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When Acquirers Are Short on Cash Flow in M&A Deals

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Abstract Studies on corporate takeovers are voluminous but typically assume that acquirers are not financially constrained. We show that acquirers' free cash flow (FCF) levels have significant impacts on their takeover activities and consequences. Acquirers with low FCF, despite their high levels of cash holdings, tend to pay in stocks rather than cash. The targets acquired by low-FCF acquirers are of inferior quality relative to those obtained by high-FCF acquirers. After acquisition, low-FCF acquirers seriously underperform their peers, but this underperformance does not exist in high-FCF acquirers. Further, the financial leverage of low-FCF acquirers increases sharply following acquisitions, and a significant number of them become bankrupt or are acquired by other firms. Our evidence suggests the importance of acquirer's financial position to sustain the normal operation of the combined entity following the deals. Firms with financial constraints, therefore, should be conservative in advancing takeovers.

Keywords Corporate takeover, Free cash flow, Agency problem, Financial constraints

JEL: G33, G34

1. Introduction

With the 2008 financial crisis triggered by the collapse of Lehman Brothers, due to financial constraints, a significant number of corporations were challenged by acquisitions undertaken before the financial crisis when the stock market was booming.¹ Since January 2020, the COVID-19 pandemic has triggered an even more devastating impact on all aspects of social and economic life globally; innumerable firms have gone bankrupt, and even surviving firms occupy fragile financial positions (Falato et al., 2020; Fahlenbrach et al., 2020). These unfortunate events demonstrate how important a firm's financial position is for its various policies, including its normal operations.

Over the last three decades, financial position has been used to explain takeover activities. The existing studies (e.g., Shleifer and Vishny, 1986; Lang et al., 1991; Hanson, 1992; Nohel and Tarhan, 1998; Harford, 1999; Oler, 2008) mainly focus on acquirers' cash holding level when advancing their acquisition activities. Recently, Duchin (2010) examines how acquisitions affect the acquirer's cash holdings and shows that the acquirer's cash holdings gradually decrease over the three years following the acquisition, often leading to financial distress for the acquirer. According to the pecking order theory (Myers, 1984; Myers and Majluf, 1984), internal capital is preferred to external capital in financing policies, and internally generated cash flows are the most important and reliable source of cash for a company. Therefore, the acquirer's cash flow level is critical to maintaining the long-term normal operations of the combined entity.

¹ For example, to pursue profit growth, Merrill Lynch acquired First Franklin in December 2006 and First Republic Bank in January 2007. These acquisitions enabled Merrill Lynch to approach wealthy private investors and increase its broker profit. In the short term, these acquisitions did indeed improve Merrill Lynch's performance. Merrill Lynch's profit increased by 30.2% in the second quarter of 2007 relative to the same quarter of 2006, far exceeding that of industry peers such as Goldman Sachs. However, First Franklin later became embroiled in the subprime mortgage crisis. As Merrill Lynch could not raise enough cash to cope with the crisis, it was eventually acquired by Bank of America.

Using a large sample of 7,481 mergers and acquisitions completed by 2,618 acquirers from 2000-2017, this study conducts a thorough analysis of the association between acquirer free cash flow (hereafter referred to as FCF) level and takeover activities. In the sample, acquirers seem to adopt different strategies in takeovers based on their free cash flow level. High-FCF firms tend to pay a high price to buy seemingly high synergy targets characterized by a high return on assets (ROA) and low financial leverage; instead, low-FCF acquirers simply pay a low price to acquire low synergy targets with a low ROA and high leverage. Moreover, high-FCF acquirers conduct transactions with more cash offers, whereas low-FCF acquirers conduct transactions with more stock offers. Obviously, financial constraints limit acquirers' payment capacities and target choices.

We examine investors' responses to these takeovers. The results show that investors respond negatively to acquisitions of public target firms but positively to acquisitions of nonpublic targets, consistent with the existing literature (e.g., Chang, 1998; Fuller et al., 2002). Moreover, the response is more positive for takeovers conducted by low-FCF acquirers. This evidence indicates that investors have higher expectations of takeovers advanced by low-FCF acquirers. Alternatively, it may imply the agency problems that exist in takeovers advanced by high-FCF acquirers, as proposed by Jensen's (1986) free cash flow hypothesis.

Despite the positive announcement returns, the transactions subsequently place a considerable burden on shareholders of low-FCF firms. Low-FCF acquirers significantly underperform their size, industry and market-to-book nonbidding control firms on the stock market over the three years following takeovers. They also substantially underperform relative to their nonbidding industry peers with the same level of free cash flow, indicating that they would have performed better had they not conducted the transactions. Such underperformance, however,

does not exist for high-FCF acquirers. Our analysis also shows that low-FCF acquirers experience an exacerbation of operating performance and a decline in capital expenditures following deals. The evidence reveals that free cash flow has a positive effect on acquirers' post-takeover normal operation and firm performance. For frequent acquisitions by an individual acquirer, the positive effect is even stronger for deals conducted later than those conducted earlier. Firms may use up their cash reserves in earlier acquisitions, and thus, generating enough cash flow becomes urgently necessary to maintain normal operations and support later acquisitions.

However, the impact of free cash flow on acquirer post-takeover stock performance is *not* monotonically increasing. We find it diminishes or even becomes negative once an acquirer's free cash flow level becomes too high. This evidence corroborates Jensen's (1986) free cash flow hypothesis on the takeover market. Firms with excessive cash flow but serious agency problems may engage in bad investments and destroy firm value.

At the end of this work, we examine acquirers' financial positioning following takeovers. The results show that financial leverage increases sharply for both low- and high-FCF acquirers following takeovers. Consequently, a significant portion of acquirers becomes bankrupt, and the percentage of low-FCF acquirers experiencing bankruptcy is more than twice as high as that for high-FCF acquirers. Obviously, the weak cash flow generated by low-FCF acquirers cannot sustain the operation of the combined entity following takeovers. Additionally, a few acquirers are acquired by other firms following takeovers, the percentage of which is also higher for low-FCF acquirers than for high-FCF peers. This evidence is consistent with the neoclassical theory of takeovers (e.g., Mitchell and Mulherin, 1996; Maksimovic and Phillips, 2002, 2008), which predicts that acquisitions that do not have a sound basis will subsequently be taken over.

Our study shows the importance of free cash flow to maintaining the acquirer's operation following takeovers. Previous studies (e.g., Harford, 1999; Oler, 2008) have examined acquirers' takeover activities from the perspective of cash holdings and document that cash-rich acquirers make value-destroying acquisitions. Notably, in our sample, low-FCF acquirers are rich in cash stock before takeovers, and their cash holdings nearly double relative to those of high-FCF acquirers; their net debt positioning is also superior to that of their high-FCF peers. Low-FCF acquirers' poor post-takeover performance or even bankruptcy reveals that their high cash holdings before the acquisitions cannot sustain the operation of the combined entity following the deals. Our evidence echoes the finding of Duchin (2010) that acquirers' cash holdings are gradually reduced over the three years following acquisitions. Therefore, internally generated cash flow becomes particularly important to shape acquirers' normal operation in the long-term following acquisitions. The theory of precautionary savings (e.g., Fazzari et al., 2000) proposes that a firm rich in current cash holdings may reflect the poorness of future cash flow and numerous cash balances indicate that a firm is taking the precaution of saving for fear of becoming constrained in the future.² In aligning with this theory, we believe that low-FCF acquirers should be conservative in advancing takeovers, as their cash flows are weak, whereas deals are cash burning. However, the financing policy and channel for the acquirers following the acquisitions is beyond the scope of this study.

Our study also contributes new insights to the research exploring corporate serial acquisitions. Phalippou et al. (2015) find that corporate acquisitiveness is negatively related to announcement returns. Fuller et al. (2002), Billett and Qian (2009), and Aktas et al. (2009), among others, document that successively announcement returns decline from deal to deal for an

² The precautionary savings driven by cash flow uncertainty are also documented by Opler et al. (1999), Bates et al. (2009), Riddick and Whited (2009), Gao et al. (2013), Harford et al. (2014), and Duchin et al. (2017), among others.

individual acquirer. These studies all examine acquisitiveness and serial acquisitions from the perspective of announcement period returns. Our study complements these works by examining acquirers' post-takeover performance. Relative to earlier acquisitions, acquirers rely more on internally generated cash flow to maintain normal operations in acquisitions conducted later.

The rest of the paper is organized as follows. Section 2 reviews related literature. Section 3 describes the construction of our sample and provides statistics on the characteristics of the sample constituents. Section 4 presents the empirical results for the effect of free cash flow on acquirers' performance. Section 5 examines acquirers' financial positioning following acquisitions. Section 6 concludes.

2. Related Literature

2.1. Financial Constraints in Takeovers

The impact of takeover participants' financial status on their acquisition activities has been extensively studied in the takeover literature over the past few decades. Extant studies (e.g., Shleifer and Vishny, 1986; Lang et al., 1991; Hanson, 1992; Nohel and Tarhan, 1998; Harford, 1999; Oler, 2008) usually focus on acquirers' cash holding level and document value-destroying acquisitions for cash-rich acquirers.³ Moreover, takeover theories typically assume that acquirers are not financially constrained (e.g., Grossman and Hart, 1980, 1981; Hirshleifer and Titman, 1990; Burkart et al., 1998, 2000; Mueller and Panunzi, 2004). As noted by Burkart et al. (2014), without financial constraints, the takeover outcome depends exclusively on the acquirer's

³ However, recently, Gao and Mohamed (2018) document that cash-rich acquirers on average perform better than their cash-poor counterparts during their sample period of 1984-2012.

willingness to buy. This is the situation analyzed in prevailing works on takeovers.

Relatively few studies examine the effects of acquirers' financial constraints on their acquisition activities. Specifically, Burkart et al. (2014) analyze the role of legal investor protection in the efficiency of the takeover market when acquirers are financially constrained. The authors believe that the takeover outcome is inefficient if acquirers are financially constrained. In Gorbenko and Malenko's (2018) model, financial constraints lessen acquirers' incentives to approach the target and reduce the use of cash in transactions. Maksimovic et al. (2011) find that financial conditions affect acquirers' post-merger restructuring activities and that acquirers with financial constraints are more likely to sell targets' assets. Malmendier et al. (2018) show that a loss of financial flexibility causes winners of bidding contests to underperform relative to losers after mergers.

Khatami et al. (2015) explore the impact of targets' financial constraints on takeover activities. They find that the presence of financial constraints in the target is one of the most important determinants of a takeover bid. Moreover, financial constraints of target companies significantly increase acquisition premiums and abnormal returns for both parties. Smith and Kim (1994) show that investors respond positively when acquirers with high cash flow acquire targets with low cash flow and relieve financial frictions in target firms. Erel et al. (2015) document that acquirers' financial slack can relieve target firms' financial constraints and thus create value.

2.2. The Impact of Acquirer Cash Flow on Takeovers

According to standard investment models of corporate finance (e.g., Myers and Majluf, 1984;

Fazzari et al., 1988, 2000; Alti, 2003; Tirole, 2006; Whited and Wu, 2006), the role of financial slack in value creation can be fully utilized by solving the problem of underinvestment and reducing distortions in asset allocation. Financially constrained firms, therefore, may face underinvestment problems. Mergers and acquisitions serve as a substitute for new capital investment in capital reallocation. In keeping with this theory, weak financial status on the part of the acquirer may lead to inefficient acquisitions.

In accounting and finance, free cash flow—particularly cash flow from operating activities—is generally considered to be the best means to evaluate whether a firm is able to generate sufficient cash to continue as a going concern. In mergers and acquisitions, Duchin (2010) shows that acquirers' cash holdings gradually decrease within three years after acquisitions, which often results in financial constraints on the acquirer. As a result, internally generated cash flow becomes an important source of cash for the acquirer to maintain operations of the combined entity after the acquisition transaction closes. We therefore expect that acquirers' cash flow levels have a positive impact on their takeover activities, consistent with the investment models of corporate finance mentioned above.

However, excess cash flow accompanied by agency problems may lead management to overinvest. In fact, the existing literature has documented various forms of agency problems arising from acquisitions (e.g., Amihud and Lev, 1981; Shleifer and Vishny, 1986, 1989; Morck et al., 1990; May, 1995; Jenter and Lewellen, 2015). Therefore, acquisitions by firms with excess cash flow may also not be the best option to create value for shareholders, as Jensen (1986) proposes.

