Zero-leverage Firms and Their Mergers & Acquisitions

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ABSTRACT

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Shufei Wu

We examine whether the M&A decisions of zero-leverage (ZL) firms may not be optimal (value-maximizing) as their choices of targets may be limited for maintaining zero leverage, by comparing their short-term announcement returns and long-term post-acquisition firm performance with leverage firms. Our main findings are as follows: debt-free companies tend to acquire targets with low or zero leverage; zero-leverage acquirers underperform non-ZL acquirers around event announcement and the result is robust to using the matched sample and controlling for bidder management quality, governance quality, and bidder, target and deal characteristics; compared to levered buyers, zero-debt buyers display significantly lower long-term post-acquisition operating performance as well as lower post-acquisition stock return performance, and the difference in the long-term operating performance between zero-leverage and leverage bidders is robust to the methodology and benchmark used. Overall, our results show that unlevered firms underperform levered firms during and after the M&A activities. Our results suggest that M&A decisions of zero-leverage acquirers may not be value maximizing since they tend to draw on a limited pool of targets given their preference to maintain zero leverage.

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1. Introduction

In recent years, there have been more than 1/5 of firms that are zero-leverage (ZL) in the USA, including both short- and long-term debt, in their capital structure. The tendency of so many firms to eschew any debt is called the zero - leverage puzzle (Yang, 2013). This zero - leverage phenomenon is not consistent with standard capital structure theories: the trade-off theory (Kraus and Litzenberger, 1973) and the pecking order theory (Myers and Majluf, 1984), both of which advocate financing with debt (Bessler et al., 2013). So studying ZL firms is vital for us to have a better understanding of capital structure decisions. It is also universally acknowledged that a firm's capital structure has a dramatic impact on its mergers and acquisitions (M&As) decisions. In this study we investigate the M&A decisions of ZL firms as well as the influence of these decisions on their firm value.

The volume of empirical work on zero-leverage firms is very small, most of which focus on researching the determinants of zero-leverage behavior and characteristics of ZL firms. For example, Ilya et al. (2013) find that in US the zero-leverage and low-leverage phenomena is triggered by managerial preference, CEO and governance characteristics of firms, while Erik et al. (2012) hold a different opinion and argue that it has nothing to do with governance mechanisms and it is the result of financial constraints. Bessler et al. (2013) also propose that only a small number of firms deliberately maintain zero-leverage while most zero-leverage firms are constrained by their debt capacity after studying the industrial firms from 20 developed countries. Lee et al. (2011) and Hoque et al. (2010) examine the firm

performance of ZL firms and conclude that debt-free firms tend to perform better over the long-term and short-term periods.

Some previous studies investigate the relationship between capital structure decisions and M&As activities. Mattsson (2012) states that both highly overleveraged firms and underleveraged companies have less tendency to make acquisitions. Harford, Klasa and Walcott (2009) and Hutchinson (1995) document that bidders with higher leverage tend to finance their acquisitions with equity rather than debt. Uysal (2011) and Hu and Yang (2016) find that overleveraged firms are less likely to use cash or pay high premium in the acquisitions. Some previous research study the effect of M&A decisions on firm performance. Tuch and Sullivan (2007) mention that if bidders buy larger targets, hostile targets and use cash in their offers, they tend to experience better performance. The study on the association between M&A premia, deal size and firm value suggests that even if acquirers pay observably lower premia for large targets, they still experience significantly more negative firm performance in large deals than in small ones (Alexandridis et al. 2013). Dutta and Jog (2009), Tao et al. (2017) and Siegel et al. (2010) do not find negative short-term or long-term firm performance for Canadian acquirers, Chinese firms and Swedish manufacturing companies, respectively. However, these above-mentioned literature does not analyze ZL firms separately from other firms.

The only exception is a working paper by Bae et at. (2014) who examine acquisition decisions of ZL firms. They find debt-free companies tend to acquire targets with low or zero leverage in order to maintain zero leverage, and these firms do not particularly suffer

from value-destroying acquisitions and their post-acquisition stock performances are not worse than those of matched firms.

In this paper we argue that given their preference for maintaining zero leverage or low leverage, for ZL firms their choices of targets may be limited and hence, they may not acquire the optimal targets, which may result in their underperformance compared with non-ZL firms in the short-term announcement period and long-term post-acquisition period as well. We use a large sample of M&A decisions of zero-leverage firms to test our hypothesis by comparing their short-term and long-term firm performances during and after M&As respectively with those of leveraged firms.

Our sample consists of 3,527 completed US public mergers and tender offers during the period of 1985 to 2015 and we find consistent results with our above-mentioned hypothesis. First, we document systematically significant differences in the bidder, target and deal characteristics between zero-leverage and leveraged acquirers. For example, ZL acquirers have significantly smaller size and higher growth than leveraged firms do and their corresponding targets are also smaller and have higher growth, indicating that they are riskier and inclined to pursue acquisitions with higher risk, which do cause value deduction and lower returns. Consistent with our hypothesis that ZL firms' M&As choices may be limited, we find unlevered bidders do tend to acquire unlevered targets. Also, leveraged firms' targets have significantly more free cash flow than unlevered firms' targets do, which can generate more value-enhancing acquisitions for leveraged firms. Besides, the difference of pre-announcement price run up (in %) between leveraged and near zero-leverage firms'

targets is found to be negative and significant, so near ZL acquirers may have a higher cost of acquisition and it may negatively influence their firm performance. Finally, unlevered firms are relatively less likely to pay for deals with cash while cash acquisitions earn higher returns.

An extensive examination of the short-term and long-term performances of acquiring firms demonstrates that ZL buyers experience significantly more negative announcement abnormal returns than leveraged buyers, and this finding is robust to using matched sample and controlling for bidder management quality, corporate governance quality, and bidder, target and deal characteristics. ZL bidders also display significant subprime industry and matched firm adjusted operating performance during the 3-year and 5-year post-acquisition periods, and it is robust to the methodology and benchmark used. Results using 3-year and 5-year buy-and-hold abnormal stock returns are not consistent with our above-mentioned findings, as the stock market is affected by many factors in the long-run.

The following parts of the paper are organized as follows: Section 2 presents the relevant literature reviews. Section 3 and section 4 describes the data and summarizes the methodology respectively, and Section 5 states empirical results and section 6 concludes.

2. Literature Review

2.1. Research on Zero-leverage Firms

The volume of empirical study on zero-leverage firms is small. Most of them focus on studying the determinants of zero-leverage behavior and try to explain the zero-leverage

puzzle. Some of these papers carry out research into US non-financial firms. For example, Ilya et al. (2013) conclude zero-leverage behavior is because of managerial preference, and the CEO and governance characteristics of firms, such as CEO ownership, tenure, board size, board independence and family status, are likely important determinants of the zero-leverage and low-leverage phenomena. But Erik et al. (2012) propose neither internal nor external governance mechanisms can explain a firm's conservative approach to debt financing, and it is the result of financial constraints. Soku et al. (2012) also state that firms' extreme debt conservatism is triggered by the favorable equity market valuation and borrowing constraints. Some of the other previous research investigate international zero-leverage firms. For instance, Bessler et al. (2013) examine industrial firms from 20 developed countries and apply a detailed comparison between constrained and unconstrained debt-free firms and document that only a small number of firms deliberately maintain zero-leverage while most zero-leverage firms are constrained by their debt capacity. Viet (2013) conducts this research on UK non-financial firms and indicates that the zero-leverage phenomenon can be explained by a combination of considerations of financial constraints, underinvestment incentives, financial flexibility, and macroeconomic conditions. Adverse macroeconomic conditions increase the tendency of firms to avoid debt and accumulate cash to preserve financial flexibility and meet financing needs, especially for less financial constrained companies. However, Takami (2016) find that Japanese firms are inhibited from zero leverage by the factors - financial constraints and bank shareholdings, which are more powerful than the factor of foreign investors encouraging unleverage. Based on the empirical evidence from Nigeria, zero-leverage behavior is

attributed to firm size, age and profitability, and bigger, younger and more profitable firms are more likely to retain zero-leverage. (Ezeoha ,2008).

