Essays on Corporate Finance

Submitted by Jian Liu to the University of Exeter as a thesis for the degree of Doctor of Philosophy in Finance, January 2018.

I certify that all material in this thesis which is not my own work has been identified and that no material has previously been submitted and approved for the award of a degree by this or any other University.

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Abstract

This thesis examines the impact of sources of financing on the performance of M&As and the value of firm diversification.

Chapter Three examines how sources of financing between corporate cash holdings and bank lines of credit affect the performance of M&As. The evidence shows that the M&As financed by bank lines of credit have higher stock return performance and operating performance than those financed by corporate cash holdings. Firms with higher institutional ownership are more likely to use bank lines of credit as a source of financing in M&As. Moreover, M&As that are financed entirely by bank lines of credit are associated with lower acquisition premiums than those financed by corporate cash holdings. The outperformance is only significant in firms with a lower level of corporate governance and firms with a lower level of bankruptcy risk. Further, the fraction of bank lines of credit used as the source of financing is positively related to the performance of M&As, and the costs associated with bank lines of credit are negatively related to the performance of M&As. The results are consistent with the hypothesis based on agency problems between shareholders and managers.

Chapter Four examines how sources of financing between corporate cash holdings, other bank loans, debt issues, and equity issues affect the performance of M&As. The evidence shows that the M&As financed by other bank loans and debt issues are associated with higher announcement returns, higher operating performance, and lower premiums than those financed by corporate cash holdings. Moreover, poorly governed firms benefit from the use of debt financing, and the positive effect of debt financing on M&As is only pronounced among firms

with a lower level of bankruptcy risk. The results are consistent with the hypothesis based on agency problems between shareholders and managers.

Chapter Five examines how the sources of financing between bank lines of credit and corporate cash holdings in M&As affect the value of firm diversification. The evidence shows that firms financed by bank lines of credit in M&As have a smaller reduction in excess value, more efficient internal resources transfers, and a higher value added by allocation than those financed by corporate cash holdings. Firms with higher institutional ownership are more likely to use bank lines of credit in M&As. Moreover, firms financed by bank lines of credit have a higher value of firm diversification than those financed by corporate cash holdings if they have a lower level of corporate governance and a lower level of bankruptcy risk. The results are consistent with the hypothesis based on agency problems between shareholders and managers.

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Chapter 1. Introduction

1. 1 Background and Motivation

A growing literature shows that different sources of financing affect the performance of M&As differently. It has been mentioned by both Schlingemann (2004) and Martynova and Renneboog (2009) that a large number of studies use, "methods of payment" as the proxy of, " sources of financing". However, for cash-paid mergers and acquisitions (M&As), a large proportion of deals are financed by external sources of financing. According to Martynova and Renneboog (2009), at least one-third of takeovers entirely paid in cash are partially financed by external sources financing. Given the magnitude of external financing in cash-paid M&As, it is crucial to analyse the impact of different sources of financing.

To my knowledge, only a few papers study the sources of financing in M&As. Schlingemann (2004) shows that the announcement returns are positively related to the cash raised by equity issuance when firms have poor investment opportunities, and returns are negatively related to internally generated cash flows. Martynova and Renneboog (2009) show that the choice of sources of financing is firstly determined by the cost of capital; equity financing is associated with negative bidder returns, and takeovers financed by internally generated funds underperform those financed by debt. Bharadwaj and Shivdasani (2003) find that tender offers entirely financed by bank receive positive and significant announcement returns. However, most existing studies analyse debt in general or a particular type of deals. The effect of different types of debt used in M&As is

under-researched. The motivation of this thesis is to complement the literature in M&As by providing a more comprehensive analysis based on different sources of financing.

In Chapter Three, I examine the impact of sources of financing between different forms of corporate liquidity on the performance of M&As.

Corporate cash holdings have drawn considerable attention in the past few decades. The literature of corporate cash holdings shows that managers are likely to hold excess cash for agency motives and that is detrimental to firms (e.g., Jensen, 1986; Harford, 1999; Lang, Stulz and Walkling, 1991; Dittmar, Mahrt-Smith and Servaes, 2003). With the existence of agency problems, the performance of M&As financed by corporate cash holdings may be affected negatively. Bank lines of credit, also known as revolving credit facility, are an alternative source of corporate liquidity which has been widely used by U.S. firms. Sufi (2009) shows 85% of firms in his sample have bank lines of credit, and bank lines of credit account for 16% of total assets. The revolving feature makes a bank line of credit distinguishable from other forms of debt. Unlike corporate cash holdings, the use of bank lines of credit is monitored by banks. Firms have to comply with financial covenants which include a wide range of restrictions on capital expenditures (Nini, Smith and Sufi, 2009). Nini, Smith and Sufi (2012) show that after the violation of covenants, a firm's performance improved, implying that banks play an important role in corporate governance. Given the significant magnitude of bank lines of credit, I believe it is crucial to separately examine bank lines of credit as a source of financing in M&As.

In Chapter Four, I provide additional analysis on the impact of sources of financing between corporate cash holdings, other bank loans, debt issues and equity issues on the performance of M&As in order to link with Chapter Three.

As I already mentioned, corporate cash holdings are associated with agency problems, which may lead to value-destructive M&As (Jensen, 1986; Harford, 1999), while other sources of financing may bring different performance to the firm. As to bank loans, the literature on financial intermediation shows both the monitoring function (e.g., Byers, Fields and Fraser, 2008; Ahn and Choi, 2009) and the potential hold-up problems (e.g., Rajan, 1992; Houston and James, 1996; Santos and Winton, 2008) associated with bank financing. As to the valuation effect of bank financing in M&As, Bharadwaj and Shivdasani (2003) find that bank financing is positively related to the announcement returns for tender offers. Debt issues, which are directly placed by the firm, may also mitigate agency problems associated with internally generated cash. Jensen (1986) demonstrates that debt limits managerial discretion associated with free cash flow because managers are forced to pay back debt obligations. Martynova and Renneboog (2009) show that acquisitions financed by debt have better stock return performance than internally generated funds. In terms of equity issues, the previous literature shows different views on the effect on the performance of M&As. Schlingemann (2004) finds a positive relationship between equity financing and bidder returns. However, Martynova and Renneboog (2009) show a negative relationship. Since the literature does not explicitly examine different types of debt separately as sources of financing, I provide additional analysis on this issue in Chapter Four.

In Chapter Five, I investigate how sources of financing between bank lines of credit and corporate cash holdings affect the value of firm diversification.