2.3. Acquirer Performance

In the takeover literature (see Betton et al. (2008) for a review), acquirer investors' responses on the announcement date are commonly used to measure whether a takeover is synergetic or not. One concern with using announcement returns is that they incorporate the market's assessment of more than just the synergy of the takeover for the acquirer. In Hietala et al.'s (2003) model, the reaction of the acquirer's stock price to takeover announcement reveals three pieces of information: the acquirer's payment for the target, the acquirer's valuation in itself, and the synergetic gain of the combination. Announcement returns may also be biased by price pressures present around the time of takeovers or by market inefficiencies (Asquith et al., 1987; Mitchell et al., 2004). Recently, Golubov et al. (2015) document that firm fixed effects alone explain as much of the variation in acquirer announcement returns as all that of firm- and deal-specific characteristics combined.

Empirical findings also leave open the possibility of announcement period returns reflecting takeover gains. Malmendier et al. (2018) compare the performance of winners and losers in bidding tests and find that winners underperform relative to losers over the three years after mergers. However, announcement period returns fail to identify acquirer underperformance. Qian and Zhu (2018) examine the association between the efficiency of capital deployment and acquirer stock performance. At the time of takeover announcement, the market does not distinguish acquirers with different levels of investment efficiency, although acquirers with high investment efficiency perform much better over the long term than their counterparts with low efficiency.

Therefore, this study not only examines the impact of the acquirer's cash flow on its announced stock returns, but also examines its post-acquisition performance, including stock and

operating performance.

3. Data

We collect acquisition data from the Securities Data Company's (SDC's) U.S. Mergers and Acquisitions Database, financial data from the COMPUSTAT dataset, and stock data from the CRSP database. The sample selection process starts with the SDC database based on the following criteria: (1) the acquirer is an American firm traded on the New York Stock Exchange (NYSE), American Stock Exchange (AMEX), or Nasdaq; (2) the transaction does not involve a share repurchase, privatization, or recapitalization; (3) the transaction is not made in the financial or utility industry (as these sectors are highly regulated); (4) the transaction is successfully consummated;⁴ (5) the deal value of the acquisition is at least \$1 million; and (6) the takeover announcement date occurs between 2000 and 2017. Following Officer (2003), we remove transactions with bid premiums of less than zero or greater than 200%. We also remove transactions with completion periods of over 1,000 days. We further require that financial and stock data on the takeovers be available from the COMPUSTAT and CRSP databases to calculate the acquirer's free cash flow level and stock return. This selection process yields a final sample of 7,481 completed takeover bids undertaken by 2,618 individual acquirers from 2000-2017.

⁴ We require the transaction be successfully consummated for two reasons. First, the goal of this study is to investigate the function of free cash flow in maintaining acquirers' normal operations following takeovers, and post-takeover performance for bids withdrawn would have a different meaning. Second, the existing evidence comparing the post-takeover performance of completed and failed deals is mixed. Qian and Zhu (2018) document that acquirers with high investment efficiency in completed takeovers outperform acquirers that do not complete their deals. In contrast, Malmendier et al. (2018) find that winners of bidding tests underperform relative to losers over the three years after mergers. Savor and Lu (2009) find that unsuccessful stock acquirers significantly underperform relative to successful ones while such underperformance does not exist for cash acquisitions.

(Insert Table 1 here)

The distribution of the sample is reported in Table 1. Panel A reports the distribution of takeover bids by announcement year. Generally, bids are distributed evenly over time in our sample. Panel B reports some salient descriptive statistics of the sample. Approximately 83% of acquisitions included in the sample involve nonpublic acquisitions; targets acquired are either private firms or subsidiaries of public firms. The literature examining takeovers mainly focuses on public targets. However, our sample shows that transactions of nonpublic targets are, in fact, more representative of the nature of the takeover market. As tender offers do not exist in the transactions of nonpublic firms, tender offers only account for 3.7% of the sample. In the sample, 55% of the transactions are mergers, while 45% are asset acquisitions. Regarding payment methods, 28% of the transactions included in the sample are conducted with a pure cash offer, 20% involve a pure stock offer, and the remaining 52% involve a mixture offer. In the sample, 65% of the transactions are diversifying acquisitions. Here, a transaction is defined as a diversifying acquisition if the two-digit Standard Industrial Classification (SIC) code of the primary business line of the acquirer differs from that of the target. The SIC codes are collected from the SDC M&A dataset. Last, 25% of the bids are undertaken in merger waves.⁵

(Insert Table 2 here)

⁵ The identification of merger waves, reported in Appendix A, follows Mitchell and Mulherin (1996) and Harford (2005).

Table 2 reports acquirer, target, and deal characteristics for the years surrounding the bids. We divide the sample into five quintiles based on the acquirer's free cash flow level in the year before the bids for quintile Q1, which has the lowest cash flow level, to quintile Q5, which has the highest cash flow level.⁶

As shown in Panel A, the free cash flow level is negative for acquirers in quintile Q1, but they hold more cash. For instance, cash holdings, on average, are 0.224 for acquirers in quintile Q1, which is higher than the value of 0.133 found for acquirers in quintile Q5, with statistical difference at the 1% level (t -statistic=11.8). This evidence is consistent with the theory of precautionary savings (e.g., Fazzari et al., 2000; Bates et al., 2009), which argues that firms hold more cash when their cash flow becomes riskier. Similarly, low-FCF acquirers are also found to pay less dividends to shareholders. The average debt level (LEVERAGE) is 0.477 for acquirers in quintile Q1, which is higher than the value of 0.455 found for acquirers in quintile Q5, with statistical difference at the 1% level (t -statistic=2.79). However, after excluding cash holdings from total liabilities, the net debt position (NLEVERAGE) becomes 0.234 for acquirers in quintile Q1, which is significantly lower than the value of 0.319 found for acquirers in quintile Q5, with statistical difference at the 1% level (t -statistic=-6.28). Therefore, at a minimum, low-FCF acquirers' financial strength is not weak relative to high-FCF acquirers before takeovers.

Acquirers in quintile Q1 are characterized by a shorter listing history and smaller firm size than acquirers in quintile Q5. Low-FCF acquirers are also found to have a lower market-to-book ratio and Tobin's Q value than high-FCF peers. This evidence is consistent with Alti's (2003) argument that cash flow in itself contains valuable information on a firm's investment opportunities. For accounting performance, acquirers in quintile Q1 have an average ROA of -

⁶ We also divide the sample into five quintiles for each year according to the cash flow level of the acquirer and then combine the subsamples and obtain quite similar main results.

0.045, while the value is 0.094 for acquirers in quintile Q5. Obviously, low-FCF acquirers underperform relative to high-FCF acquirers before bids. Their poor accounting performance and low valuation may explain why low-FCF firms seek to proceed with acquisitions. As proposed by Morck et al. (1990), poorly performing firms have more incentive to participate in acquisitions either to ensure the survival of the firm or to find new businesses to improve performance.

Panel B reports acquirers' stock performance in the years surrounding takeovers. Although low-FCF acquirers underperform relative to high-FCF acquirers before deals (RETURN), the difference between them is not statistically significant. However, the underperformance of low-FCF acquirers becomes severe following deals. The performance differences found between low- and high-FCF acquirers are highly significant regardless of whether they are measured over one, two or three years after takeovers, serving as initial evidence that low-FCF acquirers perform poorly following takeovers.

Panel C reports deal characteristics. Acquisitions differ for high- and low-FCF firms from various perspectives. First, high-FCF firms acquire more frequently than low-FCF firms. The average acquisition frequency is 2.75 for acquirers in quintile Q1, which is significantly lower than the value of 3.14 found for acquirers in quintile Q5, with statistical difference at the 1% level (t -statistic=-6.54). Second, high-FCF firms prefer small deals, whereas low-FCF firms prefer large deals. The average deal value is 0.278 for acquirers in quintile Q1, which is more than twice the value of 0.122 found for acquirers in quintile Q5.

Third, high-FCF firms tend to pay a high price to acquire high synergy targets characterized by a high ROA and low leverage. Instead, low-FCF acquirers simply pay a low price to acquire targets with a low ROA and high leverage. There are two possible explanations for this trend.

One is that low-FCF acquirers cannot afford to buy high-quality targets given their low cash flow level. Another explanation is that targets usually combine with acquirers stronger than their own, and thus, high-quality targets reject combining with acquirers with limited cash-generating ability.⁷

Fourth, high-FCF acquirers conduct transactions with more cash offers and taking the form of tender offers, whereas low-FCF acquirers conduct transactions with more stock offers. It may be that high-FCF acquirers are financially stronger, and thus, they can afford to conduct transactions with cash. In Gorbenko and Malenko's (2018) model, acquirers' financial constraints are negatively related to the use of cash in takeovers. Alternatively, or in combination, high-FCF acquirers may pay targets with cash to preempt potential competitive acquirers, as their targets are of high quality. Fishman's (1989) preemptive model argues for cash acquisition when the acquirer gives high valuation to the target. Finally, more unsolicited bids are advanced by low-FCF acquirers.

4. Acquirer Firm Performance

4.1. Announcement Abnormal Stock Return

We start our research with a univariate analysis of the association between free cash flow and acquirer stock returns. As discussed above, our sample includes a large number of nonpublic targets, while the prior literature mainly focuses on public targets. This examination enables us,

⁷ Rhodes-Kropf and Robinson (2008) identify a like-buys-like mode in mergers: Higher quality firms choose to combine with higher quality partners, while lower quality firms choose to search for lower quality partners.

on the one hand, to compare our sample to those of previous works and, on the other, to draw a direct comparison of the effect of free cash flow on acquirers' short- and long-term returns.

(Insert Table 3 here)

We first examine the announcement cumulative abnormal return (ACAR) for acquirers. The announcement abnormal return is computed over a five-day event window (-2, +2) using the market model and Scholes-Williams betas, and the parameters are estimated over a (-205, -6) interval prior to the takeover announcement. We also calculate acquirer announcement returns for the three-day event window and obtain quite similar results. Table 3 reports acquirer announcement returns based on various deal characteristics.

We examine target listing status first. The takeover literature documents that target listing status has a significant effect on acquirer announcement returns. Acquirers obtain negative announcement returns in the acquisition of public firms and positive returns in the acquisition of nonpublic targets (e.g., Chang, 1998; Fuller et al., 2002; Faccio et al., 2006; Cooney et al., 2009). Consistent with these studies, on average, acquirers in our sample realize a significantly negative return of -0.57% when acquiring public targets and a significantly positive return of 1.26% when acquiring nonpublic targets. The difference between them is highly significant at the 1% level with a *t*-statistic of -9.26.

In our sample, the majority of targets are nonpublic, and thus, they are acquired through nontender offers. Therefore, ACAR is significantly positive for nontender offers in the sample. Acquirers also realize greater announcement returns from asset acquisitions than from mergers.

The payment method also has a significant effect on acquirer announcement returns. In the acquisitions of public firms, acquirers experience negative abnormal returns from stock offers but no abnormal returns from cash offers (Travlos, 1987; Servaes, 1991). In contrast, in the acquisition of nonpublic targets, acquirers experience higher announcement abnormal returns from stock offers than from cash offers (Chang, 1998; Fuller et al., 2002). In our sample, the average ACAR is 0.95% for pure cash offers, which is significantly higher than 0.4% for pure stock offers, with the statistical difference at the 5% level (t -statistic=2.44).

Studies (e.g., Morck et al., 1990) also document that investor respond negatively to diversifying acquisitions. However, since our sample includes a large number of nonpublic targets, ACARs are positive for both diversifying and nondiversifying acquisitions, and the difference between them is not statistically significant. ACARs are also not significantly different for acquisitions conducted between merger waves and nonwaves.

Finally, we divide the total sample into five quintiles according to the acquirer's free cash flow (FCF) level in the year before takeover announcement for quintile Q1, with low cash flow, to quintile Q5, with high cash flow. Acquirers in all five quintiles experience significant, positive announcement returns. Moreover, ACAR is significantly higher for acquirers in quintile Q1 than for acquirers in quintile Q5. Apparently, investors respond more positively to acquisitions advanced by low-FCF firms. This evidence indicates that the acquisitions conducted by low-FCF firms are less likely to be driven by agency problems. Instead, the agency problem may to some extent exist in acquisitions conducted by high-FCF firms, as the bid price offered by high-FCF acquirers for targets is higher than that offered by low-FCF acquirers, although the higher price can be justified by potential greater synergy creation.

4.2. Post-takeover Abnormal Stock Return

Next, we examine the acquirer's stock performance over the three years following takeover consummation. We adopt a *size, industry, and market-to-book* nonbidding control firm approach to calculate acquirer long-term abnormal returns.⁸ A detailed discussion of the procedure used for control firm construction and for the calculation of long-term abnormal returns is reported in Appendix B.

Table 3 reports the preliminary results for acquirer post-takeover long-term abnormal stock returns (ARETURN3) for the five quintiles of acquirers sorted by free cash flow level. On average, acquirers in quintile Q1 suffer a significant loss of 16.7%, while acquirers in quintile Q5 receive a positive return of 2.2%. The difference between them is highly significant at the 1% level with a *t*-statistic of -3.13. Therefore, low-FCF firms perform worse than high-FCF firms following acquisitions, running contrary to the trend found for announcement abnormal returns.

