiring firms and their matching firms in Table 4. From Table 4, as we expected, the acquiring firms with higher PM, lower CAPX, and lower COGS have better long-term performance. In sum, we expect that part of the synergies in M&As are from profitability, investment strategy, and economies of scale. How these three factors affect long-term performance depends on how much they change after M&As. Therefore, in the next section, we will test in regression analysis the changes in the three years starting from the previous year of the announcement of M&As.

Table 4. Summary Statistics of Performance after Domestic M&As

This table reports the acquirers' three-year BHARs. The matching firms are selected by propensity scores from Li and Zhao (2006) using the criteria of SIZE and BM. The table has three factors of classifications scaled by sales: PM, CAPX, and COGS. The median of each variable separates the high and low subsamples.

		BHRs				BHARs	
		Domestic M&As		Matching Firms			
		Mean	Median	Mean	Median	Mean	Median
PM	Low	0.227	0.137	0.154	0.061	0.073	-0.004
	High	0.353	0.202	0.210	0.121	0.143	0.013
		-0.126***	***	-0.056***	***	-0.070***	***
CAPX	Low	0.303	0.166	0.169	0.065	0.134	0.017
	High	0.265	0.142	0.181	0.097	0.084	-0.007
		0.038***		-0.012		0.050***	**
COGS	Low	0.356	0.216	0.197	0.097	0.158	0.032
	High	0.240	0.150	0.167	0.087	0.074	0.013
		0.116***	***	0.039***	**	0.085***	***

To analyze whether the factors significantly impact the motivation of M&As, we regress the dummy variable of M&As on three factors: acquiring firms' characteristics, operational performance, and corporate governance. The factors of acquiring a firm's characteristics contain SIZE, BM, DR, and PR. The factors of operational efficiencies include ROA, TOT, PM, CHG_PM, CAPX, CHG_CAPX, COGS, and CHG_COGS. Corporate governance factors include H_PERCT, CHG_PERCT, H_HHI, CHG_HHI, TOP10 and TOP10_PERCT.

From Table 5, considering acquiring firms' characteristics, the empirical results show DR of acquirers has a significantly positive impact on the domestic acquisition (coefficients are 1.786, 1.785, 1.789, 1.814, 1.790, and 1.589 in models 1 to 6), implying firms tend to finance to acquire target firms.

Table 5. The Motivation Factors of M&As

This table reports how the motivation factors affect M&As. We categorize the motivation factors into three: (1) company characteristics, including BM, DR, and PR, (2) operational efficiencies, including ROA, TOT, PM, CAPX, and COGS, (3) corporate governance, including H_PERCT and H_HHI. Dependent variable $y_{i,t}=1$ for M&As, 0 for matching firms of corresponding M&As. Sample period: 1990~2014. Numbers in parentheses are p-values. Superscripts *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
BM	0.087 (0.197)	0.086 (0.206)	0.089 (0.195)	0.084 (0.238)	0.081 (0.259)	0.107 (0.208)
DR	1.786*** (0.000)	1.785*** (0.000)	1.789*** (0.000)	1.814*** (0.000)	1.790*** (0.000)	1.589*** (0.000)
PR	-0.003 (0.236)	-0.003 (0.230)	-0.003 (0.232)	-0.003 (0.210)	-0.004 (0.208)	-0.002 (0.332)
ROA	-0.001 (0.933)		-0.001 (0.911)	0.000 (0.997)	-0.016 (0.249)	-0.025 (0.127)
TOT		-0.024 (0.143)			-0.052*** (0.000)	-0.090*** (0.000)
PM	0.000 (0.643)				0.004 (0.180)	0.004 (0.126)
CAPX		0.000 (0.887)	0.000 (0.860)		0.016** (0.030)	0.014* (0.051)
COGS				-0.000 (0.683)	-0.000 (0.932)	-0.000 (0.990)
H_PERCT	1.210*** (0.000)	1.214*** (0.000)	1.212*** (0.000)	1.308*** (0.000)	1.312*** (0.000)	1.734*** (0.000)
H_HHI	-1.240*** (0.000)	-1.234*** (0.000)	-1.245*** (0.000)	-1.164*** (0.000)	-1.147*** (0.000)	-1.129*** (0.000)
Constant	0.800*** (0.000)	0.819*** (0.000)	0.796*** (0.000)	0.766*** (0.000)	0.818*** (0.000)	0.638*** (0.000)
Yearly FE	NO	NO	NO	NO	NO	YES
Observations	38,234	38,124	37,640	37,130	36,762	38,234
Pseudo R ²	0.0615	0.0619	0.0618	0.0651	0.0660	0.0842

Next, from the empirical results in acquirers' operational performance, we find a significantly negative relation between the TOT of acquirers and the domestic M&As (coefficients are -0.052 and -0.090 only in models 5 and 6). We infer that the firms with a higher TOT would prefer to develop business organically, as organic growth has less risk than M&As. The empirical results also show positively that the acquirers' CAPX affects domestic M&As significantly (coefficients are 0.016 and 0.014 only in models 5 and 6). It indicates that the acquiring firms would increase the capital expenditure by scaling up business on top of domestic M&As.