Some research investigates the firm performance of zero-leverage firms. The empirical evidence shows debt-free firms tend to perform better over the long-term and short-term periods (Lee et al., 2011 and Hoque et al., 2010). And Babak (2016) argue that these firms do not lose value by not levering up because they optimally hold the real option to have debt later.

Erik et al. (2012) study whether the corporate governance mechanism of zero-leverage firms is better than leveraged firms and prove that the internal and external governance mechanisms of zero-debt firms are not weaker than those of non- ZL firms, so their debt initiation decisions are not attributed to shocks to managerial entrenchment, such as takeover threats or activist block holders.

Only Bae et at. (2014) research zero-leverage firms and their acquisition activities. Their findings present that zero-leverage firms do not tend to pursue value-destroying acquisitions, although their managers have high levels of discretion. These firms prefer to acquire low or zero-leverage targets in order to maintain zero leverage and they are more likely to use cash than equity in their transactions and their post-acquisition stock performances do not suffer from their acquisition activities.

2.2. Impact of Capital Structure on Mergers and Acquisitions Decisions

It is widely accepted that a firm's capital structure has a great impact on its M&A decisions.

Harford, Klasa and Walcott (2009) and Hutchinson (1995) examine how acquirers choose to finance acquisitions and adjust their capital structure after acquisitions based on their target capital structures, and they find that when a bidder's leverage is above its target level, it is more likely to finance the acquisition with equity rather than debt. Uysal (2011) also shows managers consider deviations from their target capital structures when planning and structuring acquisitions, overleveraged firms are less likely to make acquisitions and are less likely to use cash in their offers, and they prefer to acquire smaller targets and pay lower premiums. Besides, Mattsson (2012) presents that both of highly overleveraged firms and underleveraged companies are associated with lower acquisition probability, they seem to make more shareholder value increasing acquisitions and acquire above average abnormal announcement return.

Qiu et al. (2005) study the relationship between financial leverage and the firms' investment decisions on Canadian publicly traded companies. Their results show that leverage has a negative impact on firm investment and this negative effect is more obvious for firms with lower growth opportunities.

Hu and Yang (2016) investigate the role of leverage in cross-border mergers and acquisitions in 57 countries, their study provide international evidence on how leverage affects managerial decision to acquire foreign targets and their results prove that the interdependent relationship between investment decision and financing decision also exists in other countries besides America and Canada. Similar to the results of the study on North America, they also find that firms with higher leverage are less likely to use cash or pay high premium in the acquisition, and underleveraged firms adjust their capital structure before

the acquisition by issuing more debt, while overleveraged firms issue more equity after the acquisition. Besides, firms tend to acquire foreign targets with lower leverage, whereas firms are less likely to be regarded as targets by foreign bidders with higher leverage, and this finding is more significant in Asian countries than North America.

The existing literature demonstrates the interdependent relationship between capital structure decisions and acquisitions exists globally, but they do not analyze ZL firms separately from other firms.

2.3. Impact of Mergers and Acquisitions Decisions on Firm Performance

Hu and Yang (2016) prove that foreign bidders gain positive abnormal returns in the short-run, but negative returns in the long run, while targets earn positive abnormal returns in the both short run and long run. AGRAWAL et al. (1992) find acquiring firms' 5-year post-merger return is about -10%, and this is robust to various specifications. A review of empirical research states that acquisitions have an insignificant impact on shareholder wealth in the short run but an overwhelmingly negative effect in the long term, and acquirers with superior pre-bid performance are more likely to underperform in the post-bid period. If bidders acquire larger targets, hostile targets and use cash to pay for the transaction, they tend to experience better performance (Tuch and Sullivan, 2007). But the study on the association between M&A premia, deal size and firm value suggests that even if acquiring firms pay observably lower premia for large targets, they still experience significantly more negative firm performance in large deals than in small ones, and this result can largely be attributed to the unobserved complexity inherent in large deals (Alexandridis et al. 2013).

Ma et al. (2011) measure the long-term influence of mergers on acquirers' intrinsic value and the results also exhibit that bidders suffer a loss on average over the three - year post-merger period, which is mainly driven by decreases in expected returns. This is the case especially for firms with high initial intrinsic values. They also mention that the poor post-acquisition stock returns recorded in other research can be primarily due to decreasing intrinsic value rather than changes in valuation levels. Haleblian and Finkelstein (1999) suppose that the more similar a firm's acquisition targets are to its prior targets, the better they perform.

Dutta and Jog (2009) do not find negative long-term operating performance or stock performance for Canadian bidders after their acquisitions. For Chinese firms, the announcement of cross-border M&As causes a positive stock market reaction, and the level of targeting countries' political risk negatively affects the acquirers' short-term market performance (Tao et al., 2017). For Swedish manufacturing firms, their performance does not decline after M&As and plant productivity gets enhanced as well, although establishments and firms shrank (Siegel and Simons, 2010). Through the study on overseas acquisitions by developing country multinational companies (DMNCs), Singh and Kale (2017) demonstrate that DMNCs earn better acquisition performance when they keep the target "structurally separate" from their own organization and retain its senior executives, and it also improves performance by "linking mechanisms" to coordinate interdependencies between the two firms. Salaber et al. (2016) argue that M&As in ASEAN （Association of Southeast Asian Nations） countries show value destruction during the post-M&A period, yet, M&As implemented during the financial crisis are more profitable than those

completed before or after the crisis. Also, during the crisis, firms' characteristics related to M&A activity like payment method, industry relatedness and targets' relative size are found to have no impact on performance.

Huang et al. (2017) examine the influence of national cultural differences on cross-border post-acquisition performance, they apply a different approach- power distance value (PDV) to measure one dimension of national cultural values and conduct the research in the global information technology industry. They find a negative relationship between PDV differences and bidders' long-term post-bid performance and this relationship is stronger when acquiring firms' PDV are higher than acquired firms' than the opposite case. However, the investigation by Savović (2017) indicates that organizational culture differences can create firm value in Serbia if the managers of acquirers properly understand and manage the culture differences, and employees' attitudes towards the diversities is a partial mediator of the relationship between culture differences and post-acquisition performance, so the managers should also monitor and evaluate employees' attitudes, there by helping to improve the firm performance.

Our study adds to the existing body of literature by analyzing the M&A decisions of ZL firms as well as the influence on their firm performance separately from other firms. Also, we propose a different hypothesis towards their firm performances under the impact of their preferred M&A decisions and find different results from the existing literature as well. We conduct this research by comparing zero-leverage firms with matched non-ZL firms for their announcement abnormal returns in the short-term and industry and matched firm adjusted return on assets (ROA) as well as buy-and-hold abnormal returns (BHAR) in the long-term

period so as to investigate whether ZL firms underperform leveraged firms with the influence of M&A activities.

3. Data

To construct our sample, we start with the data collection of acquisition deals from Securities Data Corporation (SDC) Platinum database and our data is comprised of successful mergers and tender offers from January 1, 1985 to December 1, 2015. We want our study to cover an enough long - time period, but before our starting point, very few mergers and tender offers happened, this is why we choose this time period. And the reason why we choose these two M&A deal types is because they are the only ones where one company tends to buy another completely. The data satisfy the following criteria: (1) both the acquirer and target are public firms in the USA; (2) the deal value reported in SDC is more than $1 million; (3) the acquisition is completed; (4) the acquirer owns 100% of the target's share after acquisition and controls less than 50% before acquisition (in an another word, the acquirer obtains more than 50% of target's ownership in the event); (5) utilities (Fama-French 8 industry) and financial firms (FF 11 industry) are excluded from the sample as they are very highly regulated industries; (6) the sample firms have financial and stock return data available from COMPUSTAT and CRSP, respectively. Our final sample consists of 3,527 deals comprising 2,717 (77.03 percent) mergers and 810 (22.97 percent) tender offers.