Diversified firms play an important role in the economy. The effect of diversification has been studied by a large number of studies. Lang and Stulz (1994) and Berger and Ofek (1995) find that there is a significant discount associated with diversification. The prevailing idea among scholars is that diversification stems from agency problems (e.g., Servaes, 1996; Denis, Denis and Sarin, 1997; Hoechle, Schmid, Walter and Yermack, 2012). Event studies (e.g., Moeller and Schlingemann, 2005; Dos Santos, Errunza and Miller, 2008) linking diversification and M&As show that diversifying M&As have poor performance and acquiring firms show a significant decrease in excess value. On the contrary, other literature argues that diversification does not destroy value and that the discount of diversified firms is due to endogeneity problems (Campa and Kedia, 2002), acquisitions to already discounted firms (Graham, Lemmon and Wolf, 2002), measurement bias (Custodio, 2014) and risk-reducing effects via leverage (Mansi and Reeb, 2002; Glaser and Müller, 2010). M&As are frequently used by entrenched managers to pursue their personal benefits. Since corporate cash holdings are associated with agency problems, while bank lines of credit are associated with discipline. When they are used in M&As, different sources of financing may lead to different value consequences. Since previous literature does not provide evidence from the perspective of sources of financing, I investigate how bank lines of credit and corporate cash holdings affect the value of firm diversification around the M&As.

As discussed above, there is a gap in the literature on how the sources of financing affect the performance of M&As, and how the sources of financing affect the value of firm diversification. I provide a comprehensive analysis to explore the effect of sources of financing on the performance of M&As and the value of firm diversification in this thesis.

1. 2 Main Findings

In Chapter Three and Chapter Four, I investigate how sources of financing between corporate cash holdings and various external sources of financing affect the performance of M&As.

In Chapter Three, I find that the M&As entirely financed by bank lines of credit are associated with higher announcement returns, higher operating performance and lower acquisition premiums than the M&As entirely financed by corporate cash holdings. Moreover, acquiring firms with higher institutional ownership are more likely to use bank lines of credit as a source of financing in M&As. The sub-group analysis based on corporate governance shows that the performance is higher for the M&As entirely financed by bank lines of credit than those entirely financed by corporate cash holdings only in weaker-governed firms. Further, I find that the fraction of bank lines of credit used as the source of financing is positively related to the performance of M&As, and the costs associated with bank lines of credit are negatively related to the performance of M&As. I also find that only when an acquiring firm has lower bankruptcy risk, the M&As entirely financed

by bank lines have higher performance than those financed by corporate cash holdings.

In Chapter Four, I find that the M&As entirely financed by other bank loans and debt issues have higher announcement returns, higher operating performance and lower acquisition premiums than the M&As entirely financed by corporate cash holdings. The sub-group analysis based on corporate governance shows that the performance is higher for the M&As entirely financed by other bank loans and debt issues than those financed by corporate cash holdings in weaker-governed firms. Moreover, I find that only when an acquiring firm has lower bankruptcy risk, the M&As entirely financed by other bank loans and debt issues have higher performance than those financed by corporate cash holdings.

In Chapter Five, I examine how sources of financing between bank lines of credit and corporate cash holdings affect the value of firm diversification. I find that the firms entirely financed bank lines of credit have a smaller reduction in excess value, more efficient internal resource transfers and a higher value added by allocation than the M&As entirely financed by corporate cash holdings. An acquiring firm is more likely to use bank lines of credit when institutional ownership is higher. The positive effect of bank lines of credit on the value of firm diversification is only significant among the sub-group of firms with a lower level of corporate governance and the sub-group of firms with a lower level of bankruptcy risk.

1. 3 Contributions

My research contributes to the literature in the following areas:

First, my research contributes to the literature on the performance of M&As by examining the difference of various sources of financing, including corporate cash holdings, bank lines of credit, other bank loans, debt issues and equity issues. To my knowledge, previous studies show limited evidence on sources of financing and the performance of M&As. For example, Schlingemann (2004) and Martynova and Renneboog (2009) examine debt financing in general without differentiating bank debt and non-bank debt. Bharadwaj and Shivdasani (2003) examine bank financing without differentiating bank lines of credit and other bank loans. However, I believe it is important to examine different types of debt, including bank lines of credit, other bank loans and debt issues separately, due to different features and the significant magnitude of bank lines of credit.

Second, my research contributes to the literature on sources of financing in the settings of M&As by providing a more comprehensive analysis. I examine several issues that have not been explored in the existing literature on the sources of financing and M&As. For example, in Chapter Three and Chapter Four, I employ the net change in return on assets as the measure of operating performance and I examine the relation between sources of financing and acquisition premiums. Also, I analyse the costs associated with bank lines of credit, which are not examined in Bharadwaj and Shivdasani (2003),

Schlingemann (2004) and Martynova and Renneboog (2009). By conducting additional analysis, I believe this thesis complements the limited literature on sources of financing in the settings of M&As.

Third, my research contributes to the literature on corporate liquidity from the agency perspective. Existing studies focus on the choice between bank lines of credit and corporate cash holdings (e.g., Sufi, 2009; Yun, 2009). However, these papers only focus on how agency problems affect the level of holding bank lines of credit. Since a firm can choose whether to use or not use the bank lines of credit, it raises the issue that whether a firm's choice of liquidity brings about different performance and different value consequences to the firm. I extend the literature by examining the performance and the changes in the value of firm diversification brought by bank lines of credit.

Fourth, my research contributes to the literature on firm diversification in the settings of M&As. Most studies in firm diversification focus on the debate of the value of firm diversification. These papers generally attempt to answer whether firm diversification increase or reduce firm value (e.g., Lang and Stulz, 1994; Rajan, Servaes and Zingales, 2000; Berger and Ofek, 1995; Stein, 1997; Campa and Kedia, 2002; Graham et al., 2002; Mansi and Reeb, 2002; Glaser and Müller, 2010; Custodio, 2014), and how agency problems affect the choice of diversification and value consequence (e.g., Servaes, 1996; Denis et al., 1997; Hoechle et al., 2012). Moeller and Schlingemann (2005) and Dos Santos et al. (2008) examine the effect of cross-border M&As on the stock return performance and the changes in excess value. However,

these papers do not examine the effect when the M&As are financed by different sources of financing. I explore the difference in value consequence when acquiring firms are financed by different sources of financing, providing additional evidence from the perspective of agency problems.

Overall, my thesis provides comprehensive analysis on how sources of financing affect the performance of M&As, as well as the value of firm diversification. The thesis highlights the corporate governance role of various types of debt including bank lines of credit, other bank loans and debt issues when they are used as sources of financing in M&As.

1. 4 Organisation of the Thesis

The remainder of the thesis is organised as follows.

In Chapter Two, I provide a comprehensive analysis of existing literature on sources of financing and the performance of M&As, corporate liquidity, the role of bank financing and firm diversification. In Chapter Three, Chapter Four and Chapter Five, I present the major research of this study. Each Chapter has its own introduction, hypotheses, data and variables, empirical results and a conclusion. In Chapter Six, I conclude the findings. I also describe the limitations and provide directions for future research.

Chapter 2. Literature Review

In the following section, I discuss the recent literature on the following aspects:

First, I review the literature on sources of financing and the performance of M&As. Recent growing literature (e.g., Schlingemann, 2004; Martynova and Renneboog, 2009) shows that external sources of financing are frequently employed in M&As with cash payment, and that different sources of financing have different impacts on the performance of M&As.