(Insert Table 4 here)

We conduct a series of tests to confirm the effect of free cash flow on acquirers' post-takeover stock performance. Specifically, we divide the sample based on various factors that may affect the acquirer's post-takeover stock performance, including target listing status, the deal type, the payment method, the deal form, the deal value, the acquirer market-to-book ratio, the acquirer's Tobin's Q, the acquirer's sales growth, whether the takeover is a diversifying

⁸ As the long-term abnormal stock return is highly sensitive to the choice of benchmark, we also construct a *size, industry and free cash flow* nonbidding control sample and a reference portfolio, respectively, as benchmarks to calculate the acquirer's long-term abnormal stock return. The results are reported in the section on our robustness tests.

transaction, and whether the takeover is undertaken in a merger wave. Table 4 reports the analyses of acquirer post-takeover long-term abnormal returns based on these factors and acquirer free cash flow levels.

For nearly all of the tests, low-FCF acquirers in quintile Q1 have significantly negative long-term abnormal returns, while high-FCF acquirers in quintile Q5 have normal returns following acquisitions. In particular, our results show that poor post-takeover stock performance, whether for “glamour” acquirers, as documented by Rau and Vermaelen (1998), or for acquirers clustered in merger waves, as documented by Rosen (2006) and Bouwman et al. (2009),⁹ is mainly driven by these low-FCF acquirers.

The existing literature also documents that the payment method used has certain explanatory power in shaping acquirers’ long-term performance and that acquirers with noncash acquisitions perform worse than those with cash tender offers (e.g., Loughran and Vijh; 1997; Rau and Vermaelen, 1998). Our results show that if an acquirer with cash acquisition has limited cash flow, it still performs poorly following the bids; instead, once an acquirer with noncash acquisition is rich in cash flow, the long-term underperformance disappears.¹⁰

A. Agency Problems

Jensen’s (1986) free cash flow hypothesis predicts that firms with excessive cash flow but serious agency problems may engage in bad investments and destroy firm value. This theory indicates that agency problems are a potential factor that should be considered in our examination of the cash flow-acquisition relationship. Therefore, we further the check board

⁹ According to Shleifer and Vishny (2003) and Rhodes-Kropf and Viswanathan (2004), merger waves are driven by the market’s misvaluation of the participants that rational acquirers take advantage of the overvaluation of their shares to buy less over- or undervalued firms.

¹⁰ Martin (1996) finds that stock acquisitions are more likely to be associated with a shortage of free cash flow.

governance and CEO incentives of acquiring firms. To measure board governance, we divide the sample according to the percentage of independent directors on a board not appointed by incumbent CEOs.¹¹ To measure CEO incentives, we divide the sample according to the ratio of a CEO's equity compensation to his or her total compensation.¹² Table 5 presents the acquirer's post-takeover stock performance based on governance, incentives and cash flow.

(Insert Table 5 here)

Two notable observations are made on the acquirer's post-takeover stock performance. On the one hand, acquirers with strong governance perform better following takeovers than those with weak governance, consistent with the existing takeover literature (e.g., Jensen, 1986, 1987; Shleifer and Vishny, 1986, 1989; Morck et al., 1990). On the other hand, low-FCF acquirers perform worse than high-FCF acquirers regardless of governance strength. This evidence demonstrates that while agency problems may affect an acquirer's post-takeover performance, they cannot rule out the impact of the cash flow level.

B. Management Ability

¹¹ Studies (e.g., Yermack, 1996) show that a board is more efficient and thus the governance effect is stronger if the board includes a larger proportion of independent directors. This is particularly the case if independent directors are not appointed by incumbent CEOs (Coles et al., 2014). We also measure board governance from other perspectives, including board size, shareholdings of directors, the duality between the CEO and chairman of the board, and the percentage of female directors on the board. The results of these tests are available upon request.

¹² The financial literature (e.g., Murphy, 1999) shows that equity compensation, such as stock options and restricted shares, can motivate managers the most. In reference to takeovers, Datta et al. (2001) show that acquirers with higher equity-based compensation pay lower acquisition premiums, acquire higher quality targets, and perform better in the long run following deals.

In both the accounting and finance literature, cash flow is widely used as a measure of a firm's operating performance (e.g., Harford, 1999, 2005; Dechow, 1994; Healy et al., 1992), while firm performance is often used to evaluate manager ability.¹³ Based on the literature, cash flow may contain important information on the capacity of management to run a firm, wherein high cash flow indicates that management exhibit strong capacity in this area. We then go one step further and differentiate the effects of management ability and cash flow. We measure management ability with acquirer's stock return in the year before takeover deals (RETURN) or the management ability score constructed by Demerjian et al. (2012).¹⁴ Table 6 presents the acquirer's post-takeover stock performance based on management ability and cash flow.

(Insert Table 6 here)

Table 6 shows that capable managers perform better than incapable managers following acquisitions. Importantly, irrespective of management ability, low-FCF acquirers perform worse than high-FCF acquirers.

C. Other Tests

We also conduct other robustness tests of acquirers' post-takeover stock performance. (1) We construct a *size, industry and free cash flow* control sample of nonbidding firms as a benchmark to calculate the acquirer's long-term abnormal stock return. The sample used is the same as that described by but replaces the acquirer market-to-book ratio with free cash flow. (2)

¹³ A large body of literature shows that top managers are fired due to poor firm performance. See, for example, Warner et al. (1988), Murphy and Zimmerman (1993), Denis and Denis (1995), Denis et al. (1997), Franks et al. (2001), and Kini et al. (2004).

¹⁴ We thank Demerjian et al. (2012) for sharing their data on CEO management ability scores for 1980–2014.

Following Lyon et al. (1999) and Bouwman et al. (2009), we construct a reference portfolio as a benchmark to calculate the acquirer's long-term abnormal stock return.¹⁵ (3) Following Bowen et al. (1986) and Dechow (1994), we construct four additional free cash flow measures for acquirers. (4) We remove acquirers that are delisted five years after takeover consummation.¹⁶ (5) We remove overlapping observations. Following Loughran and Vijh (1997), if a takeover occurs within three years of a previously included acquisition by the same firm, the latter observation is excluded. (6) Finally, we construct a sample including only the first bid undertaken by the 2,618 individual acquirers from 2000 to 2017. The results of robustness tests are reported in Table 7.

(Insert Table 7 here)

For all robustness tests, low-FCF acquirers in quintile Q1 have significantly negative long-term abnormal returns, while those with high free cash flow in quintile Q5 have normal returns following acquisitions. The difference in abnormal returns between the two quintiles is statistically significant. Specifically, note that high-FCF acquirers perform as well as their peer nonbidding control firms with the same level of free cash flow. Low-FCF acquirers, instead, substantially underperform relative to their nonbidding peers with the same level of free cash flow, indicating that they would have performed better had they not conducted the transactions. This evidence suggests that the weak cash flow generated by low-FCF acquirers cannot sustain the operation of the combined entity following takeovers.

Overall, the univariate analyses show that an acquirer's pre-takeover free cash flow level has a significant impact on its post-takeover long-term stock performance. Low-FCF acquirers

¹⁵ See Appendix B for a detailed discussion of the construction of reference portfolios and calculation of the acquirer's long-term abnormal stock return.

¹⁶ See Section 5.2 for a detailed discussion of acquirers' trading status following takeovers.

significantly underperform relative to their control firms following mergers and acquisitions, while such underperformance does not exist for high-FCF acquirers.

D. Regression Results

Next, we conduct multiple regressions for acquirer abnormal stock returns at the free cash flow level while controlling for various firm and deal characteristics. The results are reported in Table 8. Specifications (1) to (4) present the regression results for acquirer announcement stock returns (*ACAR*), and Specifications (5) to (8) present the results for acquirer post-takeover stock returns (*ARETURN3*).

(Insert Table 8 here)

In Table 8, *FCF* is negatively related to *ACAR* but positively related to *ARETURN3*. The relations are statistically significant across all specifications. The results confirm that high cash flow has a negative effect on acquirer announcement returns but a positive effect on long-term returns following acquisitions. Note that, for all tests of *ARETURN3*, the magnitudes of coefficients of *FCF* are larger than those of *CASH*, indicating that internally generated cash flow rather than cash stock shapes acquirers' normal operation in the long-term following acquisitions.

Specifically, Specification (6) tests the association between cash flow and post-takeover stock performance by dividing the sample into high- and low-FCF groups. Dummy variable *High_FCF* is significantly positive, indicating that high-FCF acquirers obtain a higher stock return following acquisitions relative to low-FCF acquirers. *FCF* is statistically significant with an estimated coefficient of 0.706, demonstrating a positive effect of cash flow on post-takeover

stock performance for firms with low cash flow. Nonetheless, the interaction between *FCF* and *High_FCF* is significantly negative with an estimated coefficient of -0.857. This result indicates that the effect of free cash flow on acquirer post-takeover stock performance is not monotonically increasing; the effect diminishes or even becomes negative ($0.706 - 0.857 = -0.151$) once an acquirer's cash flow level is too high.¹⁷

Specification (7) tests the impact of the acquisition sequence on the cash flow-acquisition performance relationship. *Acquisitiveness* is significantly positive, whereas *acquisition sequence* is significantly negative, indicating that acquirers realize high stock returns through frequent acquisitions, but the contribution of acquisitions to stock performance sequentially diminishes. The interaction of *FCF* with *acquisition sequence* is significantly positive at the 5% level (coefficient=0.058, *t*-value=2.27), indicating that cash flow has a stronger impact on stock performance for acquisitions conducted by an individual acquirer later than for those conducted earlier. Firms may use up their cash reserves in the acquisitions conducted earlier, and thus, generating enough cash flow becomes urgently necessary to support later acquisitions and normal operations.

Similarly, in Specification (8), the positive effect of free cash flow on acquirer post-takeover stock performance is more pronounced for acquisitions conducted with pure stock offers or mixture offers relative to those conducted with pure cash offers, given that firms advancing cash acquisitions are typically financially strong (Martin, 1996; Gorbenko and Malenko, 2018).

(Insert Figure 1 here)

¹⁷ Jensen (1987) proposes that the association between free cash flow and firm value is not linear but follows an inverted U curve.

Last, to obtain a clear account of the association between cash flow and acquirer post-takeover abnormal returns, we draw a graphical form for the five quintiles of acquirers in terms of their accumulation of post-takeover abnormal returns for a period of 36 months. As shown in Figure 1, there is a decreasing trend of abnormal returns within the study period for low-FCF acquirers in quintiles Q1 and Q2. In contrast, such a trend does not exist for acquirers with high cash flow. In addition, the figure also clearly shows that the abnormal return is not significantly different for acquirers in quintiles Q3, Q4, and Q5, indicating that once a firm's cash flow reaches a certain level, the positive effect of cash flow on post-takeover performance disappears, indicating that the association between them is not strictly linear.

4.3. Post-takeover Abnormal Operating Performance

We also examine the acquirer's post-takeover abnormal operating performance. We use three measures to examine operating performance. The first measure is ROA. Following Bouwman et al. (2009), ROA is defined as operating income before depreciation normalized by average total assets. Such a definition can eliminate the impact of payment and accounting methods on operating performance, as highlighted by Healy et al. (1992). The second measure is operating cash flow returns on assets (OCF). Following Healy et al. (1992) and Harford (1999), OCF is obtained as operating cash flow normalized by average total assets. The last measure is the acquirer's capital expenditure (CapEx.) calculated as capital expenditures normalized by year-beginning total assets. Acquirer operating performance is adjusted to the value of the control firm.

To estimate the abnormal change in the acquirer's post-takeover operating performance, following the approach used by Healy et al. (1992), which is similar to that used by Harford (1999, 2005), we regress acquirer average operating performance within three years following takeover consummation on acquirer pre-takeover free cash flow level while controlling for acquirer average operating performance within three years before takeovers.¹⁸ Table 9 reports the regression results.

(Insert Table 9 here)

Panel A of Table 9 provides two notable observations on the acquirer's post-takeover operating performance. First, for all three performance measures, the pre-takeover performance is significantly positively related to post-takeover performance, indicating that acquirer operating performance tends to persist over time. Second, while controlling for the persistence of firm performance, *FCF* is found to be significantly positively related to all three performance measures, demonstrating that free cash flow has a positive effect on post-takeover operating performance.