In Table 1, we present a detailed breakdown of the sample firms' deal characteristics by year. There are more mergers and tender offers between 1994 and 2001 due to the technology boom and fewer after 2001 because of the slowdown of the economy and

especially fewer after the burst of financial crisis. 1120 out of 3,527 (31.76 percent) deals are 100% paid for by cash, 1225 (34.73 percent) by stock and 458 (12.99 percent) by a mix of cash and stock. Finally, 926 (26.25 percent) M&As are diversified deals, that is to say, the acquirer acquires the target in a different industry.

Table 2 shows the sample distribution by industry defined by Fama – French industry classification and the industry distribution holds on a yearly basis as well. The largest number of deals are from the business equipment sector (1062) followed by healthcare (526) and manufacturing (390), while other sectors represent a much smaller percentage of the sample and the smallest number of deals are from chemicals sector (81).

In Table 3, we report a breakdown of the acquiring firms' and acquired firms' deal characteristics by leverage respectively. We get this sample after merging data from SDC with those from CRSP and COMPUSTAT and classify them by leverage. We define the book leverage ratio of firm i in year t by

$$L_{it} = \frac{LTdebt_{it}+LTDyr1_{it}}{TA_{it}} \quad (1)$$

where LTdebt is the amount of long-term debt that is over one year,

LTDyr1 is long -term debt due within one year and TA is total asset.

This Leverage ratio is defined similarly in most recent capital structure papers (e.g., Lemmon, Roberts, and Zender,2008; Yang et al., 2013; Graham and Leary,2011; Leary and Roberts,2010; Lemmon and Zender,2010). As you can see from this table, ZL firms represent complete zero - leverage firms whose leverage ratio is 0%, NZL is near zero - leverage firms

with 0% - 2% of debt and 0% included, and L means leveraged firms which have debt of more than 2%. Overall, the percentage of each deal characteristic is similar to that presented in Table 1. Specifically speaking, for NZL firms and leveraged firms, each characteristic term occupies around 20% and 80% of the whole sample respectively, except for tender offer (12.24% and 87.76%) and diversification (9.96% and 89.67%, respectively). Also, for these 3 levels of leveraged firms, the numbers of merger are all more than those of tender offer. And ZL and NZL firms seem to prefer use stock to pay for transactions since their numbers of cash and stock are 63 versus 91 and 117 versus 181 respectively while leveraged firms tend to pay by cash (665 versus 530). This finding is not consistent with what Bae et at. (2014) proved in their paper.

Summary statistics on bidder and target firm characteristics, acquiring firm governance and deal characteristics are provided in Table 4 for ZL, NZL and L firms, respectively. Variable definitions are described in Appendix 1. Firms that are smaller and have higher growth opportunities are normally riskier and inclined to make risky investments. Likewise, smaller high growth targets are associated with greater uncertainty and hence riskier. We note that ZL and NZL acquirers have significantly smaller size and higher growth, as measured by total assets and Tobin's q, than leveraged firms do, and their corresponding targets are also smaller and have higher growth. This indicates that unlevered firms pursue acquisitions with higher risk, which may cause value deduction and lower returns. As we expect, unlevered bidders tend to acquire unlevered targets since their targets' median of debt ratio is almost 0, although the mean of their leverage ratio is 0.072, which may be influenced by extreme values. Thus, their M&As choices may be limited. We can also see from the median of free

cash flow, leveraged acquirers have significantly less free cash flow than ZL and NZL acquirers do, this may partly explain why the former needs to borrow more money and have higher leverage ratio than the latter does. On the contrary, leveraged firms' targets have significantly more free cash flow than unlevered firms' targets do. Moreover, the difference of pre-announcement price run up (in %) between L and NZL firms' targets is found to be negative and significant at 1% and 10% level for mean and median, respectively, demonstrating that NZL acquirers may have a higher cost of acquisition and it may negatively influence their firm performance.

We also include G-index (Gompers et al., 2003) and E-index (Bebchuk et al., 2009) in our analysis to measure the overall governance quality of firms and a lower value for each of these indexes indicates higher governance quality. We observe from this table that the mean and median values of both indexes for ZL and NZL firms are statistically smaller compared to the values for L firms, so unlevered firms have higher governance quality, which is consistent with the finding by Erik et al. (2012) that zero-leverage firms' debt initiation decisions are not due to shocks to managerial entrenchment.

Finally, we note that for deal characteristics, compared with unlevered firms, leveraged firms are relatively more likely to pay for deals with cash, acquire targets in a different industry and the possibility of their deals being tender offer is higher than unlevered firms.

4. Methodology

4.1. Event Study Analysis

For short-term announcement period performance analysis, we use event study methodology to get announcement returns for ZL and non-ZL acquirers, and test if there is any significant difference between their returns to examine if ZL buyers underperform non-ZL buyers during the announcement period under the influence of their different acquisition decisions. For the event study estimation period, we keep the default value in Eventus - using (-255, -46) and use 30 days prior to announcement date and 30 days after announcement date (-30, +30) as the event period. Alternative event windows are (-42, 42), (-42, 3), (-1, 0), (0, 1), (-1, 1) and (-2, 2).

The daily market model (CRSP Value Weighted Index) is used to estimate the cumulative abnormal returns (CARs) around the announcement date for each acquirer. CRSP equally weighted returns all also used but the results are similar so that they are not reported. $CAR_{i,t}$ for firm i over the period of t is calculated as:

$$CAR_{i,t} = \Sigma R_{i,t} - E(R_{i,t}) \quad (2)$$

Where $R_{i,t}$ is the actual return on firm i at time t,

$E(R_{i,t})$ is the expected return on firm i at time t.

In order to more precisely investigate if non-ZL acquiring firms outperform debt-free ones, we create matched leveraged bidders with ZL and NZL bidders based on three criteria: same Fama-French industry classification, within (-20%, 20%) range of the size and closest book-

market ratio (B/M). After applying event study to get CARs, we compare the difference on the CARs between zero-debt and matched levered acquirers, NZL and matched levered acquirers, respectively.

4.2. Regression Analysis of Short-Term Performance

To further test the difference between ZL and non- ZL bidders' CARs in a cross-section setting, we implement ordinary least squares (OLS) regression models with year fixed effect and industry fixed effect. Acquirer's 3-day CARs ($CAR_{-1, +1}$) is the dependent variable and our main variable of interest is debt ratio or debt ratio (dummy) which takes the value of 1 if the buyer's debt ratio is over 2% and 0 otherwise. The independent variables consist of bidder and target characteristics (log of total assets, Tobin's q, free cash flow and price run up for target firm), deal characteristics (tender offer dummy, cash dummy, diversification dummy, relative deal size and industry M&A) and governance quality measured by G-index or E-index. Variable definitions are provided in Appendix 1. The regression model for firm i, time t is as follows:

$$CAR_{i,t} = \alpha + \beta 1\ \text{Debtdummy}_{i,t} + \beta 2\ \text{Bidder Characteristics}_{i,t} + \beta 3\ \text{Target Characteristics}_{i,t} + \beta 4\ \text{Deal Characteristics}_{i,t} + \beta 5\ \text{Governance}_{i,t} + \text{Year fixed effect} + \text{Industry fixed effect} + \varepsilon_{i,t} \quad (3)$$

Where α and β are the parameters and $\varepsilon_{i,t}$ is the error term.

And we also control for bidder management quality in our regression models, as it is an important factor to determine the success of a M&A deal as well as acquisition returns. Higher management quality is more likely to benefit shareholder wealth maximization

(Bhabra and Hossain, 2017). We employ operating income growth rate for the preceding three years to measure management quality (Masulis et al., 2007), and followed Morck et al. (1990), we define industry adjusted operating income growth rate as ($EBITDA_{t-1}$ - $EBITDA_{t-4}$)/$EBITDA_{t-4}$. The regression model for firm i, time t is as follows:

$$CAR_{i,t} = \alpha + \beta 1\ Debtdummy_{i,t} + \beta 2\ Operating\ Income\ Growth\ Rate_{i,t} + \beta 3\ Bidder\ Characteristics_{i,t} + \beta 4\ Target\ Characteristics_{i,t} + \beta 5\ Deal\ Characteristics_{i,t} + \beta 6\ Governance_{i,t} + Year\ fixed\ effect + Industry\ fixed\ effect + \varepsilon_{i,t} \quad (4)$$

Where α and β are the parameters and $\varepsilon_{i,t}$ is the error term.