As to acquirers' corporate governance, on the one hand, H_PERCT in acquiring firms shows a significantly positive impact on the domestic M&As (coefficients are 1.210, 1.214, 1.212, 1.308, 1.312, and 1.734 in models 1 to 6), implying that institutional shareholders take a positive view with domestic M&As because they are familiar with these domestic industries and firms. On the other hand, we find the distinct result that H_HHI appears to affect the domestic M&As significantly negatively (coefficients are -1.240, -1.234, -1.245, -1.164, -1.147 and -1.129 in models 1 to 6), a result that differs from the previous result of H_PERCT. We infer that institutional shareholders under a higher shareholding concentration resist engaging in domestic M&As. We find no evidence to support BM, PR, ROA, PM, and COGS influencing decisions on domestic M&As.

4.2 Multivariate Regression

With the knowledge of the motivation of M&As from previous empirical results, we would like to analyze the long-term abnormal performance after M&As. Based on the empirical evidence in Table 5, these factors of acquirers significantly affect the acquiring decision, including DR, TOT, CAPX, H_PERCT, and H_HHI. Accordingly, we can infer that firms with these previous specific factors tend to take an M&As. Furthermore, we suspect that there are impacts on acquirers' future performance after M&As, and therefore we analyze the long-term abnormal performance after M&As and summarize regression results in Table 6.

From the results in Table 6⁸, among the control variables of acquiring firms' characteristics, we find that the acquirers' SIZE is negatively associated with acquiring firms' BHARs (coefficients are -0.029, -0.029, -0.030, -0.028, and -0.030 in models 1 to 5). This finding suggests that acquirers with a larger size tend to underperform after the M&As, and the target firms provide fewer benefits to their acquirers. We also find that the impact of DR is similar to SIZE. The acquirers' DR is negatively associated with acquiring firms' BHARs (coefficients are -0.101, -0.127, -0.090, and -0.074 in models 2 to 5). The result indicates that acquirers with a higher DR tend to underperform after the M&As.

Regarding acquiring firms' operational performance based on the results from Table 6, we find ROA (coefficients are 0.300, 0.306, 0.271, 0.378, and 0.378 in models 1 to 5) and PM (coefficients are 0.039, 0.037 in models 4 and 5 respectively) are positively significant correlated with BHARs. Practical experience suggests that the profit margin improvement will increase company value. Furthermore, we found COGS (coefficients are -0.026, -0.028, -0.021, -0.064, and -0.064 in models 1 to 5) and CAPX (coefficients are -0.152, -0.138, -0.104, -0.123 and -0.131 in models 1 to 5) both have negatively significant impacts on acquirers' BHARs after M&As. It is consistent with previous analyses as increasing capital expenditure after M&As will deteriorate company value. Decreasing the cost of goods sold would increase profit margins in cases where other revenue and expenses are constant. Moreover, some possible changes in operations could significantly impact acquirers' long-term performance after M&As. We find that CHG_COGS is positively associated with acquiring firms' BHARs (coefficients are 0.044 and 0.042 in model 4 and model 5), and CHG_CAPX is negatively weakly associated with acquiring firms' BHARs (coefficient is -0.031 in models 2). The finding from changes in these variables may indicate that the acquirers realized the operational synergies after M&As by reducing capital expenditures and the cost of goods sold.

With respect to the factors regarding industries for the acquirers, the evidence shows HORIZON⁹ has a positive significant impact on acquiring firms' BHARs (coefficients are 0.067, 0.070, 0.063, 0.060, and 0.057 in models 1 to 5). This indicates that acquirers will enjoy higher abnormal returns given that the acquirer and the target firms have a related business line. This finding explains the practice that business-related M&As do create synergy after M&As.