In Panel B, we regress firm performance on cash flow quintiles instead of on cash flow levels in case the association between them is nonlinear. For all three performance measures, the intercepts of the regressions are significantly negative, indicating that the operating performance of acquirers with the lowest cash flow (i.e., quintile Q1) declines abnormally following acquisitions. The decline also exists for acquirers in quintile Q2, as dummy variable Q2 is

¹⁸ We also regress acquirer post-takeover operating performance in the third year following takeover consummation on acquirer pre-takeover free cash flow levels. The results remain qualitatively unchanged.

statistically insignificant. Post-takeover performance is stronger for high-FCF firms since the estimated coefficients of dummy variables Q3, Q4, and Q5 are significantly positive.

For example, in the regression of acquirer ROA, the intercept is -0.011 with statistical significance at the 1% level (t -value=-2.77). This result indicates that acquirers with the lowest cash flow experience a per-year abnormal decline of 1.1% in their return on assets following acquisitions. The estimated coefficient of dummy variable Q5 is 0.016 with statistical significance at the 1% level (t -value = 6.80), indicating that acquirers with the highest cash flow experience an abnormal increase of 0.5% (0.016 – 0.011) each year in their return on assets following acquisitions. In sum, the results show that operations exacerbate for acquirers with low cash flow following a takeover. Cash flow therefore has a positive effect on acquirers' post-takeover operations.

5. Acquirer Financial Position

5.1 Acquirer Post-takeover Financial Leverage

Our study shows that free cash flow has a substantially positive effect on acquirers' post-takeover firm performance. Low-FCF acquirers significantly underperform relative to control firms following takeovers, while such underperformance does not exist for high-FCF acquirers. In this section, we examine acquirers' financial position following takeovers. Table 10 reports the change in acquirer financial leverage following takeovers sorted by free cash flow level.

(Insert Table 10 here)

A salient result is illustrated in Table 10. Irrespective of the free cash flow level, acquirers' financial leverage, net leverage, and abnormal leverage increase sharply following takeovers. For instance, in Panel B, the average net financial leverage (NLEVERAGE) of low-FCF acquirers in quintile Q1 nearly doubles from 0.234 in the year before deal announcement to 0.442 in the third year following deal consummation. The difference between them is highly significant at the 1% level with a t -statistic of -14.14.

Note that in Panel C, the value of abnormal financial leverage is negative for all five quintiles before takeovers, indicating that acquirers' financial strength is not weak relative to their industry peers. After a takeover, however, the abnormal leverage becomes positive for low-FCF acquirers in quintiles Q1, Q2, and Q3, suggesting that they have less financial strength than their industry peers. For high-FCF acquirers in quintiles Q4 and Q5, their abnormal leverage is still negative following takeovers, although the magnitude decreases. This evidence indicates that high-FCF acquirers are still in a better financial position than their industry peers following takeovers, although their strength also decreases.

(Insert Table 11 here)

Next, we examine how the change in financial leverage affects acquirer stock performance following acquisitions. The results are reported in Table 11. Panel A presents the sorting of acquirer post-takeover stock returns (ARETURN3) based on the change in net financial leverage and free cash flow. For the group with an increase in leverage (i.e., $\text{NetLeverageChange} > 0$), low-FCF acquirers in quintile Q1 experience an average significant loss of 24.6% after a takeover,

while the loss is only 4.5% and statistically insignificant for high-FCF acquirers in quintile Q5. The difference between them is highly significant at the 5% level with a t -statistic of -2.05. This evidence shows that the increase in financial leverage substantially hinders acquirers' operations following acquisitions, while such an effect can be greatly mitigated if acquirers have high levels of free cash flow.

For the group showing a decrease in financial leverage (i.e., $NetLeverageChange \leq 0$), low-FCF acquirers in quintile Q1 realize an average positive return of 4.2%, which is not significantly different from the value of 6.4% found for high-FCF acquirers (t -statistic=-1.51). Moreover, this return is significantly higher than the loss of 24.6% found for low-FCF peers whose leverage increases following a takeover, with statistical difference at the 1% level (t -statistic = -3.39). This evidence again confirms the impact of leverage changes on acquirer stock performance following a takeover.

Panel B presents the results of regressing post-takeover stock performance on leverage change and free cash flow. According to Specification (1), $ARETURN3$ is positively related to FCF but negatively related to $NetLeverageChange$. The relations are statistically significant at the 1% level.

According to Specification (2), where $NetLeverageChange$ is included in the model, $NLEVERAGE$ is significantly negatively related to $ARETURN3$ at the 1% level (coefficient=-0.173, t -value=-3.52). The adjusted R-squared of the regression is 0.10. Note that in Table 8, where $NetLeverageChange$ is not included in the model, $NLEVERAGE$ is significantly positively related to $ARETURN3$ (as high-FCF acquirers have a high net debt level), and the adjusted R-squared value is only 0.07. The inclusion of a change in financial leverage in the model not only changes the sign of the coefficient for financial leverage but also increases the explanatory power

of the model by 3%. Apparently, relative to financial leverage, a change in leverage plays a more important role in post-takeover performance for acquirers.

In sum, acquirers' financial positioning weakens following takeover deals, their debt level increases sharply, and the increase is more severe for acquirers with low free cash flow. This debt increase has a negative impact on acquirers' post-takeover firm performance, implying the importance of cash flow for maintaining normal operations following mergers and acquisitions.

5.2 Acquirer Post-takeover Trading Status

The neoclassical theory of takeovers predicts that acquisitions that do not have a sound basis will subsequently be taken over (e.g., Mitchell and Mulherin, 1996; Maksimovic and Phillips, 2002, 2008). Mitchell and Lehn (1990) find that firms advancing acquisitions that destroy firm value subsequently become the targets of other firms. Bad acquirers may not only become good targets but also fall into insolvency and eventually become bankrupt.¹⁹ The sharp increase in financial leverage, without the strong support of internal cash flow, challenges the going-concern ability of low-FCF acquirers. Hence, as a further test, we examine the acquirer's trading status at the end of the fifth year following takeover consummation.

Trading status is measured from the CRSP database, which reports firms' reasons for delisting and delisting times (last trading day). Reasons for delisting include acquisitions by other firms, insufficient (or noncompliance with rules of) float or assets, bankruptcy, declared insolvency, delinquency in filing, nonpayment of fees, prices falling below an acceptable level, and a failure to meet the exchange's financial guidelines for continued listing.

¹⁹ For example, one year after paying a 124% premium to Federated Department Stores, Campeau declared bankruptcy due to its inability to meet debt payments from the acquisition (Kaplan, 1989; Trachtenberg et al., 1990).

(Insert Table 12 here)

Table 12 presents the results for the association between the acquirer's trading status and the cash flow level. Panel A reports the percentage of acquirers that are bankrupt or acquired by others following a takeover for the 7,481 mergers and acquisitions conducted by 2,618 individual acquirers. The acquirers are sorted by the free cash flow level present when advancing the first takeover attempt. A robustness test returns a similar result when the acquirers are sorted by cash flow level when they advance the last takeover attempt.

Apparently, the bankruptcy percentage is significantly higher for low-FCF acquirers. Specifically, for the 2,618 acquirers, 7.1% of low-FCF acquirers in quintile Q1 become bankrupt five years after a takeover, whereas the percentage is only 3.2% for high-FCF acquirers in quintile Q5. The difference between them is statistically significant at the 1% level (t -value=2.80). The bankruptcy percentage for acquirers with the lowest cash flow level is more than twice that of acquirers with the highest cash flow level. For firms acquired by others following a takeover, the percentage is also higher for low-FCF acquirers than for high-FCF acquirers, although it is statistically not significant.

Panel B reports the regression results for acquirer status based on cash flow and leverage. The acquirer's leverage is significantly positively related to the probability of bankruptcy but negatively related to acquisition probability. These results indicate that acquirers with high leverage are more likely to become bankrupt following acquisitions, while those with low leverage are more likely to become takeover targets. Importantly, in the bankruptcy regression, *FCF* is significantly negative at the 1% level (coefficient=-0.176, t -value=-6.63), indicating that

acquirers with high cash flow are less likely to become bankrupt following a takeover. The magnitude of coefficient of FCF is larger than that of CASH, confirming again the importance of internally generated cash flow to sustain normal operation following the acquisitions.

In sum, a significant number of low-FCF acquirers become bankrupt or are acquired by other firms. In contrast, high-FCF acquirers secure a better position following acquisitions. Again, the results indicate that acquirers' free cash flow has a significantly positive impact on their post-takeover operations.

6. Conclusions

Acquirers' free cash flow level has a significant impact on their takeover activities. The targets acquired by low-FCF firms have lower operating performance but higher financial leverage than those obtained by high-FCF firms. Low-FCF acquirers also use more stock but less cash in transactions. Although investors respond positively to these acquisitions on the announcement date, low-FCF acquirers experience poor subsequent stock market performance. Low-FCF acquirers' operating performance also declines abnormally, while their financial leverage increases sharply following acquisitions. Finally, a significant number of these acquirers become bankrupt or are acquired by other firms. Financial constraints limit low-FCF acquirers' target choice in the first place and eventually place a considerable burden on their shareholders.

High-FCF acquirers' financial leverage also increases following acquisitions, but they are still in a better position than their industry peers. Consequently, high-FCF acquirers perform as well as their peer firms over the long-term following acquisitions.

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Table 1
Sample distribution

This table presents the distribution of the 7,481 completed mergers and acquisitions (M&As) of 2,618 acquirers between 2000 and 2017. In the sample, the acquirer is an American firm traded on the NYSE, AMEX or NASDAQ and the deal value of the acquisition is equal to or greater than \$ 1 million. Panel A presents the sample distribution by year. Panel B presents the sample distribution by target listing status, deal form, deal type, payment method, acquisition diversification, and merger wave.

	Sample	Percentage
<i>Panel A: Distribution by announcement year</i>		
2000	364	4.86%
2001	311	4.16%
2002	335	4.48%
2003	360	4.81%
2004	428	5.72%
2005	438	5.85%
2006	474	6.34%
2007	459	6.14%
2008	350	4.68%
2009	324	4.33%
2010	424	5.67%
2011	430	5.75%
2012	434	5.80%
2013	409	5.47%
2014	481	6.43%
2015	491	6.56%
2016	483	6.46%
2017	486	6.49%
Total	7,481	100%
<i>Panel B: Distribution by deal characteristics</i>		
<i>Target listing status</i>		
Public	1,243	16.6%
Non-public	6,238	83.4%
<i>Deal form</i>		
Tender offer	278	3.7%
Non-tender offer	7,203	96.3%
<i>Deal type</i>		
Merger	4,131	55.2%
Asset acquisition	3,350	44.8%
<i>Payment method</i>		

Pure cash	2,076	27.8%
Pure stock	1,523	20.3%
Mixture	3,882	51.9%
<i>Diversifying M&As</i>		
Diversify	4,859	65.0%
Non-diversify	2,622	35.0%
<i>Merger wave</i>		
Wave	1,867	25.0%
Non-wave	5,614	75.0%

Table 2
Acquirer, target and deal characteristics sorting by free cash flow level

This table reports acquirer, target and deal characteristics for 7,481 completed mergers and acquisitions of 2,618 acquirers between 2000 and 2017. The sample is sorted into five quintiles based on acquirer free cash flow (FCF) level in the year before the bids, starting from quintile Q1, with low cash flow, to quintile Q5, with high cash flow. Panel A reports acquirer firm characteristics in the year prior to the bid announcement. Panel B reports acquirer stock returns in the years surrounding the takeovers. Panel C reports target and deal characteristics. For public targets, bid price is calculated as the proportional change of the offer price relative to the target stock price four weeks prior to the bid announcement. For private targets, bid price is calculated as the valuation multiple (P/E ratio), obtained as the transaction value in a takeover transaction normalized by the product of the target year-end earnings before interest and tax (EBIT) before the takeover announcement year and the percentage of target total shares acquired in the takeover transaction. The definitions of other variables are provided in Appendix A. We report both the mean and median value (in brackets). The *t*-statistic and *z*-statistic are reported for the value comparison between quintiles Q1 and Q5. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