Next, we regress $CAR_{-1,+1}$ on the same independent variables excluding governance indexes as the numbers of observations will be increased a lot. All the model specifications are similar with above-mentioned and we also control bidder management quality.

4.3. Long-Term Post-Acquisition Operating Performance Analysis

For the long-term performance analysis, we first examine the operating performance of acquiring firms during 3-year and 5-year periods after M&A announcements. The operating performance is measured as the return on assets (ROA), which is the ratio of earnings before interest, taxes, depreciation and amortization (EBITDA) scaled by total assets. Tests include both industry and matched-firm adjusted ROAs. Industry adjusted ROA is computed as acquirer's ROA - industry average ROA. For matched-firm adjusted ROA, we match each of our sample firm with a control firm which is a non-event firm, meaning it did not undertake any M&A activity during the period of 5-year before and 5-year after the sample

firm's event date and the 3 matching criteria are: same Fama-French industry classification, within (-20%, 20%) range of the size and closest book-market ratio (B/M). Matched-firm adjusted ROA is calculated as acquirer's ROA – matched firm's ROA (Barber and Lyon, 1996). And then through mean test analysis, we can see if the sample firm outperforms or underperforms industry average and the matched - firm for ZL, NZL and leveraged firms respectively and if there is any significant difference on the two types of ROAs between ZL and non-ZL firms.

Similar to the short-term performance regression analysis, next we implement 4 ordinary least squares (OLS) regression models with year fixed effect and industry fixed effect to conduct the long-term operating performance regression analysis. Acquirer's 3-year or 5-year post acquisition industry adjusted ROAs is the dependent variable for two of the regression models and matched-firm adjusted ROAs is the dependent variable for the other two models. Also, our main variable of interest is debt ratio (dummy) which takes the value of 1 if the buyer's debt ratio is over 2% and 0 otherwise. The control variables consist of bidder and target characteristics (log of total assets, Tobin's q), deal characteristics (tender offer dummy, cash dummy, diversification dummy) and governance quality measured by G-index or E-index. The regression model for firm i, time t is as follows:

$$ROA_{i,t} = \alpha + \beta 1\ Debtdummy_{i,t} + \beta 2\ Bidder\ Characteristics_{i,t} + \beta 3\ Target\ Characteristics_{i,t} + \beta 4\ Deal\ Characteristics_{i,t} + \beta 5\ Governance_{i,t} + Year\ fixed\ effect + Industry\ fixed\ effect + \varepsilon_{i,t} \quad (5)$$

Where α and β are the parameters and $\varepsilon_{i,t}$ is the error term.

4.4. Long-Term Post-Acquisition Stock Performance Analysis

To perform the long-term performance analysis, we also conduct 3-year and 5-year long-term event studies by employing the buy-and-hold abnormal return (BHAR) approach to examine monthly abnormal returns. Following Mitchell and Stafford (2000), we use the following formula to calculate BHAR for firm i in month t where benchmark is our matched non-event sample in the previous operating performance analysis:

$$BHAR_{i,t} = \prod(1 + Rit) - \prod(1 + R\ benchmark, t) \quad (6)$$

Again, we apply the t test to investigate if the long-term stock performance of bidder is better than that of the matched non-event firm for ZL, NZL and leveraged firms respectively and if there is any significant difference on BHARs between ZL and non-ZL firms.

For the regression analysis, the approach and models are same as what we use in the operating performance regression analysis while the only difference is that the dependent variable becomes acquirer's 3-year or 5-year post-acquisition BHARs.

5. Empirical Results

5.1. Analysis of Short-Term Announcement Returns

First, we examine the short-term stock price reaction to the M&A announcement captured by CARs for acquiring firms. Table 5 presents the results for the different event windows for the full sample (panel A) and the matched sample (panel B).

Both of panel A and panel B show CAR is positively correlated to leverage so CARs of leveraged acquirers are significantly higher than those of ZL and NZL ones in all windows and the differences between L and ZL, L and NZL are statistically significant at the 1% level for all the window reported. For example, $CAR_{-1,+1}$ of L bidders is -0.33% for the full sample and -0.54% for the matched sample while the corresponding values for the ZL bidders are all -2.56%.

This means ZL and NZL buyers underperform leveraged buyers around the announcement date under the influence of their different acquisition decisions, which is consistent with our hypothesis that the M&A decisions of ZL firms may not be optimal as their target may be limited to zero leveraged or near zero leveraged firms and this will negatively affect their announcement returns.

We estimate 6 ordinary least squares regressions with acquirers' $CARs_{-1,+1}$ as the dependent variable and in all regression models, we include the governance (G-index) or entrenchment (E-index) variables as well as control for year and industry fixed effects. The regression results are reported in Table 6 and the results with the control variable – bidder management quality are showed in model V and VI. In model IV and VI, our main variable of interest is acquiring firm's debt ratio while in the other 4 models, the main variable is debt ratio dummy which equals 1 if bidder's debt ratio is over 2% but takes a value of 0 if the ratio is 0% in model I and model V and 0 if the ratio is within 0% to 2% in model II and III.

The debt ratio dummies are significantly positive in the 4 models and significant at 5% level in model I and V and at 10% level in model II and III, meanwhile the debt ratios are also

positive and significant at 1% in model IV and VI. This robustly proves that the CAR increases with the increase of the debt ratio no matter controlling for the bidder management quality or not. Among bidder characteristics, the results in 5 out of 6 models suggest that acquirers' size has a significant positive effect on the announcement return. In model VI, free cash flow is significantly positively related to $CAR_{-1,+1}$, which means more profitable firms gain larger returns and this is consistent with existing empirical evidence. Among target characteristics we note that those buyers who take over smaller and lower future growth target firms earn better announcement period returns. Finally, among deal characteristics, we observe that in all the 6 models the cash dummy and relative deal value are consistently significant at 1% and 10% level respectively, and the former is positively associated with CARs while the latter is negative. This result robustly demonstrates that cash acquisitions benefit from higher abnormal returns and the findings in Table 3 and 4 show that leveraged acquirers are more likely to pay for the deal with cash so we propose this may partly explain why L buyers outperform ZL and NZL buyers. Also, smaller deal value has more positive effect on bidders' short-term returns, being consistent with the result about the relationship between targets' size and CARs and consistent with existing empirical evidence.

Table 7 displays the regression results without controlling for corporate governance and the numbers of observations are increased a lot. All the other variables are same as those in Table 6 and the model specifications are also similar with those in Table 6. The results with the control variable – bidder management quality are showed in model IV, V and VI, and in models I, II, IV and V, debt ratio dummy equals 1 if bidder's debt ratio is over 2% and takes

a value of 0 if the ratio is 0% in model I and IV while 0 if the ratio is within 0% to 2% in model II and V.

The regression results are similar with the previous ones but there are some differences. The significant levels of debt dummy are higher than before, the bidder management quality becomes significantly positively related to the announcement returns and the result for bidder's size is not significant in this table. As for target characteristics, debt ratio and free cash flow become significantly positive at 10% and 5% level respectively in most of the models, which means if bidders acquire targets which have higher debt ratio and more free cash flow, they will obtain higher returns. Since we observe in Table 4 that L firms tend to buy higher leveraged targets and buy those with more free cash flow, it may partly illustrate why L acquirers outperform ZL and NZL acquirers.

The overall evidence in Table 6 and Table 7 is also consistent with our prediction, clearly indicating that levered firms realize greater short-term gains than unlevered firms do.

5.2. Analysis of Long-Term Post-Acquisition Performance

Bae and Chung (2014) find that zero-leverage firms' post-acquisition stock performances are not worse than those of matched firms, so for further study purpose, we examine their difference of performances during the post-acquisition long-term period as well. Table 8 and Table 9 present the evidence from this investigation for operating performance.