Second, I review the literature on different forms of corporate liquidity. The literature demonstrates that agency problems are associated with corporate cash holdings. Bank lines of credit are an alternative form of corporate liquidity which have been widely used and the use of bank lines of credit have a wide range of restrictions. The level of corporate governance of a firm is one important determinant of the choice between bank lines of credit and corporate cash holdings.

Third, I review the literature on the role of bank financing. The literature shows that the use of financial intermediation is a double-edged sword. I summarise the literature which shows the benefits of bank monitoring and the advantages in response to information asymmetry. I also discuss the literature that indicates the problems associated with bank financing.

In the final part of this section, I review the literature on firm diversification. There is no consensus agreement on the effect of firm diversification on firm value. I review both the studies that support diversification discount and the studies that do not support the value destruction of diversification.

2. 1 Sources of Financing and the Performance of M&As

The sources of financing affect the performance of M&As for various reasons. First, agency problems arise when a firm's ownership and control are separated. Managers as the agent, may not always engage in shareholder value maximisation activities (Jensen and Meckling, 1976). The free cash flow theory (Jensen, 1986) demonstrates that internally generated cash are provide flexibility to managers to pursue their own agenda through acquisitions due to lack of monitoring from external markets. These acquisitions benefit managers by increasing firm size thereby increase their compensation, however, destroy shareholder value. While there is a control function of debt, where debt financing mitigates agency problems by reducing the free cash flow that available for managerial discretionary activities. The performance of M&As is affected by the sources of financing since managers may prefer internally generated cash to external sources when undertaking low return acquisitions.

Second, agency problems also arise when a firm is financed by both equity and debt. Jensen and Meckling (1976) show that there are incentive effects associated with debt. A firm can transfer wealth from debtholders to shareholders by first issue debt by promising to take a low variance project, then take a high variance project and sell part of all of his claims. Myers (1977) also shows that when a firm has high leverage, raising debt to finance new projects benefit debtholders instead of shareholders, therefore, the firm may forgo good investments. Such loss in market value is absorbed by the firm's current

shareholders. Given agency cost of debt exists, M&As financed by debt may generate lower performance than those financed by internally generated funds.

Third, information asymmetry between the firm and external markets affects the cost of capital. According to Myers and Majluf (1984), external sources of financing are more expensive than internally generated cash, and equity financing is more expensive than debt financing. When managers have inside information that investors do not have, issuing equity could be interpreted as overvaluation by the market. In such circumstance, firms may not issue equity and thereby forgo good investment opportunities. Nevertheless, bank financing substitute for financial slack, therefore, provides a solution to information asymmetry. Since different sources of financing convey different degrees of asymmetric information, there are potential links between the performance of M&As and the sources of financing.

The performance of M&As has been studied by a wide range of literature. Recent literature (e.g., Schlingemann, 2004; Martynova and Renneboog, 2009) argues that, for M&As with cash payment, a large proportion of the deals are financed by external sources of financing and the sources of financing have different impacts on the performance of M&As.

Schlingemann (2004) studies the relationship between prior financing decision and bidder gains. The paper suggests the announcement returns of bidders are positively related to the amount of cash raised by equity issuance the year before the takeover, particularly for firms with good investment opportunities. Moreover,

bidder gains are negatively related to the internally generated free cash flow for firms with poor investment opportunities, supporting the free cash flow hypothesis (Jensen, 1986), in that entrenched managers are likely to waste their resources on value destructive projects. In addition, the result in debt financing shows an insignificant relationship, consisting with the notion that debt serves as a monitoring role and limits managerial discretion depending on investment opportunities.

Martynova and Renneboog (2009) investigate the determinates of financing decision for European M&As and whether the choice of source of financing is related to an acquirer's return. Their result shows a bidder's financing decision is firstly determined by the cost of capital in that firms prefer the least expensive source of financing: internally generated funds. Moreover, they do not find evidence that the choice of source of financing is driven by agency problems. In terms of announcement returns, they find acquisitions with equity financing receive negative returns, and acquirers financed by internally generated funds underperform those financed by debt.

The valuation effects of bank financing in tender offers have been studied by Bharadwaj and Shivdasani (2003). They empirically test a sample of 115 cash tender offers in the U.S. between 1990 and 1996 and find that acquisitions entirely financed by banks are associated with higher announcement returns. They suggest that the benefits are particularly important for small, poorly performing firms and firms facing substantial information asymmetry. The finding

suggests that banks play an important role in monitoring and certification for acquiring firms in tender offers.

In M&As, there are several methods of payment, such as cash payment, equity payment and mixed payment. Among the M&As with cash payment, the cash may come from external sources, such as debt and equity. The sources of financing are important determinants of market reaction to the announcement of M&As.

2. 2 Corporate Liquidity

Corporate liquidity accounts for a large proportion of total assets. Corporate cash holdings are the most important forms of corporate liquidity. According to Bates, Kahle and Stulz (2009), the mean of the ratio of cash to total assets is 23.2% for U.S. firms in 2006. Bank lines of credit, another important form of corporate liquidity, have been viewed as the substitute for corporate cash holdings. According to Sufi (2009), 85% of the firms in his sample have bank lines of credit, and the mean of the ratio of total lines of credit to total assets is 16%. Lins, Servaes and Tufano (2010) conduct a survey of CFOs in 29 countries and show that the ratio of bank lines of credit to total assets is 15%.

Firms can use corporate liquidity to hedge against risks and fund investment opportunities. Previous literature in corporate liquidity management demonstrates the motives of holding cash. For example, transition motives (Keynes, 1936; Baumol, 1952; Miller and Orr, 1966), precautionary motives

(Opler, Pinkowitz, Stulz and Williamson, 1999; Almeida, Campello and Weisbach, 2004; Acharya, Almeida and Campello, 2007; Bates et al., 2009) and agency motives (Jensen, 1986; Lang et al., 1991; Harford, 1999; Dittmar et al., 2003; Harford, Mansi and Maxwell, 2008). The agency motives of holding cash suggest that self-interested managers can use corporate cash holding in a discretionary way.

2. 2. 1 Corporate Cash Holdings

Jensen (1986) proposes the theory of agency of cost of free cash flow. Free cash flow is defined as the cash flow exceeding the amount that is required to fund all positive NPV projects. He argues that managers have the incentive to hold excess cash rather than pay it out to shareholders because paying out reduces the resources under managers' control, reducing their power. This incurs monitoring costs from the external markets. Managers would like to use the free cash flow to derive personal benefits through acquisitions.

Lang et al. (1991) test the free cash flow hypothesis with a sample of tender offers. They find that bidder returns are significantly negatively related to cash flow for firms with low investment opportunities, while this is not related to firms with high investment opportunities. This supports the free cash flow hypothesis, that the acquisitions engaged in by firms with high cash flow and low investment opportunities decrease shareholders' wealth.