	Q1 (Low FCF)	Q2	Q3	Q4	Q5 (High FCF)	<i>t</i> -statistic/ <i>z</i> -statistic (Q1-Q5)
<i>Panel A: Acquirer firm characteristics</i>						
IPO History	9.8 [6]	17.0 [11]	19.9 [14]	18.4 [13]	11.7 [8]	-7.49*** -9.42***
ASSET	3316 [456]	4704 [879]	4326 [780]	3904 [624]	3803 [515]	-7.65*** -12.5***
BMV	1601 [284]	3178 [553]	2860 [606]	5237 [703]	7362 [821]	-13.02*** -19.5***
FCF	-0.137 [-0.045]	0.041 [0.042]	0.073 [0.079]	0.116 [0.113]	0.188 [0.173]	-74.5*** -63.5***
CASH	0.224 [0.117]	0.140 [0.064]	0.126 [0.068]	0.140 [0.076]	0.133 [0.070]	11.8*** 8.96***
PAYOUT	0.267 [0.00]	0.409 [0.051]	0.451 [0.156]	0.417 [0.158]	0.358 [0.079]	-3.95*** -15.6***
LEVERAGE	0.477 [0.490]	0.500 [0.521]	0.504 [0.522]	0.466 [0.482]	0.455 [0.467]	2.79*** 2.18**
NLEVERAGE	0.234 [0.333]	0.359 [0.431]	0.372 [0.436]	0.322 [0.385]	0.319 [0.374]	-6.28*** -2.94***
MTB	2.80 [2.61]	2.53 [2.10]	2.66 [2.30]	3.10 [2.52]	3.93 [4.05]	-11.00*** -14.87***

Tobin's Q	2.07 [1.43]	1.70 [1.39]	1.81 [1.53]	2.09 [1.76]	2.73 [2.18]	-8.44*** -18.49***
ROA	-0.045 [-0.001]	0.023 [0.031]	0.046 [0.049]	0.065 [0.069]	0.094 [0.096]	-30.12*** -35.24***
GROWTH	0.360 [0.178]	0.352 [0.154]	0.282 [0.143]	0.292 [0.169]	0.345 [0.224]	0.23 -3.27***
<i>Panel B: Acquirer pre- and post-takeover stock returns</i>						
RETURN	0.172 [0.156]	0.183 [0.169]	0.207 [0.175]	0.221 [0.189]	0.227 [0.196]	-1.63 -1.51
RETURN1	0.083 [0.087]	0.107 [0.128]	0.162 [0.172]	0.181 [0.188]	0.209 [0.217]	-9.79*** -10.66***
RETURN2	0.142 [0.181]	0.229 [0.256]	0.274 [0.288]	0.315 [0.326]	0.333 [0.313]	-8.27*** -7.15***
RETURN3	0.410 [0.390]	0.419 [0.416]	0.466 [0.458]	0.539 [0.524]	0.642 [0.638]	-7.26*** -5.48***
<i>Panel C: Target and deal characteristics</i>						
Target Size	93 [22]	148 [58]	159 [60]	162 [67]	144 [56]	-6.05*** -9.40***
Deal Size	0.278 [0.078]	0.191 [0.063]	0.171 [0.059]	0.138 [0.050]	0.122 [0.040]	7.28*** 15.12***
Target ROA	-0.097 [0.018]	0.022 [0.052]	0.028 [0.073]	0.017 [0.068]	-0.043 [0.047]	-1.93* -2.96***
Target Leverage	0.740 [0.584]	0.631 [0.601]	0.688 [0.586]	0.564 [0.521]	0.644 [0.535]	2.07** 2.16**
Bid price for public targets	36.8% [24.6%]	39.5% [32.5%]	43.6% [32.5%]	47.4% [41.1%]	46.9% [35.9%]	-2.03** -3.82***
Bid price for non-public targets	6.95 [5.93]	9.36 [6.25]	9.36 [7.60]	9.05 [7.24]	10.43 [8.39]	-1.76* -2.42**
Average acquirer acquisitiveness	2.75	2.86	2.65	2.89	3.14	-6.54***
Percent of tender offers	2%	3.6%	4.6%	4.7%	3.7%	-4.28***
Percent of pure cash offers	21.6%	25.2%	32.3%	30.5%	29.2%	-4.38***
Percent of pure stock offers	28.9%	16.3%	15.6%	18.8%	22.2%	4.72***
Percent of unsolicited bids	4.1%	3.6%	3.4%	2.9%	2.1%	3.44***
Percent of public targets	15.7%	16.2%	17.7%	17.9%	15.6%	0.14
Percent of asset acquisition	45.9%	45.1%	42.7%	45.3%	44.9%	0.88
Percent of diversifying acquisitions	61.4%	67.3%	66.8%	67.6%	61.7%	-0.43
Percent of bids announced in merger waves	26.5%	25.2%	25.5%	23.5%	24.1%	1.47
Average competitive acquirers per bid	1.01	1.03	1.04	1.02	1.01	0.01

Table 3
Univariate analysis of acquirer abnormal stock returns

This table reports acquirer abnormal stock returns over the five-day event window (-2, +2) of the announcement date (ACAR) and over the three years following the consummation of the takeovers (ARETURN3), respectively, for 7,481 completed mergers and acquisitions (M&As) of 2,618 acquirers between 2000 and 2017. The analysis is performed according to the target listing status, deal type, deal form, payment method, acquisition diversification, merger wave, and acquirer free cash flow level. In the last panel, acquirers are sorted into five quintiles according to their free cash flow (FCF) level in the year before the bids, starting from quintile Q1, with low cash flow, to quintile Q5, with high cash flow. The definitions of the variables are provided in Appendix A. We report both the mean and median value (in brackets). For comparison of stock returns, the *t*-statistic and *z*-statistic are reported. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

	ACAR	ARETURN3
<i>Target listing status</i>		
Public	-0.0057*** [-0.0029]	-0.095*** [-0.064]
Non-public	0.0126*** [0.0059]	-0.072*** [-0.069]
<i>t</i> -statistic/ <i>z</i> -statistic	-9.26*** -9.43***	-0.82 0.26
<i>Deal type</i>		
Merger	0.004*** [0.003]	-0.067*** [-0.059]
Asset acquisition	0.015*** [0.010]	-0.085*** [-0.081]
<i>t</i> -statistic/ <i>z</i> -statistic	-5.95*** -7.20***	0.93 1.65*
<i>Deal form</i>		
Tender offer	-0.001 [0.0005]	-0.036 [0.004]
Non-tender offer	0.009*** [0.006]	-0.078*** [-0.071]
<i>t</i> -statistic/ <i>z</i> -statistic	-2.77*** -2.50**	1.69* 2.69***
<i>Payment method</i>		
Pure cash	0.0095*** [0.0067]	-0.036 [-0.032]
Mixture	0.0061*** [-0.0002]	-0.067 [-0.070]
Pure stock	0.004*** [-0.002]	-0.180*** [-0.160]
<i>t</i> -statistic/ <i>z</i> -statistic (Cash vs Stock)	2.44** 5.78***	2.62*** 2.92***
<i>Diversifying M&As</i>		
Diversifying	0.008*** [0.005]	-0.063*** [-0.045]

Non-diversifying	0.006***	-0.081***
	[0.004]	[-0.088]
<i>t</i> -statistic/ <i>z</i> -statistic	1.29	0.45
	0.86	0.90
<i>Merger wave</i>		
Wave	0.0061***	-0.125***
	[0.0049]	[-0.104]
Non-wave	0.0073***	-0.054***
	[0.0044]	[-0.046]
<i>t</i> -statistic/ <i>z</i> -statistic	-0.64	-8.45***
	0.28	-7.91***
<i>Acquirer free cash flow level</i>		
Q1 (Low FCF)	0.014***	-0.167***
	[0.0055]	[-0.163]
Q2	0.010***	-0.130***
	[0.0061]	[-0.093]
Q3	0.006***	-0.073
	[0.0047]	[-0.059]
Q4	0.007***	-0.049
	[0.0041]	[-0.014]
Q5 (High FCF)	0.005***	0.022
	[0.0042]	[-0.025]
<i>t</i> -statistic/ <i>z</i> -statistic (Q1-Q5)	3.12***	-3.13***
	2.98***	-4.49***

Table 4
Acquirer post-takeover abnormal stock return sorting by free cash flow level

This table reports the acquirer buy-and-hold abnormal stock return (ARETURN3) over the three years following takeover consummation for 7,481 completed mergers and acquisitions (M&As) of 2,618 acquirers between 2000 and 2017. The sample is sorted into five quintiles based on acquirer free cash flow (FCF) level in the year before the bids, starting from quintile Q1, with low cash flow, to quintile Q5, with high cash flow. The analysis is performed according to the target listing status, deal type, payment method, deal form, acquisition diversification, merger wave, deal size, acquirer sales growth, Tobin's Q, and market-to-book (MTB) ratio. The definitions of the variables are provided in Appendix A. For each quintile, we report both the mean and median value (in brackets). For comparison of stock returns between quintiles Q1 and Q5, the *t*-statistic and *z*-statistic are reported. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

	Q1 (Low FCF)	Q2	Q3	Q4	Q5 (High FCF)	<i>t</i> -statistic/ <i>z</i> -statistic (Q1-Q5)
<i>Target listing status</i>						
Public	-0.154* [-0.106]	-0.161* [-0.145]	-0.274*** [-0.163]	-0.098 [-0.026]	0.024 [-0.008]	-1.91* -1.68*
Non-public	-0.170*** [-0.221]	-0.124** [-0.088]	-0.030 [-0.048]	-0.039 [-0.011]	0.020 [-0.058]	-2.61*** -4.37***
<i>Deal type</i>						
Merger	-0.114** [-0.151]	-0.094* [-0.134]	-0.066 [-0.051]	0.029 [0.018]	0.089** [0.023]	-3.02*** -2.41**
Asset acquisition	-0.216*** [-0.190]	-0.164*** [-0.078]	-0.086* [-0.062]	-0.065 [-0.056]	-0.064 [-0.059]	-2.89*** -2.34**
<i>Payment method</i>						
Pure cash	-0.081* [-0.113]	-0.068 [-0.069]	0.022 [-0.018]	0.069 [0.040]	0.046 [0.024]	-1.84* 2.89***
Mixture	-0.208*** [-0.162]	-0.198*** [-0.130]	-0.089** [-0.026]	-0.075 [-0.078]	-0.032 [-0.040]	-2.84*** -2.59***
Pure stock	-0.334*** [-0.242]	-0.211*** [-0.213]	-0.181*** [-0.185]	-0.144* [-0.081]	-0.051 [-0.046]	-3.71*** -4.47***
<i>Deal form</i>						
Tender offer	0.028 [-0.048]	-0.308** [-0.138]	-0.129 [-0.103]	-0.205 [0.201]	0.224 [0.182]	-0.69 -0.78
Non-tender offer	-0.172*** [-0.168]	-0.122** [-0.093]	-0.071 [-0.056]	-0.042 [-0.016]	0.021 [-0.030]	-3.03*** 4.40***
<i>Diversifying M&As</i>						

Diversifying	-0.161*** [-0.149]	-0.141*** [-0.112]	-0.086* [-0.046]	-0.054 [0.014]	0.014 [-0.048]	-2.25** -2.74***
Non-diversifying	-0.176*** [-0.190]	-0.094* [-0.077]	-0.068 [-0.103]	-0.008 [-0.040]	0.088* [0.025]	-3.53*** -3.82***
<i>Merger wave</i>						
Wave	-0.231*** [-0.204]	-0.197*** [-0.198]	-0.142*** [-0.151]	-0.079* [-0.049]	-0.018 [-0.078]	-3.13*** -3.43***
Non-wave	-0.138*** [-0.147]	-0.090 [-0.079]	0.046 [-0.019]	0.030 [0.022]	0.029 [-0.005]	-2.20** -2.66***
<i>Deal size</i>						
Small (\leq median)	-0.183*** [-0.160]	-0.209*** [-0.123]	-0.157* [-0.068]	-0.150** [-0.027]	0.104* [-0.001]	-3.57*** -4.39***
Large ($>$ median)	-0.164*** [-0.171]	-0.048 [-0.048]	0.035 [-0.037]	0.041 [-0.009]	-0.072 [-0.087]	-1.67* -1.93*
<i>Acquirer sales growth</i>						
Low (\leq median)	-0.154*** [-0.155]	-0.099* [-0.053]	-0.026 [0.002]	0.044 [0.046]	0.035 [0.003]	-2.15** -2.88***
High ($>$ median)	-0.184*** [-0.175]	-0.154** [-0.152]	-0.113* [-0.104]	-0.076 [-0.050]	-0.011 [-0.042]	-3.26*** -2.22**
<i>Acquirer Tobin's Q</i>						
Q $>$ 1	-0.233*** [-0.224]	-0.197*** [-0.119]	-0.083* [-0.068]	-0.053 [-0.025]	0.016 [-0.041]	-3.17*** -3.58***
Q \leq 1	-0.144*** [-0.115]	-0.085** [-0.078]	-0.037 [0.024]	-0.041 [0.010]	0.042 [0.039]	-2.67*** -2.13**
<i>Acquirer MTB ratio</i>						
G1 (Value)	-0.085 [-0.055]	-0.074 [-0.063]	0.154 [-0.046]	-0.115 [-0.031]	0.141 [0.069]	-1.21 -1.73*
G2	-0.077 [-0.092]	-0.257* [-0.144]	-0.099 [-0.073]	0.099 [-0.051]	0.136 [0.001]	-1.93* -1.81*
G3	-0.256*** [-0.223]	-0.106 [-0.072]	-0.073 [-0.092]	-0.049 [0.024]	-0.011 [-0.056]	-2.49** -2.60***
G4	-0.400*** [-0.383]	-0.224** [-0.134]	-0.139* [-0.033]	0.124** [0.129]	0.023 [-0.021]	-4.04*** -4.37***
G5 (Glamour)	-0.329*** [-0.286]	-0.287*** [-0.200]	-0.143* [-0.113]	-0.134** [-0.109]	-0.069 [-0.036]	-3.17*** -3.65***