Table 8 displays the univariate mean test results. In the industry adjusted performance, we observe (for 5-year ROA) that the ZL and NZL acquirers significantly underperform their

industry mean benchmark by 4.19% and 3.36% respectively while the leveraged sample outperforms their industry benchmark by 0.59% and is also significant at 1% level. Both of the differences between L and ZL bidders and between L and NZL sample are around 4% and statistically significant at 1% level. The trend is similar for the 3-year ROAs. In the match firm adjusted performance, for 5-year ROA, levered firms significantly outperform their paired non-event control firms by 2.70% although the results for ZL and L samples are not significant. Similar with our findings above, the differences are also significant while the differences for 3-year ROA are not significant. It generally confirms that zero-leverage and near zero leveraged bidders' subprime operating performance in the long-run following an acquisition event.

In Table 9 we report the cross-sectional regression analysis of 5-year and 3-year adjusted ROAs. In panel A, acquirer's 5-year post-acquisition industry adjusted ROA is the dependent variable for model I and II and 5-year matched-firm adjusted ROA is the dependent variable for the other two models. Our main variable of interest is debt ratio (dummy), which is consistently positive and significant in all four models. This is consistent with the result in Table 8 that the difference of adjusted ROA between leveraged and unlevered acquirers is significantly positive. We also observe that bidder's size and Tobin's q are positively related to ROAs and significant at 1% level, and mergers enable the firms to earn better industry adjusted ROAs than tender offers do. Again, consistent with our findings in the short-term performance analysis, cash acquisitions robustly positively affect adjusted ROAs and significant at the 1% level in each model. Meanwhile, all the model specifications, variables and results are about the same for the analysis of 3-year adjusted ROAs in panel B.

Overall, the evidence robustly supports our hypothesis that L firms also realize better long-term operating performance than ZL and NZL firms do.

Apart from operating performance, we also report the analysis results for stock performance in Table 10. Panel A shows 3-year and 5-year average BHARs for ZL, NZL and L firms respectively, as well as the differences between them. We can see (for 3-year BHARs) that both of NZL and L acquirers significantly underperform their matched benchmarks, but the difference is not significant. For 5-year BHARs, ZL and NZL bidders underperform by 104.04% and 162.13% their matched firms respectively, while leveraged bidders underperform 88.71% less than NZL sample does and the difference is significant at 5% level, once again proving the levered buyers' superior performance in the long-run.

Next, we present the analysis result in a cross-section setting in panel B. The dependent variables are 3-year BHAR (model I, II) and 5-year BHAR (model III, IV). Again, our main variable of interest is debt ratio dummy, while equals 1 when the acquirer's debt ratio is over 2% and 0 otherwise. We find that acquirers which have bigger size and lower growth opportunity gain higher long-term stock performance and the results are significant in all of the 4 models. Also, consistent with our pervious findings and the existing empirical evidence, target's Tobin's q and tender offer dummy have a negative relation with 5-year stock returns and 3-year stock returns, respectively. However, the debt ratio dummy is not significant in each model, indicating debt ratio is not related to long-term stock performance and there is no significant difference on the long-term stock returns between levered and unlevered bidders. We suppose this inconsistent result may be due to the fact

that the stock market is affected by many factors in the long-run, which will make the association become weak between leverage and stock returns.

6. Conclusions

In this paper we conduct a comprehensive study of the M&A decisions of zero-leverage firms and the influence on their short-term and long-term firm performance using a sample of 3,527 completed US mergers and tender offers during the period of 1985 to 2015. Our results demonstrate that ZL acquirers experience significantly more negative announcement abnormal returns than leveraged acquirers, and this finding is robust to using matched sample and controlling for bidder management quality, corporate governance quality, and bidder, target and deal characteristics. ZL acquiring firms also display significant subprime industry and matched firm adjusted operating performance during the 3-year and 5-year post-acquisition periods, and it is robust to the methodology and benchmark used. Results using 3-year and 5-year buy-and-hold abnormal stock returns are not consistent with our above-mentioned findings, as the stock market is affected by many factors in the long-run.

The underperformance of ZL buyers can be primarily explained by the following findings. First, we note that ZL acquirers have significantly smaller size and higher growth than leveraged firms do and their corresponding targets are also smaller and have higher growth, indicating that they are riskier and inclined to pursue acquisitions with higher risk, which do cause value deduction and lower returns. Consistent with our hypothesis that ZL firms' M&As choices may be limited, we find unlevered bidders do tend to acquire unlevered targets. Also, leveraged firms' targets have significantly more free cash flow than unlevered

firms' targets do, which can generate more value-enhancing acquisitions for leveraged firms. Moreover, the difference of pre-announcement price run up (in %) between leveraged and near zero-leverage firms' targets is found to be negative and significant, so near ZL acquirers may have a higher cost of acquisition and it may negatively influence their firm performance. Finally, unlevered firms are relatively less likely to pay for deals with cash while cash acquisitions earn higher returns.

In conclusion, the evidence robustly supports our hypothesis that zero-leverage firms underperform leveraged firms in the short-term announcement period as well as the long-term post-acquisition period and their M&A decisions may not be optimal.

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Appendix

Variable Definitions

Variable	Definitions
Panel A: leverage dummy	
Debt ratio dummy variable	1 for leveraged firms and 0 otherwise
Panel B: bidder and target characteristics	
Firm size	Log of book value of total assets
Tobin's q	Market value of assets over book value of assets: (book value of debt + share price × common shares outstanding)/total assets
Leverage	Book value of debts / total assets
Free cash flow	Operating income before depreciation – interest expense – income taxes – capital expenditure, scaled by book value of total assets
Price run-up (target)	Cumulative abnormal return for the period (−60,−10) with CRSP value weighted return used for market adjustment
Panel C: deal characteristics	
Tender offer	Equals 1 if flagged as a tender offer in SDC, 0 otherwise
Cash	Equals 1 for totally cash financed deals, 0 otherwise
Diversification	Equals 1 if target and acquirer are not in the same Fama-French industry, 0 otherwise
Relative deal size	Deal value (SDC)/ market value of equity
Industry M&A	Value of all corporate acquisitions worth $1 million or more for each year and Fama-French industry divided by the total book value of assets of all Compustat firms in same Fama-French industry and year (target industry)
Panel D: bidder management quality	
Operating income growth rate	Industry adjusted operating income growth rate is defined as $(EBITDA_{t-1} - EBITDA_{t-4})/EBITDA_{t-4}$
Panel E: governance indices	
G-index	From Gompers et. al. (2003)
E-index	From Bebchuk et al. (2009)

Table 1 Sample Description by Year

This table reports description of 3,527 completed US transactions from the Securities Data Corporation's (SDC) U.S. Merger and Acquisitions database, covering dates from January 1, 1985 to December 31, 2015. It provides a detailed breakdown of the sample firms' deal characteristics by year. We use the following criteria: (1) both the acquirer and target are public firms in the USA; (2) the deal value reported in SDC is more than $1 million; (3) the acquisition is completed; (4) the acquirer owns 100% of the target's share after acquisition and controls less than 50% before acquisition; (5) utilities (FF industry 8) and financial firms (FF industry 11) are excluded from the sample; (6) the sample firms have financial and stock return data available from COMPUSTAT and CRSP, respectively.