Harford (1999) empirically tests corporate cash reserves and the performance of acquisitions. The result shows that firms with high level of cash are more likely to make acquisitions, and stock return evidence shows these acquisitions are value-decreasing. Moreover, cash-rich firms are more likely to make diversifying acquisitions, and they are likely to acquire unattractive targets. The finding shows strong evidence of agency problems with corporate cash holdings.

Dittmar et al. (2003) argue agency problems are the primary determinant of corporate cash holdings. They examine international data and find that in countries with low shareholder rights, corporations are more likely to hold cash than in countries with strong shareholder protection, while other determinants of corporate cash holdings seem less important in such countries.

Harford et al. (2008) find that U.S. firms with weaker corporate governance structure tend to hold less cash reserves and these firms prefer repurchase over dividends. Moreover, firms with both low shareholder rights and excess cash will increase capital expenditures and acquisitions, and these firms have lower valuation and profitability. Their evidence shows that weakly controlled managers are less likely to hoard cash. Instead, they tend to spend cash quickly on acquisitions and capital expenditures.

Although the literature shows poor performance associated with excess cash, Pinkowitz, Sturgess and Williamson (2013) suggest that cash-rich firms are 23% less likely to use cash payment relative to firms that do not have a high level of cash. They find that larger deals, firms with greater investment opportunities,

friendly bids and public targets are more likely to use stock payment. They examine potential explanations for this and find that corporate governance, financial constraints, information asymmetry, tax issues, equity overvaluation or capital structure are not able to explain the results.

Corporate cash holdings enable firms to overcome underinvestment problems, while corporate cash holdings also provide flexibility to managers to derive private benefits through value-destructive acquisitions. Since corporate cash holdings are associated with agency problems, the use of corporate cash holdings in M&As may negatively affect the performance.

2. 2. 2 Bank Lines of Credit

Theory and evidence suggest that bank lines of credit are an important alternative form of corporate liquidity to corporate cash holdings. In this section, I review the literature of bank lines of credit. According to Sufi (2009), bank lines of credit, also known as revolving credit facility, or loan commitments, are provided by banks or financing companies. The used portion is debt obligation, and unused portion is off-balance sheet. A firm pays a commitment fee for the unused portion of bank lines of credit and a predetermined interest rate for the drawn portion.

Theoretical literature models bank lines of credit are based on an insurance idea. Boot, Thakor and Udell (1987) demonstrate that a loan commitment with a fixed rate prevents the borrower from the interest rate shock in the spot market and banks can recoup the loss with a commitment fee upfront. Holmström and Tirole

(1998) show that banks can serve as liquidity pools that prevent firms from liquidity shocks through optimal allocation.

However, Demiroglu and James (2011) suggest that the insurance provided by bank lines of credit is contingent on the changes of both the lender's and the borrower's financial health. First, firms have to remain compliant with the operating performance and balance sheet benchmarks set up in the covenants. Second, the "Material Adverse Change" clauses allow the lenders to withhold funds if a borrower's credit quality deteriorates significantly. Third, the borrowing base limits the amount of credit available to the borrower. Fourth, some lenders tie the loan spread to borrower's Debt/EBITDA ratio or credit rating, so the cost of borrowing increases if borrower's operating performance deteriorates or EBITDA remains while the drawn portion of bank lines of credit increases. Fifth, bank financial condition affects the ability and willingness of supply funds. Last, since bank lines of credit are mostly short-term, the availability and pricing of bank lines of credit may change due to change in risk of the borrower or the change in credit market conditions. Thus, borrowers face rollover risk.

Literature shows that financial covenants contain a wide range of restrictions on the borrowers. Nini et al. (2009) examine the direct contractual restrictions on firm investment in the debt agreements. They show that 32% of credit agreements contain restrictions on firms' capital expenditures. Banks also limit firm investment in response to firm's increase in credit risk. Failure to comply with the covenants may lead to the acceleration of repayment which could force firms to bankrupt. The evidence suggests that conflict of interest between creditors and borrowers

has a significant impact on firm investment policy. Nonetheless, financial covenants violations are common. According to Nini et al. (2012) between 10% and 20% firms report financial covenants violations in any given year and 40% firms were in violation at some points during the period. Nonetheless, the study shows that the post-violation stock return performance and operating performance improved, implying bank lines of credit increase the level of corporate governance of these firms.

Overall, as an important form of corporate liquidity, bank lines of credit show an insurance idea that is similar to the precautionary motive of corporate cash holdings, but the insurance provided by bank liquidity may be insufficient. On the other hand, the restrictions on borrowers limit the access of bank lines of credit and affect firms' investment policy. When bank lines of credit are used as sources of financing in M&As, the acquiring firms may have higher performance than those financed by corporate cash holding due to the monitoring effect of banks.

2. 2. 3 The Choice between Corporate Cash Holdings and Bank Lines of Credit

Recent empirical literature examines the determinants of the choices between corporate cash holdings and bank lines of credit. Agency problems between shareholders and managers are an important determinant of the choice.

Sufi (2009) investigates the determinants of bank lines of credit by using a sample of Compustat universal data and a random sample with the total lines of credit,

unused portion and covenant compliance status information. The paper shows that cash flow is a strong predictor of a firm's use of bank lines of credit in corporate liquidity management. Firms with low cash flow or high cash flow volatility are less likely to obtain a line of credit, and they rely more heavily on cash. In addition, the sensitivity of the use of bank lines of credit to cash flow is only among firms with high financial distress likelihood. Overall, the paper suggests that maintaining cash flow is an important determinant of whether a firm uses bank lines of credit because they allow firms access to and maintaining compliance with covenants.

Yun (2009) examines how corporate governance influences a firm's choice between corporate cash holdings and bank lines of credit. The author employs state-level changes in takeover protection as exogenous shocks to corporate governance and finds that poorly governed firms increase their level of corporate cash holdings relative to bank lines of credit when takeover threat is weaker, while no such tendencies exist in well-governed firms. The finding suggests that self-interested managers will balance private benefits of discretion against increased oversight by the bank to avoid control challenges from shareholders. Therefore, bank lines of credit not only substitute cash but also provide a function to limit managerial discretion on the use of corporate liquidity.

Other firm characters also affect a firm's choice between the two forms of corporate liquidity. Lins et al. (2010) conduct a survey of the CFOs in 29 countries and find the two forms of liquidity are employed to hedge a different kind of risks – corporate cash holdings are employed to prevent against future cash flow

shocks, while bank lines of credit are employed when future external financing needs are high and when managers believe that their equity is undervalued. Campello, Giambona, Graham and Harvey (2011b) show that small, private, non-investment grade and unprofitable firms have a significantly higher ratio of bank lines of credit to assets than larger, public, investment-grade and profitable firms. Acharya, Almeida and Campello (2013) find a firm's exposure to aggregate risks is a fundamental determinate of choice between the two forms of liquidity. Acharya, Almeida, Ippolito and Perez (2014) extend the literature by proposing a theory that bank lines of credit are a form of monitored liquidity insurance. The model indicates that liquidity risk is an important determinant of choice between the two forms of liquidity. Firms with greater liquidity risk incur more monitoring costs, leading to a switch from monitored liquidity insurance (bank lines of credit) to self-insurance (corporate cash holdings).