Despite Table 6 provides a comprehensive realization of the abnormal performance after conducting M&As, we explore further to investigate corporate governance from the viewpoint of institutional ownerships. In order to reveal relations between acquirers' performance and institutional ownership, we next perform the multivariate analysis by running the regressions of TOP10, TOP10_PERCT, and BLOCK and summarize the results in Table 7.

⁸ We further analyze the performance of MB (market value/book value) and ROA after M&As and find most of the results are consistent.

⁹ Horizontal M&As (HORIZON) is M&As where the acquiring firms and the target firms have the same 3-digit SIC code.

Table 6. The Analysis of Long-Term Abnormal Performance after M&As

This table reports the abnormal performance after M&As. The abnormal performance is the three-year BHARs of acquirers. The dependent variables are categorized as (1) company characteristics, including SIZE, BM, DR, and PR, (2) operational efficiencies, including ROA, TOT, PM, CHG_PM, CAPX, CHG_CAPX, COGS, and CHG_COGS, (3) corporate governance, including CHG_PERCT and CHG_HHI. Numbers in parentheses are p-values. Superscripts *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

VARIABLES	(1)	(2)	(3)	(4)	(5)
SIZE	-0.029*** (0.000)	-0.029*** (0.000)	-0.030*** (0.000)	-0.028*** (0.000)	-0.030*** (0.000)
BM	0.005 (0.234)	0.004 (0.266)	0.005 (0.239)	0.007* (0.058)	0.007* (0.073)
DR	-0.077 (0.122)	-0.101** (0.039)	-0.127*** (0.009)	-0.090* (0.070)	-0.074 (0.142)
PR	0.009* (0.074)	0.009* (0.072)	0.009* (0.086)	0.011** (0.023)	0.011** (0.026)
ROA	0.300*** (0.000)	0.306*** (0.000)	0.271*** (0.000)	0.378*** (0.000)	0.378*** (0.000)
TOT	-0.018 (0.119)	-0.017 (0.145)	-0.016 (0.162)	-0.001 (0.902)	-0.008 (0.497)
PM	0.007 (0.305)			0.039*** (0.003)	0.037*** (0.006)
CHG_PM	-0.030*** (0.000)	-0.025*** (0.000)	-0.014*** (0.000)	-0.057*** (0.000)	-0.056*** (0.000)
CAPX	-0.152*** (0.000)	-0.138*** (0.001)	-0.104*** (0.000)	-0.123*** (0.000)	-0.131*** (0.000)
CHG_CAPX		-0.031* (0.052)		0.001 (0.963)	0.000 (0.992)
COGS	-0.026*** (0.000)	-0.028*** (0.000)	-0.021*** (0.001)	-0.064*** (0.000)	-0.064*** (0.000)
CHG_COGS			0.005 (0.137)	0.044*** (0.000)	0.042*** (0.002)
CHG_PERCT	0.019 (0.653)	0.018 (0.668)	0.017 (0.683)		-0.011 (0.823)
CHG_HHI				-0.054 (0.423)	-0.110 (0.164)
HORIZON	0.067*** (0.000)	0.070*** (0.000)	0.063*** (0.000)	0.060*** (0.000)	0.057*** (0.000)
Constant	0.826*** (0.000)	0.838*** (0.000)	0.855*** (0.000)	0.811*** (0.000)	0.853*** (0.000)
Observations	19,117	19,062	18,820	18,565	18,381
Adjusted R ²	0.029	0.029	0.028	0.029	0.030

Table 7. The Analysis of Long-Term Abnormal Performance with respect to Institutional Holding after M&As

This table reports the abnormal performance after M&As with further consideration of institutional holding. The abnormal performance is the three-year BHARs of acquiring firms. The dependent variables are defined as the same as in previous tables. Numbers in parentheses are p-values. Superscripts *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