Year	Total	Merger	Tender Offer	Cash	Stock	Mixed	Diversification
1985	90	45	45	44	26	5	45
1986	101	47	54	57	15	10	39
1987	88	54	34	43	17	9	31
1988	102	55	47	53	18	3	30
1989	72	47	25	28	28	7	24
1990	61	48	13	16	26	4	15
1991	57	45	12	8	23	13	17
1992	54	44	10	10	25	7	14
1993	70	56	14	18	28	11	19
1994	132	107	25	30	67	17	41
1995	172	136	36	35	93	13	49
1996	189	151	38	30	84	18	55
1997	213	166	47	34	99	16	52
1998	276	229	47	50	130	20	67
1999	256	199	57	58	115	26	66
2000	231	184	47	39	109	26	63
2001	178	145	33	39	76	26	43
2002	104	74	30	40	32	14	22
2003	103	82	21	29	35	19	18
2004	105	95	10	42	27	17	26
2005	115	106	9	44	23	30	20
2006	107	101	6	58	16	17	24
2007	111	88	23	58	16	23	33
2008	76	52	24	35	15	11	18
2009	77	58	19	25	18	18	13
2010	78	59	19	50	11	9	15
2011	45	36	9	20	7	11	13
2012	61	51	10	37	8	10	14
2013	58	46	12	33	6	6	9
2014	63	50	13	24	19	15	13
2015	82	61	21	33	13	27	18
TOTAL	3527	2717	810	1120	1225	458	926

Table 2 Sample Distribution by Industry

This table shows the sample distribution of the 3,527 completed US transactions by industry defined by Fama - French industry classification and the industry distribution holds on a yearly basis as well. Utilities (FF industry 8) and financial firms (FF industry 11) are excluded from the sample.

	FF1 Consumer Non-Durables	FF2 Consumer Durables	FF3 Manufacturing	FF4 Energy	FF5 Chemicals	FF6 Business Equipment	FF7 Telecom.	FF9 Shops	FF10 Healthcare	FF12 Other	Total
1985	9	4	18	3	7	9	7	13	8	12	90
1986	9	10	25	5	5	10	2	12	5	18	101
1987	7	6	20	4	3	18	4	8	6	12	88
1988	6	6	20	4	3	21	7	17	3	15	102
1989	7	4	7	3	2	19	7	6	9	8	72
1990	1	1	8	5	0	14	6	12	6	8	61
1991	5	1	7	3	0	15	4	2	10	10	57
1992	7	1	7	2	0	13	3	4	10	7	54
1993	8	0	9	1	2	13	6	6	18	7	70
1994	4	3	16	11	1	29	13	13	31	11	132
1995	8	5	19	5	6	39	13	18	37	22	172
1996	4	5	20	9	3	41	19	28	36	24	189
1997	12	5	27	16	4	53	22	27	27	20	213
1998	13	5	33	18	7	74	24	41	33	28	276
1999	11	8	27	6	9	99	31	17	24	24	256
2000	13	2	26	9	3	95	17	20	18	28	231
2001	11	3	10	17	2	75	10	10	22	18	178
2002	4	0	5	5	2	46	6	6	16	14	104
2003	6	2	7	6	0	51	3	4	17	7	103
2004	9	1	7	8	3	38	4	7	14	14	105
2005	4	1	5	7	2	41	11	7	28	9	115
2006	6	3	7	8	1	39	5	8	17	13	107
2007	2	1	11	5	3	44	6	10	19	10	111
2008	0	1	6	2	2	27	6	4	21	7	76

2009	4	0	5	7	1	28	6	2	14	10	77
2010	2	2	8	7	1	26	5	4	18	5	78
2011	0	1	8	6	1	14	4	3	4	4	45
2012	3	3	3	2	2	18	4	4	12	10	61
2013	3	0	4	2	1	17	5	6	17	3	58
2014	6	0	7	4	4	12	3	4	13	10	63
2015	5	3	8	5	1	24	4	6	13	13	82
Total	189	87	390	195	81	1062	267	329	526	401	3527

Table 3 Sample Distribution by Deal Characteristics and Leverage

This table shows a breakdown of the acquiring firms' and acquired firms' deal characteristics by leverage. We get this sample after merging data from SDC with those from CRSP and COMPUSTAT and classify them by leverage. ZL firms represent complete zero - leverage firms whose leverage ratio is 0%, NZL is near zero - leverage firms with 0% - 2% of debt and 0% included, and L means leveraged firms that have debt of more than 2%.

	total	ZL firms [0%]	NZL firms [0%+0%~2%]	L firms [>2%]
Acquirers	2265	215	398	1863
Merger	1714	184	331	1379
Tender Offer	539	31	66	473
Cash	782	63	117	665
Stock	714	91	181	530
Mixed	314	34	53	261
Diversification	542	23	54	486
Targets	1873	417	641	1232
Merger	1399	318	494	905
Tender Offer	466	99	146	320
Cash	665	183	277	388
Stock	596	158	243	353
Mixed	267	43	76	191
Diversification	433	81	125	308

Table 4 Descriptive Statistics

This table presents summary statistics on bidder and target firm characteristics, acquiring firm governance and deal characteristics for ZL, NZL and leveraged firms, respectively. Variable definitions are described in Appendix 1. *, **, *** represent significant levels at 0.10, 0.05, and 0.01, respectively.

	ZL firms		NZL firms		L firms		Difference [L-ZL]		Difference [L-NZL]	
	mean	median	mean	median	mean	median	mean	median	mean	median
Bidder Characteristics										
Total assets (in year 2015, $mil)	5160.400	614.834	3803.300	586.508	15387.900	2904.260	10227.40***	2289.426***	11584.600***	2317.752***
Debt ratio	0.000	0.000	0.003	0.000	0.273	0.237	0.273***	0.237***	0.270***	0.237***
Tobin's q	3.821	2.016	3.461	2.015	1.749	1.333	-2.072***	-0.683***	-1.712***	-0.682***
Free cash flow	0.038	0.080	0.036	0.064	0.037	0.049	-0.001	-0.031***	0.001	-0.015***
Governance indices										
G-index	7.770	8.000	8.173	8.000	9.212	9.000	1.442***	1.000***	1.039***	1.000***
E-index	1.633	2.000	1.852	2.000	2.117	2.000	0.484***	0.000***	0.265**	0.000**
Target Characteristics										
Total assets (in year 2015, $mil)	317.564	89.245	260.051	81.256	1121.003	219.835	803.439***	130.590***	860.952***	138.579***
Debt ratio	0.072	0.001	0.072	0.004	0.217	0.153	0.146***	0.152***	0.145***	0.149***
Tobin's q	2.322	1.438	2.330	1.530	1.718	1.223	-0.604**	-0.214**	-0.612***	-0.307***
Free cash flow	-0.066	-0.001	-0.037	0.017	-0.005	0.031	0.061***	0.032***	0.032**	0.014
Price run up (in %)	0.085	0.085	0.103	0.088	0.057	0.061	-0.028	-0.024	-0.046***	-0.027*
Deal Characteristics										
Tender offer (dummy)	0.144	0.000	0.164	0.000	0.254	0.000	0.111***	0.000***	0.089***	0.000***
Cash (dummy)	0.293	0.000	0.291	0.000	0.357	0.000	0.066*	0.000*	0.064**	0.000**
Diversification (dummy)	0.107	0.000	0.136	0.000	0.262	0.000	0.155***	0.000***	0.126***	0.000***
Relative deal size	0.380	0.154	0.380	0.153	0.354	0.151	-0.026	-0.004	-0.026	-0.002
Observations	215		398		1863					

Table 5 Event Study Announcement Returns

This table reports the event study CARs around the announcement date for acquiring firms, where the estimation window is 255 trading days ending 46 days before the announcement date. CARs are calculated based on CRSP value weighted returns and results with CRSP equally weighted returns are similar. Panel A exhibits the announcement returns for the full sample while panel B demonstrates the results for matched sample where the leveraged bidders are matched with ZL and NZL bidders, respectively, based on industry, size and book to market ratio. *, **, *** represent significant levels at 0.10, 0.05, and 0.01, respectively.