Overall, the choice of sources of financing may be reflected by various firm characteristics, while agency problems are one of the important determinants. Nevertheless, how the choice of using different forms of liquidity may affect firms' performance is not addressed in the literature of corporate liquidity.

2. 3 Bank Financing

As to the benefits and costs of bank financing, on the one hand, there is an extensive literature on the benefit of financial intermediation. Some literature indicates that banks have the informational advantage to mitigate information asymmetry (e.g., Leland and Pyle, 1977; Campbell and Kracaw, 1980; Diamond,

1984; Fama, 1985; James, 1987; Lummer and McConnell, 1989; Diamond, 1991), and some literature indicates that bank monitoring improves the corporate governance (e.g., Byers et al., 2008; Ahn and Choi, 2009), on the other hand, some literature suggests that information monopoly of bank limit leading to hold-up problems (e.g., Rajan, 1992; Houston and James, 1996; Santos and Winton, 2008).

2. 3. 1 Benefit of Bank Financing

Leland and Pyle (1977) demonstrate the importance of the validation role of financial intermediation in the financial market where information asymmetry is pronounced. Since moral hazard prevents direct information transfer, the market value will reflect the average value of the projects and the supply of good quality projects may decrease due to higher costs. Information about the projects may be transferred when the person having inside information has the willingness to invest in the project or firm. Such willingness serves as a signal to the market of the true quality of the projects. An information-efficient financial intermediary with the capability to sort a class of risks is a natural response to information asymmetry.

Campbell and Kracaw (1980) show the information production role of financial intermediation. Contrary to Leland and Pyle (1977), the authors suggest financial intermediations are not sufficient to solve the moral hazard and appropriability problems in the market of information. They conclude that the initial wealth

endowment acts as a barrier to entry in the market for information and as a general constraint on liability.

Diamond (1984) proposes a theory of financial intermediation based on the minimum cost of monitoring information. The paper suggests that financial intermediaries can monitor the firm with loan covenants. The information advantage allows banks to re-negotiate the contract with new interest rates and contingent promises. Thus, banks provide an incentive to avoid value-decreasing investment decisions. Moreover, the costs of delegation approach zero when the returns of the projects are independent since there is a cost advantage in monitoring for well-diversified financial intermediaries.

Fama (1985) shows banks have advantages in short-term inside debt. The difference between inside debt and outside debt is that the lender for inside debt can get access to information from an organisation's decision process which is not available to the public. Banks loans are inside debt. Banks have low information cost, and such cost will translate into low prices of their service. Positive signals about the organisation will transform into the outside debt market. Therefore, banks have the advantage in monitoring and serve as an information transmitter. Similar ideas are shown in James (1987), who argues that banks have a uniqueness in their service which is not available from other borrowers by showing evidence that positive stock returns are associated with the announcement of a new bank credit agreement. Lummer and McConnell (1989) also support the information transmitter role of banks. They find favourable loan renewals accompany by stock price increases, while unfavourable loan renewals

accompany by stock price decreases, implying that banks are important and credible transmitters of firm-specific information to the capital market.

Diamond (1991) shows a reputation building theory of monitoring. He indicates that there is a "life cycle" effect of borrowing through intermediaries. Borrowers will first borrow from banks and later issue debt directly. Middle credit-rated borrowers are relying on bank loans because high-rated borrowers do not need monitoring and low-related borrowers have less to lose. Moreover, banks play a screening role for borrowers with low credit-rating by filtering out borrowers with self-interested actions.

Ahn and Choi (2009); Byers et al. (2008)find borrowing firms' earning management behaviour is negatively related to the strength of bank monitoring (measured by the magnitude of a bank loan, the reputation of a lead bank and the length of bank loans). This implies that for bank-dependent firms, bank monitoring plays an important role in corporate governance.

Byers et al. (2008); Ahn and Choi (2009)find loan announcement abnormal returns are more positive for firms with weaker corporate governance structures (e. g. less independent directors, low ownership by offers and directors, low incentive-based CEO compensations). However, bank financing can serve as a substitute only for borrowers with a weaker external market for corporate control.

2. 3. 2 Cost of Bank Financing

Rajan (1992) shows that banks can access the information which is not available to arm's length creditors (e.g., bondholders). Such advantage in information enables banks to have bargaining power over the borrower's profits, controlling the borrower's investment decisions. However, the monitoring adversely affects the firm's incentive of shareholder wealth maximisation.

Houston and James (1996) find that for firms with single bank relationship, the reliance on bank debt is negatively related to the importance of growth opportunities, while for multiple banking relationships, the relationship is positive. This implies that information monopolies associated with borrowing from single bank lender limit the use of bank debt. Multiple banking relationships or borrowing in public debt market either resolve the hold-up problems or indicate that bank information rents are lower.

Santos and Winton (2008) find the loan spread is higher for bank-dependent firms than firms with access to public bond market: the interest rate rises during recessions and it rises more for bank-dependent firms.

Overall, bank financing tends to be a double-edged sword. The positive side is banks mitigate the information asymmetry and limit the managerial discretion of the firm. The negative side is information monopolies enable firms to pursue debtholder value maximisation at the expense of the borrower's shareholders interest.

2. 4 Firm Diversification

There is an extensive literature on the consequence of firm diversification. Shleifer and Vishny (1989) demonstrate that managers are likely to make diversifying acquisitions to increase their entrenchment, thereby reduce the risk of being replaced. Several papers suggest that firm diversification is associated with a cost (e.g., Lang and Stulz, 1994; Berger and Ofek, 1995; Servaes, 1996; Denis et al., 1997; Hoechle et al., 2012; Rajan et al., 2000; Moeller and Schlingemann, 2005; Dos Santos et al., 2008), while others argue that diversification not destroy value (e.g., Stein, 1997; Campa and Kedia, 2002; Graham et al., 2002; Mansi and Reeb, 2002; Glaser and Müller, 2010; Custodio, 2014).

2. 4. 1 Firm Diversification Destroys Shareholder Value

Lang and Stulz (1994) find a negative relationship between Tobin's q and the degree of diversification. By comparing Tobin's q of diversified firms and single segment firms, the authors find that diversified firms have a lower q ratio than specialised firms. The result shows that highly diversified firms are consistently valued less than specialised firms. Berger and Ofek (1995) also find that diversification destroys value. They estimate the value of diversification using the imputed stand-alone values for business segments and find diversification leads to an average of 13% to 15% value loss, where the loss is larger for firms diversified in unrelated segments. Moreover, the lower value of diversified firms is due to overinvestment and cross-subsidisation.