Table 5
Acquirer post-takeover abnormal stock return sorting by board governance and CEO incentive

This table reports the acquirer buy-and-hold abnormal stock return (ARETURN3) over the three years following takeover consummation for 7,481 completed mergers and acquisitions of 2,618 acquirers between 2000 and 2017. In panel A, the sample is first sorted to five quintiles based on the percentage of independent directors on the board that are not appointed by the incumbent CEOs, starting from quintile Q1 with high percentage (strong governance) to quintile Q5 with low percentage (weak governance). We then divide each quintile into two parts according to acquirer's free cash flow (FCF) level in the year before the bids. In panel B, the sample is sorted into five quintiles based on the CEO equity compensation ratio, starting from quintile Q1 with high ratio (strong incentive) to quintile Q5 with low ratio (weak incentive). The CEO equity compensation ratio is obtained as the ratio of equity compensation to total compensation in the year before the bid. Equity compensation is the sum of the value of restricted stock granted during the year, the value of stock options granted during the year, and long-term incentive payouts. Total compensation is the sum of salary, bonus, other annual compensation, the value of restricted stock granted, the value of stock options granted during the year, long-term incentive payouts, and all other compensation. The definitions of the variables are provided in Appendix A. We report both the mean and median value (in brackets) for acquirer's stock return. For comparison of stock returns, the *t*-statistic and *z*-statistic are reported. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

	Q1 (Strong)	Q2	Q3	Q4	Q5 (Weak)	<i>t</i> -statistic/ <i>z</i> -statistic (Q1-Q5)
<i>Panel A: Sorted by independent directors percentage</i>						
Total Sample	0.102* [0.109]	-0.037 [0.023]	-0.045 [-0.032]	-0.145* [-0.048]	-0.161** [-0.065]	2.06** 1.91*
Low-FCF Acquirer	0.052 [-0.073]	-0.129* [-0.133]	-0.100 [-0.044]	-0.386** [-0.197]	-0.315** [-0.128]	2.12** 0.62
High-FCF Acquirer	0.154** [0.173]	0.040* [0.037]	0.028 [-0.007]	-0.070 [-0.033]	-0.056 [-0.019]	1.85* 1.79*
T statistic/Z statistic (Low -High)	-1.74* -2.17**	-1.80* -1.77*	-0.80 -0.33	-2.95*** -2.33**	-2.15** -2.05**	
<i>Panel B: Sorted by equity compensation ratio</i>						
Total Sample	0.104** [0.114]	0.057* [0.099]	-0.079* [0.001]	-0.027 [-0.005]	-0.096** [-0.067]	3.43*** 3.65***
Low-FCF Acquirer	-0.014 [-0.033]	0.029 [-0.030]	-0.139** [-0.079]	-0.134** [-0.104]	-0.165** [-0.110]	1.85* 3.38***
High-FCF Acquirer	0.136** [0.154]	0.068* [0.112]	-0.057 [0.007]	0.055 [0.092]	0.036 [-0.043]	1.76* 3.24***
T statistic/Z statistic (Low -High)	-1.83* -2.12**	-0.24 -1.73*	-1.68* -0.87	-2.85*** -2.73***	-2.18** -1.97**	

Table 6
Acquirer post-takeover abnormal stock return sorting by management ability

This table reports the acquirer buy-and-hold abnormal stock return (ARETURN3) over the three years following takeover consummation for 7,481 completed mergers and acquisitions of 2,618 acquirers between 2000 and 2017. In panel A, the sample is first sorted to five quintiles based on the acquirer stock return in the year before the bids (RETURN), starting from quintile Q1 with low return (low ability) to quintile Q5 with high return (high ability). We then divide each quintile into two parts according to acquirer's free cash flow (FCF) level in the year before the bids. In panel B, the sample is sorted into five quintiles based on CEO ability score constructed by Demerjian et al. (2012), starting from quintile Q1 with low score (low ability) to quintile Q5 with high score (high ability). The definitions of the variables are provided in Appendix A. We report both the mean and median value (in brackets) for the acquirer's stock return. For comparison of stock returns, the *t*-statistic and *z*-statistic are reported. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

	Q1 (Low ability)	Q2	Q3	Q4	Q5 (High ability)	<i>t</i> -statistic/ <i>z</i> -statistic (Q1-Q5)
<i>Panel A: Sorted by acquirer pre-bid stock return</i>						
Total Sample	0.061 [-0.101]	-0.028 [-0.087]	-0.025 [0.038]	-0.005 [0.025]	-0.091 [-0.067]	1.35 -0.45
Low-FCF Acquirer	-0.087 [-0.153]	-0.083 [-0.129]	-0.151** [-0.060]	-0.068 [0.009]	-0.137* [-0.148]	0.51 -0.10
High-FCF Acquirer	0.136* [-0.057]	0.025 [-0.008]	0.101 [0.077]	0.057 [0.068]	-0.044 [0.025]	1.33 -0.77
T statistic/Z statistic (Low -High)	-2.02** -1.88*	-1.43 -1.71*	-2.21** -1.98**	-1.68* -1.01	-1.71* -2.11**	
<i>Panel B: Sorted by management ability score</i>						
Total Sample	-0.204*** [-0.162]	-0.078* [-0.083]	-0.007 [-0.042]	0.038 [-0.071]	0.011 [0.026]	-1.98** -2.69***
Low-FCF Acquirer	-0.316*** [-0.249]	-0.165** [-0.129]	-0.127* [-0.126]	-0.088* [-0.114]	-0.066 [-0.035]	-3.19*** -2.76***
High-FCF Acquirer	-0.091 [-0.058]	-0.048 [-0.036]	0.101* [0.052]	0.104* [-0.027]	0.062 [0.045]	-1.58 -1.69*
T statistic/Z statistic (Low -High)	-2.89*** -2.54**	-1.78* -1.67*	-2.43** -2.66***	-1.98** -1.38	-1.89* -1.76*	

Table 7
Robustness checks for acquirer post-takeover abnormal stock return

This table reports the robustness checks for acquirer buy-and-hold abnormal stock return (ARETURN3) over the three years following takeover consummation for 7,481 completed mergers and acquisitions of 2,618 acquirers between 2000 and 2017. The sample is sorted into five quintiles based on acquirer free cash flow (FCF) level in the year before the bids, starting from quintile Q1, with low cash flow, to quintile Q5, with high cash flow. Panel A reports the sorting of acquirer post-takeover abnormal stock return with alternative definitions. Construction of the reference portfolio is reported in Appendix B. Panel B reports the sorting of acquirer post-takeover abnormal stock return by different definitions of acquirer free cash flow (FCF) level. Panel C reports other robustness checks of the sorting of acquirer post-takeover abnormal stock return. The definitions of the variables are provided in Appendix A. For each quintile, we report both the mean and median value (in brackets). For comparison of stock return between quintiles Q1 and Q5, the *t*-statistic and *z*-statistic are reported. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

	Q1 (Low FCF)	Q2	Q3	Q4	Q5 (High FCF)	<i>t</i> -statistic/ <i>z</i> -statistic (Q1-Q5)
<i>Panel A: Alternative definitions for acquirer long-term abnormal return</i>						
Benchmark: size, industry, and free cash flow control firm	-0.265*** [-0.175]	-0.171* [-0.043]	-0.060 [0.014]	-0.035 [0.007]	0.125 [0.034]	-3.36*** -2.94***
Benchmark: reference portfolio	-0.211*** [-0.290]	-0.144*** [-0.165]	0.030 [-0.159]	-0.043 [-0.115]	0.006 [-0.059]	-4.55*** -4.17***
<i>Panel B: Alternative definitions for acquirer free cash flow level</i>						
NIDPR	-0.149*** [-0.184]	-0.113 [-0.089]	-0.038 [-0.060]	-0.012 [0.003]	0.064* [0.014]	-4.40*** -5.46***
CFO	-0.226*** [-0.229]	-0.073** [-0.088]	-0.042 [-0.047]	0.059* [0.037]	0.008 [-0.025]	-5.05*** -5.67***
CFAI	-0.172*** [-0.168]	-0.077* [-0.100]	0.022 [-0.004]	-0.157*** [-0.075]	0.006 [-0.016]	-3.02*** -3.71***
CFAD	-0.257*** [-0.198]	-0.091*** [-0.099]	-0.008 [-0.025]	0.066* [-0.004]	0.003 [-0.019]	-4.82*** -5.66***
<i>Panel C: Other robustness checks</i>						
Deleting delisted acquirers	-0.128*** [-0.136]	-0.121*** [-0.063]	-0.114** [-0.022]	0.038 [-0.056]	0.014 [-0.043]	-2.19** -3.57***
Deleting overlapping cases	-0.159** [-0.185]	-0.113 [-0.079]	0.001 [-0.015]	0.006 [-0.004]	-0.032 [-0.041]	-1.76* -3.32***
Only the first transaction	-0.161*** [-0.184]	-0.182*** [-0.121]	-0.017 [-0.046]	-0.097 [-0.035]	0.044 [-0.013]	-2.73*** -4.18***

NIDPR = (income before extraordinary items+ depreciation and amortization)/total asset;

CFO = (income before extraordinary items+ depreciation and amortization- Δ accounts receivables- Δ inventory- Δ non-cash current assets+ Δ accounts payable+ Δ income tax payable+ Δ other current liabilities during the period)/total asset;

CFAI = (income before extraordinary items+ depreciation and amortization- Δ accounts receivables- Δ inventory- Δ non-cash current assets+ Δ accounts payable+ Δ income tax payable+ Δ other current liabilities + proceeds from the sale of property, plant and equipment+ proceeds from the sale of investment+ Δ capital expenditures+ Δ increase in acquisitions)/total asset;

CFAD = (income before extraordinary items+ depreciation and amortization- Δ accounts receivables- Δ inventory- Δ non-cash current assets+ Δ accounts payable+ Δ income tax payable+ Δ other current liabilities- preferred dividend-common dividend)/total asset.

Table 8
Regressing acquirer announcement and post-takeover abnormal stock returns on free cash flow level

This table presents the regression results of acquirer announcement abnormal stock return (ACAR) and post-takeover abnormal stock return (ARETURN3) on acquirer free cash flow (FCF) level, acquirer firm characteristics, and deal characteristics. The sample contains 7,481 completed mergers and acquisitions of 2,618 acquirers between 2000 and 2017. The definitions of the variables are provided in Appendix A. Significance is based on White-adjusted standard errors, with *t*-values reported in brackets. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

	ACAR				ARETURN3			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Intercept	0.048*** [10.8]	0.049*** [10.6]	0.049*** [10.8]	0.049*** [10.8]	-0.189*** [-3.23]	-0.186*** [-3.15]	-0.163*** [-2.72]	-0.200*** [-3.40]
FCF	-0.011** [-2.24]	-0.013** [-2.46]	-0.016** [-2.17]	-0.014** [-2.36]	0.386*** [4.26]	0.706*** [3.88]	0.252** [2.89]	0.470*** [4.40]
High_FCF		-0.001 [-0.96]				0.167*** [3.42]		
FCF*High_FCF		0.006 [0.31]				-0.857*** [-3.56]		
FCF* Sequence			0.002 [1.00]				0.058** [2.27]	
FCF* Pure Cash				0.012 [0.72]				-0.328** [-2.16]
Sequence	0.0001 [0.27]	0.0001 [0.26]	-0.0001 [-0.12]	0.0001 [0.27]	-0.016*** [-4.10]	-0.016*** [-3.98]	-0.024*** [-4.77]	-0.016*** [-4.13]
Pure Cash	0.001 [0.36]	0.001 [0.34]	0.001 [0.40]	-0.001 [-0.19]	0.011 [0.40]	0.001 [0.04]	0.011 [0.41]	0.064* [1.84]
Acquisitiveness	0.001* [1.84]	0.001* [1.84]	0.001* [1.83]	0.001* [1.83]	0.079*** [6.63]	0.080*** [6.62]	0.077*** [6.63]	0.078*** [6.63]
Asset Acquisition	-0.002 [-0.66]	-0.002 [-0.67]	-0.002 [-0.65]	-0.002 [-0.64]	0.028 [0.98]	0.030 [1.02]	0.028 [0.98]	0.027 [0.93]
CASH	-0.014** [-2.34]	-0.014** [-2.29]	-0.015** [-2.39]	-0.015** [-2.47]	-0.146** [-2.31]	-0.122* [-1.93]	-0.153** [-2.43]	-0.130** [-2.05]
RETURN	-0.002 [-1.25]	-0.002 [-1.26]	-0.002 [-1.25]	-0.002 [-1.24]	-0.013 [-0.96]	-0.012 [-0.92]	-0.013 [-0.95]	-0.013 [-0.92]
MTB	-0.0003	-0.0003	-0.0003	-0.0003	-0.005**	-0.005**	-0.005**	-0.005**