Panel A: full sample

Event window	ZL firms	NZL firms	L firms	Difference [L-ZL]	Difference [L- NZL]
(-42,+42)	-7.45%***	-8.40%***	-1.61%***	5.84%***	6.79%***
(-42,-3)	-0.37%	-0.75%	0.96%**	1.33%***	1.71%***
(-1,0)	-1.33%***	-1.61%***	-0.45%***	0.88%***	1.16%***
(0,+1)	-2.91%***	-2.78%***	-0.36%**	2.55%***	2.42%***
(-1,+1)	-2.56%***	-2.54%***	-0.33%*	2.23%***	2.21%***
(-2,+2)	-2.74%***	-2.82%***	-0.49%***	2.25%***	2.33%***
Observations	215	398	1863		

Panel B：matched sample

Event window	ZL firms	Matched L firms	Difference [L-ZL]	NZL firms	Matched L firms	Difference [L- NZL]
(-42,+42)	-7.45%***	-1.20%**	6.25%***	-8.4%***	0.52%**	8.92%***
(-42,-3)	-0.37%	1.77%	2.14%***	-0.75%	3.03%**	3.78%***
(-1,0)	-1.33%***	-0.45%	0.88%***	-1.61%***	-0.66%**	0.95%***
(0,+1)	-2.91%***	-0.49%**	2.42%***	-2.78%***	-0.89%***	1.89%***
(-1,+1)	-2.56%***	-0.54%	2.02%***	-2.54%***	-0.91%***	1.63%***
(-2,+2)	-2.74%***	-0.63%**	2.11%***	-2.82%***	-1.05%***	1.77%***
Observations	215	204		398	382	

Table 6 Announcement Returns Regression Analysis

This table exhibits the regression analysis of acquirer announcement returns. The dependent variable is acquirer 3-day $CAR_{-1,+1}$. The results with the control variable – bidder management quality are showed in model V and VI. In model IV and VI, our main variable of interest is acquiring firm's debt ratio while in the other 4 models, the main variable is debt ratio dummy which equals 1 if bidder's debt ratio is over 2% but takes a value of 0 if the ratio is 0% in model I and model V and 0 if the ratio is within 0% to 2% in model II and III. All the variable definitions are described in Appendix 1. T- stats are showed in the parentheses and *, **, *** indicate significance at 0.10, 0.05, and 0.01, respectively.

	I	II	III	IV	V	VI
Debt ratio (dummy)	0.022**	0.012*	0.012*		0.021**	
	(2.47)	(1.65)	(1.76)		(2.33)	
Debt ratio				0.060***		0.054***
				(3.51)		(3.13)
Bidder management quality						
Operating income growth rate					0.0005	0.0005
					(0.93)	(1.00)
Bidder Characteristics						
Log (total assets)	0.003*	0.003	0.004*	0.004**	0.004*	0.005**
	(1.70)	(1.56)	(1.94)	(2.24)	(1.83)	(2.41)
Tobin's q	0.000	0.001	0.002	0.002	0.000	0.001
	(0.23)	(0.84)	(1.08)	(1.11)	(0.11)	(0.99)
Free cash flow	0.042	0.024	0.026	0.043	0.063	0.063*
	(1.07)	(0.65)	(0.70)	(1.15)	(1.58)	(1.66)
Target Characteristics						
Log (total assets)	-0.006***	-0.007***	-0.007***	-0.007***	-0.006***	-0.007***
	(-3.10)	(-3.46)	(-3.56)	(-3.56)	(-3.07)	(-3.59)
Debt ratio	0.008	0.008	0.010	0.006	0.005	0.004
	(0.76)	(0.85)	(0.97)	(0.61)	(0.44)	(0.41)
Tobin's q	-0.003**	-0.004***	-0.004***	-0.003***	-0.003**	-0.003***

	(-2.47)	(-2.93)	(-3.13)	(-2.86)	(-2.40)	(-2.86)
Free cash flow	0.016	0.016	0.015	0.015	0.012	0.012
	(0.78)	(0.84)	(0.77)	(0.79)	(0.56)	(0.64)
Price run up	0.473	0.723	0.461	0.467	0.524	0.524
	(0.47)	(0.74)	(0.48)	(0.49)	(0.52)	(0.55)
Deal Characteristics						
Tender offer (dummy)	0.002	0.002	0.002	0.002	0.001	0.001
	(0.34)	(0.33)	(0.33)	(0.38)	(0.20)	(0.22)
Cash (dummy)	0.021***	0.018***	0.018***	0.016***	0.018***	0.016***
	(3.59)	(3.11)	(3.10)	(2.83)	(2.99)	(2.84)
Diversification (dummy)	-0.005	-0.008	-0.008	-0.008	-0.006	-0.009
	(-0.84)	(-1.23)	(-1.34)	(-1.37)	(-1.05)	(-1.53)
Relative deal size	-0.017*	-0.015*	-0.015*	-0.020**	-0.015*	-0.018**
	(-1.91)	(-1.81)	(-1.78)	(-2.35)	(-1.76)	(-2.13)
Industry M&A	-0.227	-0.070	-0.106	-0.052	-0.391	-0.259
	(-1.06)	(-0.22)	(-0.32)	(-0.16)	(-1.09)	(-1.16)
Governance indices						
G-index	-0.0002	0.0002			0.0001	
	(-0.25)	(0.21)			(0.15)	
E-index			0.002	0.002		0.002
			(1.04)	(0.97)		(1.33)
Year fixed	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.096	0.088	0.090	0.102	0.095	0.100
Number of observations	665	707	729	729	655	719

Table 7 Announcement Returns Regression Analysis

This table shows the regression results of acquirer announcement returns without controlling for corporate governance. The dependent variable is acquirer 3-day $CAR_{-1,+1}$. The results with the control variable – bidder management quality are showed in model IV, V and VI. In model III and VI, our main variable of interest is acquiring firm's debt ratio while in the other 4 models, the main variable is debt ratio dummy which equals 1 if bidder's debt ratio is over 2% but takes a value of 0 if the ratio is 0% in model I and model IV and 0 if the ratio is within 0% to 2% in model II and V. All the variable definitions are described in Appendix 1. T- stats are showed in the parentheses and *, **, *** indicate significance at 0.10, 0.05, and 0.01, respectively.

	I	II	III	IV	V	VI
Debt ratio (dummy)	0.023***	0.015**		0.023***	0.011*	
	(2.94)	(2.36)		(2.74)	(1.73)	
Debt ratio			0.056***			0.045***
			(4.22)			(3.22)
Bidder management quality						
Operating income growth rate				0.0006***	0.0006***	0.0006***
				(3.59)	(3.63)	(3.51)
Bidder Characteristics						
Log (total assets)	0.000	0.000	0.001	0.000	0.000	0.000
	(0.28)	(0.45)	(0.83)	(0.25)	(0.29)	(0.56)
Tobin's q	0.000	0.000	0.000	0.000	0.000	0.000
	(-0.04)	(-0.22)	(-0.18)	(0.36)	(026)	(0.33)
Free cash flow	0.009	0.020	0.033	0.031	0.035	0.044*
	(0.36)	(0.83)	(1.34)	(1.14)	(1.32)	(1.65)
Target Characteristics						
Log (total assets)	-0.006***	-0.006***	-0.007***	-0.006***	-0.006***	-0.006***
	(-3.50)	(-3.59)	(-3.76)	(-3.22)	(-3.21)	(-3.36)
Debt ratio	0.018*	0.017*	0.012	0.018*	0.016*	0.013
	(1.90)	(1.75)	(1.22)	(1.87)	(1.69)	(1.31)

Tobin's q	-0.005***	-0.006***	-0.006***	-0.005***	-0.005***	-0.005***
	(-4.48)	(-5.05)	(-4.95)	(-4.44)	(-4.51)	(-4.44)
Free cash flow	0.040***	0.033**	0.032**	0.039**	0.031**	0.031**
	(2.57)	(2.15)	(2.07)	(2.41)	(1.99)	(1.96)
Price run up	-0.509	-0.514	-0.490	-0.616	-0.313	-0.299
	(-0.59)	(-0.62)	(-0.59)	(-0.69)	(-0.36)	(-0.34)
Deal Characteristics						
Tender offer (dummy)	0.004	0.001	0.002	0.001	0.000	0.000
	(0.67)	(0.29)	(0.31)	(0.26)	(0.03)	(0.06)
Cash (dummy)	0.023***	0.024***	0.022***	0.023***	0.024***	0.022***
	(4.41)	(4.64)	(4.33)	(4.38)	(4.50)	(4.29)
Diversification (dummy)	-0.004	-0.006	-0.005	-0.002	-0.004	-0.003
	(-0.84)	(-1.16)	(-0.97)	(-0.41)	(-0.77)	(-0.62)
Relative deal size	-0.012***	-0.012***	-0.014***	-0.012***	-0.012***	-0.013***
	(-3.83)	(-3.76)	(-4.28)	(-3.68)	(-3.65)	(-4.04)
Industry M&A	-0.219	-0.220	-0.200	-0.259	-0.235	-0.227
	(-1.00)	(-1.03)	(-0.94)	(-1.16)	(-1.09)	(-1.06)
Year fixed	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.108	0.102	0.110	0.105	0.090	0.095
Number of observations	1298	1387	1387	1206	1283	1283

Table 8 Univariate Analysis of Long-Term Post-Acquisition Operating Performance

This table reports 3-year and 5-year post-acquisition average ROAs and the univariate mean test results. ROAs are computed using the methodology from Barber and Lyon (1996). *, **, *** indicate significance at 0.10, 0.05, and 0.01, respectively.