VARIABLES	(1)	(2)	(3)	(4)
SIZE	-0.049*** (0.000)	-0.030*** (0.000)	-0.030*** (0.000)	-0.044*** (0.000)
BM	0.002 (0.703)	0.005 (0.245)	0.004 (0.280)	0.002 (0.674)
DR	-0.137*** (0.004)	-0.164*** (0.001)	-0.154*** (0.001)	-0.143*** (0.002)
PR	0.011** (0.024)	0.011** (0.023)	0.010** (0.034)	0.012** (0.016)
ROA	0.211*** (0.000)	0.209*** (0.000)	0.218*** (0.000)	0.217*** (0.000)
CHG_PM	-0.004* (0.085)	-0.004* (0.087)	-0.004* (0.087)	-0.005* (0.056)
CHG_CAPX	-0.037** (0.034)	-0.039** (0.028)	-0.038** (0.029)	-0.038** (0.032)
CHG_COGS	-0.003 (0.357)	-0.003 (0.414)	-0.003 (0.402)	-0.004 (0.308)
CHG_PERCT	-0.073 (0.104)	-0.036 (0.417)	0.010 (0.815)	-0.043 (0.329)
H_HHI				-0.474*** (0.000)
TOP10	-0.308*** (0.000)			
TOP10_PERCT		0.277*** (0.000)		
BLOCK			0.004 (0.508)	
HORIZON	0.059*** (0.000)	0.057*** (0.000)	0.060*** (0.000)	0.054*** (0.001)
Constant	1.393*** (0.000)	0.743*** (0.000)	0.805*** (0.000)	1.139*** (0.000)
Observations	18,506	18,506	18,506	18,506
Adjusted R ²	0.029	0.028	0.027	0.030

From the results in Table 7¹⁰, among the control variables, we find that TOP10 and TOP10_PERCT have a robust significant impact on the acquiring firms' BHARs. The results show that TOP10 negatively relates to the acquiring firms' BHARs (coefficient is -0.038 in model 1). Conversely, TOP10_PERCT has a positive relation with them (coefficient is 0.277 in model 2). This shows that the higher TOP10, the worse its long-term abnormal performance after M&As. On the contrary, the higher TOP10_PERCT, the better its long-term abnormal performance after the domestic M&As. Overall, we infer that the acquiring firms with higher TOP10_PERCT but lower TOP10 can outperform the future long-term abnormal performance concerning institutional holding after M&As.

¹⁰ We further analyze the performance of MB (market value/book value) and ROA after domestic M&As and find most of the results are consistent.

5. Conclusions

M&As are critical corporate events that could change a firm's value substantially. This research focuses on two issues related to the critical corporate event by utilizing the M&As that occurred from 1990 to 2014 in the US. First, we investigate the motivation of acquirers concerning different firm characteristics, operational performances, and corporate governance. Second, we analyze the long-term market performance after M&As and find factors affecting its long-term performance.

There are several exciting findings in the empirical results. First, we find that the acquirers have poor market performance after M&As. In addition, the acquirers have lower growth opportunities. Both explanations are consistent with the observations in the market. To further understand the impact of the type of M&As on motivation and performance, we separate horizontal M&As from non-horizontal M&As in the sample.

We find that acquirers tend to finance with debt to acquire the target firm. Regarding acquirers' corporate governance, on the one hand, H_PERCT in acquirers shows a positively significant impact on the decision of M&As, which implies the institutional shareholders take a positive view of the M&As because they are familiar with these industries and firms. In addition, we find that H_HHI appears to negatively affect the M&As significantly, which is different from the previous result of H_PERCT. We infer that institutional shareholders under a higher concentration in shareholdings resist M&As.

From the empirical results in operational performance, we find a significantly negative impact of TOT of acquirers on the decision of M&As. Firms with a higher TOT do not have an incentive to engage in M&As. In addition, the empirical results also show that the acquirers' CAPX significantly affects acquirers positively. It is possible that the acquirer increases the capital expenditures to enhance its market position on top of conducting an M&A. Finally, PM and COGS do not significantly influence the decision of M&As.

The empirical results show that the acquirers' SIZE is negatively associated with acquiring firms' BHARs. This finding suggests that larger acquirers tend to underperform after the M&As, providing poorer synergetic benefits to their acquirers. Further to firm size, we also find that the impact of the acquirers' DR is negatively associated with acquiring firms' BHARs. The results indicate that acquirers with higher leverage tend to underperform after the M&As. Regarding operational performance, the finding explores that ROA positively influences acquirers' BHARs.

With respect to the factors regarding the type of the M&As, the evidence shows HORIZON has a strong positively significant impact on acquiring firms' BHARs. This indicates that acquirers exhibit higher abnormal returns when the acquirer and the target firms are in a related business line, implying that business-related M&As can create synergy.

Finally, we deeply analyze the effect of institutional ownership on long-term performance. The evidence shows that both TOP10 and TOP10_PERCT both have a robust significant impact on the acquirers' BHARs. The results show that TOP10 negatively relates to the acquirers' BHARs. On the other hand, TOP10_PERCT has a positive relation with BHARs. This implies that the higher the major institutional shareholder's holding percentage, the better its long-term abnormal performance after M&As. In contrast, the higher the major institutional shareholder's holding density, the worse its long-term abnormal performance after the M&As.

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