Tobin's Q	[-1.31] 0.001	[-1.33] 0.001	[-1.27] 0.0006	[-1.31] 0.001	[-2.01] 0.007	[-2.00] 0.007	[-2.01] 0.007	[-2.01] 0.007
Log (BMV)	[1.29] -0.006***	[1.32] -0.006***	[1.26] -0.006***	[1.28] -0.006***	[1.64] -0.005	[1.64] -0.010	[1.63] -0.005	[1.64] -0.004
GROWTH	[-8.83] -0.0001	[-8.74] -0.0001	[-8.80] -0.0001	[-8.82] -0.0001	[-0.64] -0.012***	[-1.45] -0.011***	[-0.64] -0.012***	[-0.61] -0.012***
PAYOUT	[-0.42] -0.001	[-0.41] -0.001	[-0.36] -0.001	[-0.40] -0.001	[-3.12] -0.009	[-2.78] -0.010	[-3.12] -0.009	[-3.10] -0.009
NLEVERAGE	[-0.66] 0.005	[-0.70] 0.005	[-0.65] 0.005	[-0.67] 0.005	[-0.54] 0.112**	[-0.65] 0.108**	[-0.56] 0.119***	[-0.54] 0.112**
IPO History	[1.03] 0.0002*	[0.94] 0.0002*	[1.07] 0.0002*	[1.04] 0.0002*	[2.56] 0.005***	[2.46] 0.004**	[2.73] 0.005***	[2.55] 0.005***
Deal Size	[1.85] 0.003***	[1.83] 0.003***	[1.85] 0.003***	[1.85] 0.003***	[3.17] 0.057*	[2.42] 0.055*	[3.14] 0.057*	[3.18] 0.057*
Wave	[7.19] 0.002	[7.18] 0.002	[7.18] 0.002	[7.18] 0.002	[1.95] -0.117***	[1.90] -0.116***	[1.95] -0.116***	[1.94] -0.116***
Tender	[0.65] 0.013*	[0.65] 0.013*	[0.72] 0.013*	[0.65] 0.013*	[-4.26] 0.101	[-4.22] 0.098	[-4.24] 0.101	[-4.24] 0.103
Public	[1.80] -0.019***	[1.79] -0.019***	[1.81] -0.019***	[1.80] -0.019***	[1.41] 0.006	[1.37] 0.010	[1.41] 0.005	[1.43] 0.009
Diversification	[-5.27] -0.004	[-5.26] -0.004	[-5.31] -0.004	[-5.27] -0.004	[0.16] 0.029	[0.26] 0.019	[0.14] 0.030	[0.22] 0.029
Toehold	[-1.42] 0.002	[-1.44] 0.002	[-1.40] 0.002	[-1.41] 0.002	[1.21] 0.12***	[0.77] 0.13***	[1.22] 0.12***	[1.19] 0.12***
Pooling	[0.55] -0.003	[0.56] -0.003	[0.53] -0.002	[0.55] -0.003	[2.72] -0.070	[2.94] -0.074	[2.71] -0.070	[2.69] -0.074
Unsolicited	[-0.54] -0.008	[-0.54] -0.008	[-0.48] -0.007	[-0.54] -0.008	[-1.41] -0.10	[-1.49] -0.11	[-1.40] -0.10	[-1.49] -0.10
Year dummy	[-1.14] Yes	[-1.15] Yes	[-1.13] Yes	[-1.14] Yes	[-1.32] Yes	[-1.45] Yes	[-1.31] Yes	[-1.34] Yes
Industry dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj R-square	0.05	0.05	0.05	0.05	0.07	0.07	0.07	0.07
Observation	7,481	7,481	7,481	7,481	7,481	7,481	7,481	7,481

Figure 1
Acquirer post-takeover abnormal stock return by month

This figure shows the average acquirer post-takeover abnormal stock return (ARETURN3) for 7,481 completed mergers and acquisitions of 2,618 acquirers between 2000 and 2017. ARETURN3 is calculated as acquirer three-year buy-and-hold raw stock return following takeover consummation minus the return of size, industry, and market-to-book control firm. Acquirers are sorted into five quintiles based on their free cash flow (FCF) level in the year before the bids, starting from quintile Q1, with the lowest cash flow, to quintile Q5, with the highest cash flow. Return accumulation starts from the first month following the consummation of the takeovers and ends 36 months after the takeover consummation.

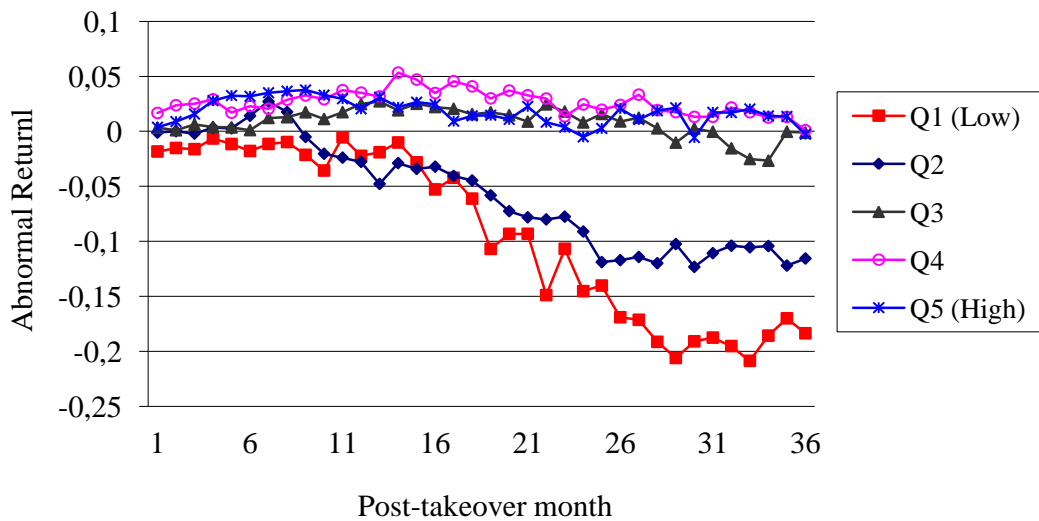


Table 9
Regressing acquirer post-takeover operating performance on free cash flow level

Panel A reports the results of regressing acquirer's average three-year post-takeover operating performance on the average three-year pre-takeover operating performance and free cash flow (FCF) level. FCF is acquirer free cash flow level in the year prior to the bid announcement, obtained as operating cash flow minus investments and dividend normalized by year-beginning total asset. Panel B reports the results of regressing acquirer's post-takeover operating performance on pre-takeover performance and cash flow quintiles, where acquirers are sorted into five quintiles based on their free cash flow (FCF) level in the year before the bids, starting from quintile Q1, with the lowest cash flow, to quintile Q5, with the highest cash flow. Q2, Q3, Q4, and Q5 are all dummy variables that equal one for their corresponding quintile of free cash flow level and zero otherwise. ROA is defined as operating income before depreciation normalized by average total assets. OCF is defined as operating cash flow normalized by average total asset. CapEx. is capital expenditure normalized by year-beginning total assets. Acquirer operating performance is adjusted with the value of the control firm. Significance is based on White-adjusted standard errors, with *t*-values reported in brackets. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

	Post-takeover ROA	Post-takeover OCF	Post-takeover CapEx.
<i>Panel A: regressing performance on free cash flow level</i>			
Intercept	0.009*** [3.11]	0.008*** [3.02]	-0.005*** [-5.30]
FCF	0.046*** [3.21]	0.026*** [3.09]	0.034*** [7.26]
Pre-takeover ROA	0.479*** [31.87]		
Pre-takeover OCF		0.413*** [27.4]	
Pre-takeover CapEx.			0.456*** [35.89]
Year dummy	Yes	Yes	Yes
Industry dummy	Yes	Yes	Yes
Adj R ²	0.278	0.186	0.306
F Value	550	325	726
Observation	7,481	7,481	7,481
<i>Panel B: regressing performance on cash flow quintiles</i>			
Intercept	-0.011*** [-2.77]	-0.047*** [-2.96]	-0.013*** [-5.61]
Q2	0.001 [0.13]	0.009 [1.27]	0.001 [0.49]
Q3	0.023*** [3.00]	0.049*** [4.06]	0.007*** [2.77]
Q4	0.021*** [5.36]	0.044*** [5.94]	0.015*** [5.71]

Q5	0.016*** [6.80]	0.055*** [6.93]	0.030*** [10.93]
Pre-takeover ROA	0.466*** [31.24]		
Pre-takeover OCF		0.392*** [23.72]	
Pre-takeover CapEx.			0.436*** [34.68]
Year dummy	Yes	Yes	Yes
Industry dummy	Yes	Yes	Yes
Adj R ²	0.296	0.205	0.331
F Value	240	149	329
Observation	7,481	7,481	7,481

Table 10
Acquirer financial leverage change surrounding the bid

This table reports the change in acquirer's financial leverage from the year preceding the bid to the third year following takeover consummation for 7,481 completed mergers and acquisitions of 2,618 acquirers between 2000 and 2017. Panel A reports the acquirer's raw financial leverage (LEVERAGE) obtained as total debt normalized by total assets. Panel B reports the acquirer's net financial leverage (NLEVERAGE) obtained as total debt minus cash and short-term investments normalized by total assets. Panel C reports the acquirer's abnormal net financial leverage obtained as acquirer's net financial leverage minus that of the control firm. Acquirers are sorted into five quintiles according to their free cash flow (FCF) level in the year before the takeovers, starting from quintile Q1, with low FCF, to quintile Q5, with high FCF. The definitions of the variables are provided in Appendix A. For each quintile, we report both the mean and median value (in brackets). For comparison of leverage, the *t*-statistic and *z*-statistic are reported. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

	Q1 (Low FCF)	Q2	Q3	Q4	Q5 (High FCF)	<i>t</i> -statistic/ <i>z</i> -statistic (Q1-Q5)
<i>Panel A: Acquirer financial leverage</i>						
One year before takeover announcement	0.477 [0.490]	0.500 [0.521]	0.504 [0.522]	0.466 [0.482]	0.455 [0.467]	2.79*** 2.18**
Third year after takeover consummation	0.577 [0.565]	0.582 [0.586]	0.546 [0.557]	0.526 [0.533]	0.506 [0.504]	9.81*** 8.60***
<i>t</i> -statistic/ <i>z</i> -statistic	-11.78*** -12.52***	-8.24*** -7.62***	-5.94*** -6.22***	-6.69*** -7.96***	-7.32*** -7.97***	
<i>Panel B: Acquirer net financial leverage</i>						
One year before takeover announcement	0.234 [0.333]	0.359 [0.431]	0.372 [0.436]	0.322 [0.385]	0.319 [0.374]	-8.28*** -6.05***
Third year after takeover consummation	0.442 [0.471]	0.446 [0.517]	0.438 [0.483]	0.431 [0.477]	0.433 [0.479]	0.54 -1.15
<i>t</i> -statistic/ <i>z</i> -statistic	-14.14*** -12.47***	-10.07*** -8.12***	-8.74*** -6.83***	-8.74*** -8.59***	-9.13*** -9.25***	
<i>Panel C: Acquirer abnormal net financial leverage</i>						
One year before takeover announcement	-0.021 [-0.018]	-0.019 [-0.016]	-0.012 [-0.007]	-0.046 [-0.052]	-0.076 [-0.085]	3.34*** 3.86***
Third year after takeover consummation	0.041 [0.045]	0.036 [0.038]	0.019 [0.020]	-0.010 [-0.027]	-0.026 [-0.037]	3.28*** 4.16***
<i>t</i> -statistic/ <i>z</i> -statistic	-4.22*** -5.01***	-3.30*** -4.14***	-2.04** -2.26**	-1.90** -1.92**	-3.88*** -3.26***	

Table 11
The association of acquirer post-takeover abnormal stock return and financial leverage change