	ZL	NZL	L	Difference [L-ZL]	Difference [L- NZL]
Industry adjusted ROA					
3-year	-5.04%***	-3.95%***	0.30%*	5.34%***	4.25%***
5-year	-4.19%***	-3.36%***	0.59%***	4.78%***	3.95%***
Observations	189	320	1686		
Match firm adjusted ROA					
3-year	0.46%	1.39%	2.42%***	1.97%	1.04%
5-year	0.23%	0.71%	2.70%***	2.47%**	1.98%**
Observations	91	149	852		

Table 9 Regression Analysis of Long-Term Post-Acquisition Operating Performance

This table shows the evidence from the analysis of post-acquisition operating performance. Panel A displays the results for 5-year performance analysis and panel B presents those for 3-year analysis. The dependent variables are acquirer's industry adjusted ROA in model I and II and match firm adjusted ROA in model III and IV. Our main variable of interest is debt ratio (dummy) which takes the value of 1 if the buyer's debt ratio is over 2% and 0 otherwise. T- stats are showed in the parentheses and *, **, *** indicate significance at 0.10, 0.05, and 0.01, respectively.

Panel A: 5-year operating performance

	I	II	III	IV
Debt ratio (dummy)	0.010*	0.015**	0.025***	0.029***
	(1.65)	(2.41)	(2.74)	(3.14)
Bidder Characteristics				
Log (total assets)	0.022***	0.021***	0.006***	0.005***
	(16.22)	(15.65)	(3.06)	(2.73)
Tobin's q	0.016***	0.016***	0.014***	0.014***
	(13.70)	(13.41)	(8.05)	(8.19)
Target Characteristics				
Log (total assets)	0.001	0.002	-0.002	-0.002
	(0.41)	(0.59)	(-0.41)	(-0.34)
Tobin's q	0.003	0.003	-0.004	-0.004
	(0.90)	(0.93)	(-1.01)	(-1.03)
Deal Characteristics				
Tender offer (dummy)	-0.010**	-0.013***	0.003	0.001
	(-2.21)	(-2.71)	(0.49)	(0.15)
Cash (dummy)	0.030***	0.030***	0.028***	0.028***
	(6.54)	(6.54)	(4.11)	(4.08)
Diversification (dummy)	-0.007	-0.007	-0.009	-0.009
	(-1.58)	(-1.57)	(-1.27)	(-1.27)
Governance indices				
G-index	0.000		0.000	
	(0.03)		(-0.17)	
E-index		0.000		-0.003
		(0.00)		(-1.43)
Year fixed	Yes	Yes	Yes	Yes
Industry fixed	Yes	Yes	Yes	Yes
Adjusted R2	0.220	0.212	0.066	0.064
Observations	449	445	412	419

Panel B: 3-year operating performance

	I	II	III	IV
Debt ratio (dummy)	0.011	0.016**	0.021*	0.023**
	(1.61)	(2.26)	(1.88)	(2.10)
Bidder Characteristics				
log (total assets)	0.022***	0.022***	0.010***	0.010***
	(13.78)	(13.54)	(4.15)	(3.98)
Tobin's q	0.013***	0.013***	0.008***	0.008***
	(10.21)	(9.78)	(4.12)	(4.22)
Target Characteristics				
log (total assets)	0.001	0.002	-0.002	-0.002
	(0.41)	(0.59)	(-0.41)	(-0.35)
Tobin's q	0.003	0.003	-0.004	-0.005
	(0.90)	(0.93)	(-1.01)	(-1.08)
Deal Characteristics				
Tender offer (dummy)	-0.008	-0.010*	-0.002	-0.004
	(-1.47)	(-1.78)	(-0.24)	(-0.52)
Cash (dummy)	0.037***	0.036***	0.036***	0.034***
	(6.74)	(6.64)	(4.25)	(4.17)
Diversification				
(dummy)	-0.001	-0.002	-0.004	-0.004
	(-0.23)	(-0.29)	(-0.48)	(-0.46)
Governance indices				
G-index	0.000		-0.001	
	(-0.16)		(-0.69)	
E-index		-0.001		-0.003
		(-0.30)		(-1.30)
Year fixed	Yes	Yes	Yes	Yes
Industry fixed	Yes	Yes	Yes	Yes
Adjusted R^2	0.221	0.212	0.055	0.052
Observations	476	470	433	440

Table 10 Long-Term Post-Acquisition Stock Performance

This table presents long-term post-acquisition stock performance analysis results. Panel A shows 3-year and 5-year average BHARs for ZL, NZL and L firms respectively, as well as the differences between them. BHARs are computed using the methodology from Mitchell and Stafford (2000). Panel B demonstrates the differences in a cross-section setting. The dependent variable is 3-year BHAR in model I, II and 5-year BHAR in model III, IV and our main variable of interest is debt ratio (dummy) which takes the value of 1 if the buyer's debt ratio is over 2% and 0 otherwise. T-stats are showed in the parentheses and *, **, *** indicate significance at 0.10, 0.05, and 0.01, respectively.

Panel A: univariate analysis

	ZL	NZL	L	Difference [L-ZL]	Difference [L- NZL]
BHAR					
3-year	-31.73%	-64.94%*	-51.62%***	-19.89%	13.32%
5-year	-104.04%**	-162.13%***	-73.42%***	30.62%	88.71%**
Observations	75	135	763		

Panel B: regression analysis

	I	II	III	IV
Debt ratio (dummy)	-0.740	-0.839	0.641	0.864
	(-1.59)	(-1.58)	(0.91)	(1.23)
Bidder Characteristics				
log (total assets)	0.435***	0.367**	0.571***	0.502**
	(2.68)	(2.28)	(2.73)	(2.39)
Tobin's q	-0.344***	-0.343***	-0.521***	-0.534***
	(-4.06)	(-4.12)	(-4.74)	(-4.88)
Target Characteristics				
log (total assets)	-0.080	-0.071	-0.219	-0.272
	(-0.60)	(-0.54)	(-1.28)	(-1.59)
Tobin's q	-0.008	0.008	-0.170*	-0.165*
	(-0.11)	(0.11)	(-1.74)	(-1.69)
Deal Characteristics				
Tender offer (dummy)	-0.716*	-0.708*	-0.637	-0.603
	(-1.69)	(-1.71)	(-1.16)	(-1.11)
Cash (dummy)	0.438	0.489	0.529	0.520
	(1.02)	(1.16)	(0.95)	(0.94)
Diversification (dummy)	0.487	0.374	0.608	0.538
	(1.10)	(0.89)	(1.06)	(0.96)
Governance indices				
G-index	-0.047		-0.009	

	(-0.73)		(-0.11)	
E-index		-0.113		-0.144
		(-0.87)		(-0.84)
Year fixed	Yes	Yes	Yes	Yes
Industry fixed	Yes	Yes	Yes	Yes
Adjusted R^2	0.015	0.024	0.032	0.035
Observations	392	407	392	406