A vast number of studies show the linkage between diversification discount and agency problems. Servaes (1996) examines the performance of diversified firms during conglomerate merger waves and finds that diversified firms are not valued at a premium. It shows firms with higher insider ownership remain focused when there is substantial diversification discount, but these firms tend to diversify when diversification discount declines. The findings suggest that diversification does not benefit U.S. firms. Denis et al. (1997) also provide an agency explanation about firm diversification. They find the level of diversification is negatively related to managerial ownership and ownership of outside blockholders. Further, the result shows that external corporate control, financial distress and management turnover are related to the decreases in diversification. The firms did not respond quickly and voluntarily when the excess value of diversification was significantly negative, implying that agency problems are responsible for firms maintaining value-reducing diversification strategies. Hoechle et al. (2012) further examine the link between corporate governance and diversification discount. They show that corporate governance variables can mostly explain diversification discount. Even after controlling endogeneity problems, diversification discount persists. However, diversification discounts approach zero when introducing corporate governance variables to these models. Moreover, the authors show that better corporate governance results in less value loss in mergers and acquisitions. Rajan et al. (2000) address the model of that internal resources transfer between divisions of diversified firms. They argue that when diversity increases, resources transfer from divisions with high investment opportunities to divisions with low investment opportunities. The inefficient internal allocation contributes to the loss of firm value.

Recent literature provides evidence on the effect of diversification by examining M&As. Moeller and Schlingemann (2005) investigate a sample of U.S. firms which conduct cross-border acquisitions as to their stock return performance and operating performance. The study shows that both stock return performance and operating performance are significantly lower for cross-border acquisitions than domestic acquisitions. Moreover, increases in both geographical and industrial diversification are negatively related to stock returns. In addition, bidder returns are positively related to takeover activity in the target country and to a legal system offering better shareholder rights, supporting the agency explanation. Dos Santos et al. (2008) extend the research by examining the valuation effects of a sample of cross-border mergers and acquisitions of U.S. firms. They find that unrelated acquisitions lead to a significant decline in excess value, while the acquisition of "fairly valued" business units does not destroy value. Overall, the study suggests that international diversification does not destroy value while industry diversification results in diversification discount.

2. 4. 2 Firm Diversification Does Not Destroy Shareholder Value

Stein (1997) argues that diversified firms benefit from the efficient internal capital market. The model indicates that there is a "winner picking" function of headquarters, which means headquarters can reallocate the limited funds efficiently across projects. Thus, the headquarters can create value which distinguishes it from a bank lender.

Campa and Kedia (2002) also show diversification does not destroy value. They consider endogeneity of the diversification decision and conclude that a firm chooses to diversity in order to respond to exogenous changes in its environment which also affect firm value. Moreover, firm's choice to diversify is negatively related to firm value. The inverse premium becomes positive when a firm's diversification discount and its firm value are estimated jointly. Overall, the paper does not support the view that diversification is a value-reducing strategy.

Graham et al. (2002) argue that the reduction of excess value of diversified firms are largely due to the acquisition of already discounted firms. Moreover, the excess value is not reduced when a firm increases its number of business segment without making an acquisition. They conclude that the benchmark for valuing conglomerate firms to stand-alone firms should be carefully reconsidered.

Mansi and Reeb (2002) indicate that there is a function of leverage which reduces shareholder value while enhancing bondholder value. They find that all equity firms do not exhibit a diversification discount and using debt to compute excess value creates a downward bias. They conclude that the relation between diversification and excess value is insignificant. Glaser and Müller (2010) examine whether the discount is due to the book value of debt bias by using the market value of credit instead of the book value of debt and find that diversification discount is reduced, supporting the risk reduction view. Nonetheless, their results remain a significant diversification discount, revealing that the book value of debt bias is not the sole explanation.

Custodio (2014) argues that the q-based measures of diversification discount are biased because the transaction value is normally greater than the book value of the target. Therefore, the q is usually lower for the merged firm than the pre-merger entities. The author finds that diversification discount is eliminated after subtracting goodwill from the book value of assets.

Overall, the effect of firm diversification on the value of a firm is a debatable topic. Since managers may engage in M&As that destroy firm value, there are changes in the value of firm diversification. The question arises as to whether the use of different sources of financing brings different value consequences.

2. 5 Summary

The literature discussed above are summarised as follow:

First, the performance of M&As financed by different sources of financing is different. The literature on sources of financing and the performance of M&As shows that equity financing, debt financing and cash financing have different impact on performance. Specifically, firms with excess corporate cash holdings have poor performance.

Second, corporate liquidity is important for a firm either to fund future investments or to hedge against risks. Bank lines of credit are an alternative source of corporate liquidity which have different features when compared with corporate cash holdings. The choice between the two sources of

financing is determined by firm characteristics. And agency problems are an important determinant.

Third, the effect of bank financing is a double-edged sword. On the one hand, firms benefit from the informational advantage and monitoring from banks. On the other hand, bank-dependent firms are associated with hold-up problems due to information monopoly.

Lastly, the value of firm diversification also gives rise to discussion. One argument is diversification destroys shareholder value by virtue of agency problems and inefficient allocation of internal resources among divisions within a firm. The opposite view is that diversification discount is due to endogeneity problems and the measures should be carefully reconsidered.

Chapter 3. Corporate Cash Holdings, Bank Lines of Credit and the Performance of M&As

3. 1 Introduction

Corporate cash holdings and bank lines of credit are two important forms of corporate liquidity. Previous literature shows that firms hold high corporate liquidity to total assets. For example, Bates et al. (2009) find that the mean of the ratio of cash to total assets is 23.2% for U.S. firms in 2006. Bank lines of credit, also known as revolving credit facilities, are an alternative form of corporate liquidity. A firm obtains a certain amount of debt capacity when it receives bank lines of credit. Used lines of credit are recorded as debt obligations, while unused lines remain off the balance sheet. A firm can choose use or not use the bank lines of credit. The costs associated with bank lines of credit are the "commitment fee" and the "predetermined interest rate". A borrower pays an up-front commitment fee to the unused portion and a predetermined interest rate on the drawn amount. Sufi (2009) finds that 85% of the firms in his sample have bank lines of credit and the mean of the ratio of total lines of credit to total assets is 16%. Lins et al. (2010) conduct a survey of CFOs in 29 countries and find that bank lines of credit accounts for 15% of total assets.

The sources of financing affect the performance of M&As. Jensen (1986) shows that entrenched managers can use free cash flow easily to spend on value-decreasing acquisitions, while debt financing limits managerial discretion.

However, when debt financing is used, the conflict of interest between shareholders and debtholders may also lead to the value loss of shareholder (Myers, 1977). Moreover, the cost of capital is higher for external sources of financing than internally generated funds due to asymmetric information between firms and the external markets (Myers and Majluf, 1984). Therefore, when different sources of financing are used to finance M&As, acquiring firms have different performance.