Panel A reports acquirer's post-takeover abnormal stock return (ARETURN3) by change in acquirer's net financial leverage (NetLeverageChange) and free cash flow (FCF) level for 7,481 completed mergers and acquisitions of 2,618 acquirers between 2000 and 2017. Acquirers are sorted into five quintiles based on free cash flow level, starting from quintile Q1, with low FCF, to quintile Q5, with high FCF. For each quintile, we report both the mean and median value (in brackets). Panel B reports the regression results of ARETURN3 on change in net financial leverage and free cash flow level. The coefficients of control variables are not reported. *NetLeverageChange* equals acquirer's net financial leverage in the third year following takeover consummation minus net financial leverage in the year preceding the takeover, where net financial leverage (NLEVERAGE) is obtained as total debt minus cash and short-term investments normalized by total assets. The definitions of other variables are provided in Appendix A. Significance is based on White-adjusted standard errors, with *t*-values reported in brackets. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

<i>Panel A: Sorting results</i>	Q1 (Low FCF)	Q2	Q3	Q4	Q5 (High FCF)	<i>t</i> -statistic/ <i>z</i> -statistic (Q1-Q5)
NetLeverageChange > 0	-0.246*** [-0.228]	-0.160** [-0.138]	-0.087* [-0.120]	-0.120** [-0.095]	-0.045 [-0.042]	-2.05** -2.11**
NetLeverageChange ≤ 0	0.042 [0.046]	-0.020 [0.026]	-0.016 [0.041]	0.047 [0.026]	0.064 [0.039]	-1.51 1.13
<i>t</i> -statistic/ <i>z</i> -statistic	-3.39*** -3.22***	-2.10** -2.99***	-0.81 -2.09**	-1.86* -1.76*	-1.55 -1.32	
<i>Panel B: Multiple regressions</i>						
	Independent variable =ARETURN3					
	(1)			(2)		
Intercept	-0.031 [-0.53]			-0.005 [-0.08]		
FCF	0.336*** [5.17]			0.385*** [3.95]		
NLEVERAGE				-0.173*** [-3.52]		
NetLeverageChange	-0.643*** [-15.5]			-0.820*** [-13.8]		
Control variables	NO			Yes		
Year dummy	Yes			Yes		
Industry dummy	Yes			Yes		
Adj R-squared	0.05			0.10		
Observation	7,481			7,481		

Table 12
Acquirer trading status sorting by free cash flow level

This table reports the acquirer's trading status at the end of the fifth year following takeover consummation for 7,481 completed mergers and acquisitions of 2,618 acquirers between 2000 and 2017. Trading status is obtained from the CRSP database. A firm may have been delisted from the current stock exchange for reasons, such as being acquired by another firm, insufficient (or non-compliance with rules of) float or assets, bankruptcy, declared insolvency, delinquent in filing, non-payment of fees, price falling below acceptable level, or not meeting the exchange's financial guidelines for continued listing. Panel A reports the percentage of the acquirers that are bankrupt or acquired by other firms. The acquirers are sorted into five quintiles based on their free cash flow (FCF) level in the year preceding the takeover, starting from quintile Q1, with low cash flow, to quintile Q5, with high cash flow. Panel B reports the regression results of acquirer trading status on acquirer free cash flow level. Significance is based on White-adjusted standard errors, with *t*-values reported in brackets. The definitions of variables are provided in Appendix A. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

<i>Panel A: Sorting results</i>	Based on 2,618 acquirers		Based on 7,481 observations	
	Bankruptcy	Acquired	Bankruptcy	Acquired
Q1 (Low FCF)	7.1%	8.6%	5.9%	7.2%
Q2	4.1%	7.2%	3.3%	5.8%
Q3	3.2%	7.7%	1.9%	6.5%
Q4	2.8%	7.2%	1.7%	5.8%
Q5 (High FCF)	3.2%	7.4%	2.6%	6.7%
<i>t</i> -statistic (Q1-Q5)	2.80***	0.68	4.64***	0.55

<i>Panel B: Multiple regressions</i>	Independent dummy variable	
	Bankruptcy	Acquired
Intercept	0.105*** [7.73]	0.292*** [12.4]
FCF	-0.176*** [-6.63]	-0.041* [-1.84]
CASH	-0.044*** [-3.27]	0.120*** [3.45]
MTB	0.0006 [1.34]	0.002** [2.09]
RETURN	0.003 [0.76]	-0.003 [-0.45]
Tobin's Q	-0.0004 [-0.50]	-0.005** [-2.42]
Log (BMV)	-0.013*** [-6.48]	-0.014*** [-4.10]
GROWTH	0.00005 [0.12]	-0.001* [-1.70]
PAYOUT	0.00002 [0.34]	0.0004*** [3.89]
LEVERAGE	0.026*** [3.16]	-0.076*** [-4.52]
IPO History	-0.0005** [-2.56]	-0.0004 [-1.04]

Deal Size	-0.006	0.018
	[-1.50]	[1.33]
Wave	0.006	0.002
	[1.03]	[0.14]
Tender	-0.009	0.014
	[-0.84]	[0.52]
Public	0.011	-0.016
	[1.44]	[-1.03]
Toehold	0.0004	-0.017
	[0.05]	[-1.00]
Pooling	-0.021***	0.018
	[-2.71]	[0.81]
Pure Cash	-0.007	0.002
	[-1.29]	[0.18]
Unsolicited	-0.022***	-0.019
	[-2.67]	[-0.72]
Diversification	0.009*	-0.011
	[1.90]	[-1.02]
Acquisitiveness	0.003	0.005
	[1.16]	[1.51]
Asset Acquisition	-0.001	-0.016
	[-0.20]	[-1.28]
Sequence	0.001	-0.007*
	[1.39]	[-1.95]
Year dummy	Yes	Yes
Industry dummy	Yes	Yes
Adj R-squared	0.07	0.03
Observation	7,481	7,481

Appendix A

This table defines the variables used in this study, which contains 7,481 completed mergers and acquisitions of 2,618 acquirers between 2000 and 2017.

Variable	Definition
BMV	Acquirer market value of equity at the end of the year prior to the takeover announcement.
ASSET	Acquirer book value of total assets at the end of the year prior to the takeover announcement.
CASH	Acquirer cash holding at the end of the year prior to the takeover announcement, obtained as cash and short-term investments normalized by ASSET.
FCF	Acquirer free cash flow level at the end of the year prior to the takeover announcement, obtained as operating cash flow minus capital investments and dividend normalized by ASSET.
High_FCF	Equals one if FCF is above the median value of the sample observations and zero otherwise.
MTB	Acquirer market-to-book ratio at the end of the year prior to the takeover announcement, obtained as BMV divided by the book value of equity.
Tobin's Q	Acquirer Tobin's Q at the end of the year prior to the takeover announcement, obtained as the sum of BMV and total debt normalized by ASSET.
LEVERAGE	Acquirer financial leverage at the end of the year prior to the takeover announcement, obtained as total debt normalized by ASSET.
NLEVERAGE	Acquirer net debt position at the end of the year prior to the takeover announcement, obtained as total debt minus cash and short-term investments normalized by ASSET.
NetLeverageChange	Acquirer net financial leverage in the third year following takeover consummation minus net financial leverage at the end of the year prior to the takeover announcement, where net financial leverage is obtained as total debt minus cash and short-term investments normalized by total assets.
ROA	Acquirer net income in the year prior to the takeover announcement normalized by ASSET.
GROWTH	Acquirer proportional sales growth in the year prior to the takeover announcement.
PAYOUT	Acquirer ratio of dividend payout and share repurchase in the year prior to the takeover announcement, obtained as the sum of total dividend and share repurchase value normalized by net income.
IPO History	The difference of the year of acquisition announced and the year of acquirer initial public offering (IPO).
RETURN	Acquirer buy-and-hold raw stock return in the year prior to the takeover announcement.
RETURN1	Acquirer one-year buy-and-hold raw stock return following takeover consummation.
RETURN2	Acquirer two-year buy-and-hold raw stock return following takeover consummation.
RETURN3	Acquirer three-year buy-and-hold raw stock return following takeover consummation.
ARETURN3	Acquirer three-year buy-and-hold raw stock return following takeover

	consummation, adjusted with the return of size, industry, and market-to-book control firm.
Deal Size	The transaction value of a deal divided by BMV.
Target Size	The sum of target total liabilities, shareholders' equity and minority interest at the end of the year prior to the takeover announcement.
Target ROA	Target operating income before depreciation normalized by total assets at the end of the year prior to the takeover announcement.
Target Leverage	Target total liabilities divided by total assets at the end of the year prior to the takeover announcement.
ACAR	Acquirer announcement stock return over the five-day event window (-2, +2) using the market model and Scholes-Williams betas and the parameters are estimated over the (-205, -6) interval prior to the takeover announcement.
Wave	Equals one if the takeover happens in a merger wave period and zero otherwise, where each merger wave lasts for a 24-month period. Merger waves are identified in the following way: <i>First</i> , all takeover bids are collected if the transaction value is above \$1 million recorded by the SDC M&A dataset in the period 2000-2017. <i>Second</i> , the total number of takeover bids in each month for each industry is calculated based on the two-digit SIC code recorded by the SDC dataset, and the 24-month period with the highest concentration of takeover bids is obtained in each industry. <i>Third</i> , a 24-month period is coded as a merger wave if the number of takeover bids within it exceeds 95% of the bids of the highest 24-month concentration in its industry.
Pure Cash	Equals one for a pure cash offer and zero otherwise.
Tender	Equals one if the takeover is put forward via tender offer and zero otherwise.
Public	Equals one if the target is a listed firm and zero otherwise.
Toehold	Acquirer's shareholding percentage of the target's shares outstanding four weeks prior to the takeover announcement.
Pooling	Equals one if the pooling-of-interest accounting method is reported in a takeover and zero if the purchase method is used.
Diversification	Equals one if the two-digit SIC code of the primary business line of the acquirer is different from that of the target and zero otherwise.
Unsolicited	Equals one if the bid is unsolicited by the target and zero otherwise.
Acquisitiveness	The number of takeover deals conducted by an acquirer within three years following per deal.
Sequence	The sequence of each takeover deal conducted by an acquirer within three years following per deal.
Asset Acquisition	Equals one if certain assets of a company, subsidiary, division, or branch are acquired by an acquiring firm and zero otherwise.

Appendix B

B.1 Control Sample Benchmark

Following Barber and Lyon (1997), we construct the *size, industry, and market-to-book* control sample of nonbidding firms in the following way. To be selected as a control firm, the firm should not have engaged in any takeover in the eight years (-4, +4) around the sample firm's takeover announcement. The firm should have the same two-digit SIC industry code as the sample firm. The firm's market value of total equity at the end of the month immediately preceding the takeover announcement should be between 80% and 120% of the sample firm's, and its market-to-book ratio should be between 80% and 120% of the sample firm's. This formed the base set of control firms. From these, we then select the one with the closest market value of total equity to the sample firm.

An acquirer's long-term abnormal stock return is calculated as its three-year long-term stock return following takeover consummation minus that of the control firm during the same period. We adopt the buy-and-hold approach to calculate the long-term stock return for the acquirer and the control firm. The buy-and-hold return BHR_i is calculated as:

$$BHR_i = \prod_{t=1}^T (1 + R_{i,t}) - 1 \quad (1)$$

where day $t = 1$ is the first trading day following takeover consummation, $R_{i,t}$ is the return on stock i on day t , and T is the three-year anniversary date of the takeover consummation date.

B.2 Reference Portfolio Benchmark

Following Lyon et al. (1999), the *reference portfolio* is constructed in the following way. First, for June of each year of the period 2000 to 2017, we calculate firm size, defined as the market valuation of equity. We rank all public firms in the CRSP database based on firm size and sort them into 14 groups. Then, we calculate a firm's market-to-book ratio. For each of the 14 groups, we further divide them into five groups according to the market-to-book ratio. As a reference portfolio, we select the group containing the acquirer's firm size and market-to-book ratio. The acquirer long-term abnormal stock return AR_i is, thus, calculated as the long-term buy-and-hold return minus the long-term portfolio return:

$$AR_i = \prod_{t=1}^T (1 + R_{i,t}) - 1 - R_{portfolio} \quad (2)$$

where $t = 1$ is the first trading month following takeover consummation; $R_{i,t}$ is the return on stock i on month t , and T is the three-year investment horizon in the months following takeover consummation. $R_{portfolio}$ is the portfolio's three-year post-takeover returns calculated as the following:

$$R_{portfolio} = \sum_{i=1}^n \frac{\prod_{t=1}^T (1 + R_{i,t}) - 1}{n} \quad (3)$$

where $R_{i,t}$ is the monthly return of security i on month t ; n is the number of securities in the portfolio traded on month $t = 1$; month $t = 1$ is the first trading month following the

consummation date of the takeover, and T is the three-year investment horizon in the months following takeover consummation.