In this chapter, I examine how the performance of M&As is affected by the sources of financing between corporate cash holdings and bank lines of credit. I develop three hypotheses based on agency problems between shareholders and managers, agency problems between shareholders and debtholders and information asymmetry. First, since bank lines of credit are subject to monitoring by banks which can reduce agency problems between shareholders and managers, I expect that the M&As financed by bank lines of credit will outperform the M&As financed by corporate cash holdings. Second, corporate cash holdings are internal sources of financing, while used bank lines of credit are debt obligations. Banks may not benefit shareholders when a conflict of interest between shareholders and debtholders exists. Therefore, I expect that the M&As financed by bank lines of credit will underperform the M&As financed by corporate cash holdings. Third, information asymmetry increases the cost of external financing. Corporate cash holdings are associated with a lower cost due to a lower degree of information asymmetry, whereas banks have the informational advantage and the function of substitution for financial slack which alleviates the problems associated with information asymmetry. Therefore, I expect that the

performance of M&As financed by bank lines of credit will not be significantly different from the M&As financed by corporate cash holdings.

I construct a sample of 723 cash-paid U.S. M&As from 1985 to 2013 to investigate the relation between sources of financing and the performance of M&As. The sources of financing of these M&As are bank lines of credit, corporate cash holdings or a mixed source of bank lines of credit and corporate cash holdings. I find that both the announcement returns and the operating performance are higher for the M&As entirely financed by bank lines of credit than those financed by corporate cash holdings. The multinomial logistic regression shows an acquirer is more likely to use bank lines of credit as the source of financing when institutional ownership is higher. Moreover, the M&As entirely financed by bank lines of credit are associated a lower acquisition premiums. I further divide the sample into sub-groups based on the degree of corporate governance. I find that only in the sub-group with weaker corporate governance, the M&As financed by bank lines of credit have higher performance than those financed by corporate cash holdings. I find consistent results after controlling for the self-selection problems.

I conduct further analysis. First, I find that the performance of M&As is better if a higher fraction of bank lines of credit is used when an M&A is financed by a mixed source of bank lines of credit and corporate cash holdings. Second, I find that the performance of M&As is higher if there are lower costs associated with bank lines of credit, such as the commitment fee and the predetermined interest rate. Third, I conduct the sub-group analysis based on the bankruptcy risk and find that the

performance is higher for the M&As entirely financed by bank lines of credit in the sub-group with lower bankruptcy risk.

I find strong evidence supporting the interpretation that the performance of M&As is higher for acquirers financed by bank lines of credit than those financed by corporate cash holdings. This is consistent with the hypothesis of agency problems between shareholders and managers.

This chapter contributes to the literature in the following ways:

First, my research contributes to the literature on the sources of financing in the setting of M&As by disclosing the relationship between the performance of M&As and bank lines of credit as a source of financing. To my knowledge, no previous study in this literature has separately examined bank lines of credit as a source of financing. For example, Bharadwaj and Shivdasani (2003) examine bank financing, but do not differentiate between bank lines of credit and other bank loans. Schlingemann (2004) and Martynova and Renneboog (2009) examine debt financing in general, but do not differentiate between bank financing and non-bank financing. However, the recent growing literature on bank lines of credit shows that bank lines of credit are an important form of corporate liquidity. Given the large magnitude of bank lines of credit, I believe that it is important to examine bank lines of credit as a source of financing in the setting of M&As separately.

Second, my research also contributes to the literature on the sources of financing in the setting of M&As by conducting a more comprehensive analysis. I examine how the costs associated bank lines of credit, such as the commitment fee and the predetermined interest rate, affect the performance of M&As. This has not been studied in either Bharadwaj and Shivdasani (2003) or Martynova and Renneboog (2009). I examine the relation between acquisition premiums and various sources of financing, which has not been studied in the two papers in the literature. I examine the net changes in operating performance as a measure of the performance of M&As, which has not been studied in the two papers in the literature. Therefore, I believe that this thesis extends the literature and provides a more comprehensive analysis.

Third, my research complements the literature on bank lines of credit from the agency perspective. Previous literature examines how the agency problems affect the level of bank lines of credit. For example, Yun (2009) finds that after a change in takeover legislation, poorly-governed firms increase the fraction of corporate liquidity held in the form of corporate cash holdings relative to bank lines of credit. Sufi (2009) finds that firms with low cash flow are less likely to obtain a line of credit, and argues that firms must maintain high cash flow to remain compliant with covenants associated with bank lines of credit. My research differs from the previous literature in that I examine the performance brought by bank lines of credit. To my knowledge, only Nini et al. (2012) examine a sample of lines of credit loans and find that a firm's operating and stock price performance improve following a violation of the covenant, which implies that banks play an important role in corporate

governance and their actions benefit shareholders. My study differs from Nini et al. (2012) in that I conduct the research in the setting of M&As.

The rest of the chapter is organised as follows. Section 3. 2 develops the hypotheses. Section 3. 3 describes the data and the variables. Section 3. 4 presents the results. Section 3. 5 concludes the chapter.

3. 2 Hypotheses

In this section, I develop hypotheses based on three different perspectives: (1) Agency problems between shareholders and managers, (2) Agency problems between shareholders and debtholders and (3) Information asymmetry.

3. 2. 1 Agency Problems between Shareholders and Managers

Jensen and Meckling (1976) expound the agency theory. Since managers (the agent) may not act in the best interests of shareholders (the principal), there is an agency cost of managerial discretion. When agency problems between shareholders and managers exist, the sources of financing with higher agency cost may generate lower performance.

Theories and evidence show that corporate cash holdings are associated with higher agency cost than external sources of financing because managers can use internally generated cash in a discretionary way with less scrutiny. Jensen (1986) indicates that internally generated free cash flow provides flexibility for managers to derive private benefits at the expense of shareholders. Managers

can use the free cash flow in value-destructive acquisitions. Lang et al. (1991) test the free cash flow hypothesis on tender offers and show supporting evidence, in that bidder returns are negatively related to free cash flow when firms have low investment opportunities. Myers and Rajan (1998) argue that, with excess liquid asset, managers can easily take or transform the assets in the form of perks that benefit themselves. Entrenched managers can also use the excess cash conduct empire building activities through acquisitions. Harford (1999) shows that cash-rich firms are more likely to make value-decreasing acquisitions, supporting the agency cost of free cash flow.

Regarding bank lines of credit, an extensive literature on financial intermediation indicates that firms benefit from the monitoring of banks reducing agency problems. For example, Diamond (1984) argues that banks can monitor a firm's compliance with loan covenants with their cost advantage in collecting the information. James (1987) finds a larger positive stock price response to the announcement of new bank credit agreements than the stock price response associated with announcements of private placements or public debt offerings. Byers et al. (2008) find that loan announcements are more likely to be associated with positive wealth effects for firms with weak internal corporate governance. Ahn and Choi (2009) find that the level of earnings management in a borrowing firm is lower when the degree of bank monitoring is higher.

The literature on bank lines of credit also shows evidence about the role of bank lines of credit on corporate governance. For example, Sufi (2009) finds that banks use covenant violations to restrict the availability of bank lines of credit, and

argues that covenants facilitate bank monitoring. Moreover, Yun (2009) finds that firms increase the fraction of corporate liquidity held in the form of corporate cash holdings relative to bank lines of credit after a change in takeover legislation which decreases the possibility of takeovers. This draws the interpretation that self-interested managers exploit the reduced threat of takeover and increase their discretion by holding more cash and reducing bank lines of credit which are associated with the monitoring by the banks.

Since bank financing reduces the agency problems between shareholders and managers, I expect that the performance of M&As is higher if bank lines of credit as the source of financing. I have the following hypothesis:

Hypothesis 1: The performance is higher for acquirers financed by bank lines of credit in M&As than those financed by corporate cash holdings in M&As.

3. 2. 2 Agency Problems between Shareholders and Debtholders

When the interest of shareholder and debt claimants diverge, the activities that maximise shareholder value may not benefit debtholder. When there is substantial conflict of interest between the two parties, different sources of financing may affect the performance differently.

Corporate cash holdings are internally generated cash. Therefore, a firm's capital structure should not change when corporate cash holdings are used in M&As.

When firms have good investment opportunities, holding internally generated funds enables firms to pay for investment expenditures (Opler et al., 1999).

When bank lines of credit are used, they will become debt obligations. Agency problems arise when the interest of shareholders differs from debtholders. One potential issue is debt overhang. Myers (1977) shows that, as highly leveraged firms find it difficult and expensive to raise external financing, firms may maintain low leverage. The existence of debt can reduce the present market value of firms by weakening the incentive to undertake good future investments. The loss in the market value will be transferred to the firm's current shareholders. Another issue associated with the agency problems between shareholders and debtholders is risk-shifting. As Jensen and Meckling (1976) demonstrate, managers can choose risky projects with high variance, which maximise shareholders' interests at the expense of debtholders' interests. In this circumstance, acquirers financed by debt may have lower performance due to the shareholder-debtholder conflict of interest.

The literature on financial intermediation also shows that banks may interfere the borrower to undertake the activities that maximise the interests of the lenders which may not necessarily maximise the value of shareholders of the borrowers. For example, Rajan (1992) argues that the information monopoly enables a bank to have the bargaining power over a firm's profits, which can adversely affect the firm's incentive to achieve shareholder value maximisation. Houston and James (1996) find that potential hold-up problems are associated with borrowing from a single bank. Santos and Winton (2008) find that banks largely raise their rates for

bank-dependent borrowers during recessions and argue that this is due to informational hold-up effects.

Since bank financing increases the agency problems between shareholders and debtholders, I expect that the performance of M&As is lower if bank lines of credit as the source of financing. I have the following hypothesis:

Hypothesis 2: The performance is lower for acquirers financed by bank lines of credit in M&As than those financed by corporate cash holdings in M&As.

3. 2. 3 Information Asymmetry

Myers and Majluf (1984) propose the pecking order theory. They argue that the financing costs are different for various sources of financing, depending on the degree of asymmetric information. They argue that the internal source of financing is the cheapest source of financing because they are not associated with asymmetric information. In this case, if a firm uses corporate cash holdings as the source of financing for M&As, the cost of the source of financing is lower than external sources of financing and thus the firm can generate higher performance than using external sources of financing in M&As.

Bank financing is an external source of financing, it can mitigate the asymmetric information problem due to a bank's informational advantage. For example, Leland and Pyle (1977) and Campbell and Kracaw (1980) argue that banks produce information. Consistent with the information production role of banks,

Myers and Majluf (1984) argue that informed bank debt can substitute for financial slack.

Since bank financing mitigates information asymmetry and can substitute for financial slack such as corporate cash holdings, I expect that bank financing and corporate cash holdings have a similar impact on the performance of M&As. I have the following hypothesis:

Hypothesis 3: The performance of the acquirers financed by bank lines of credit in M&As is NOT significantly different from those financed by corporate cash holdings in M&As.

3. 3 Data and Variables

3. 3. 1 Data

Financial data are collected from Compustat and stock return data are collected from CRSP. U.S. data on M&As are collected from Thomson One database. Bank lines of credit data are manually collected from 10-K annual reports. The data of commitment fee and the predetermined interest rate that are associated with bank lines of credit are collected from 10-K annual reports. Institutional ownership data are collected from Thomson Financial/Institutional. In the sample, the acquirers are public firms because stock market data is used to calculate a measure of firm performance. The targets are either public firms or private firms.

The sample period is from 1985 to 2013. The following screening procedures are used. The deals are U.S. M&As with cash payment[1] and the sources of financing are identified by Thomson One database as, "corporate fund", "line of credit", or a mixed source of the "corporate fund" and "line of credit". Financial firms (SIC codes between 6000 and 6999) are excluded from the sample. The M&As whose deal value is less than one million dollars are excluded. The observations with incomplete data are excluded. After the screening procedures, a final sample of 723 M&A events is obtained. Among them, 271 M&As are entirely financed by corporate cash holdings. 308 M&As are entirely financed by bank lines of credit. 144 M&As are financed by a mixed source of bank lines of credit and corporate cash holdings.

3. 3. 2 Variables

3. 3. 2. 1 Source of Financing

The sources of financing for M&As are identified in Thomson One database. For example, the database records an acquisition made by, "Actuant Corp" with the announcement date on 3 March 2008. The source of financing is recorded as, "Line of Credit", and its description is, "The transaction was financed through Actuant Corp's revolving credit facility". For another example, the database records an acquisition made by, "Select Comfort Corp", with the announcement date on 17 January 2013. The source of financing is recorded as, "Corporate

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[1] This is consistent with Bharadwaj and Shivdasani (2003) who examines cash tender offer.

Funds", and its description is, "The transaction was financed through Select Comfort Corps existing cash reserves".

Two dummy variables are constructed to indicate the sources of financing of M&As. *Bank Lines of Credit Dummy* equals ones if an M&A is entirely financed by bank lines of credit and equals zero otherwise. *Mixed Lines & Cash Dummy* equals one if an M&A is financed by a mixed source of bank lines of credit and corporate cash holdings and equals zero otherwise.

3. 3. 2. 2 Announcement Returns

An acquirer's announcement return, which is calculated as the cumulative abnormal return over days (–3, +3) around the announcement date, is used as a measure of the stock market performance of M&As. The cumulative abnormal returns are calculated using the market model with the CRSP equally weighted index as the market return. To estimate the market model, the acquirer's daily return and the return on the CRSP equally weighted index over days -200 to -20 is used, where day 0 is the event date.

3. 3. 2. 3 Changes in Operating Performance

The *Change in ROA* is used as a measure of the operating performance of M&As. *ROA* defines as the ratio of earnings before interest and tax to non-cash assets. The *Change in ROA* is calculated from year $t-1$ to year $t+1$.

3. 3. 2. 4 Net Changes in Operating Performance

The *Net Change in ROA* is used as another measure of the operating performance of M&As. *Net Change in ROA* is the difference between an acquirer's change in ROA and its matched comparable firm's change in *ROA* from year $t - 1$ to year $t + 1$. The sample of comparable firms is constructed with propensity score matching. The propensity scores are calculated based on the estimates from the logistic regression using the data one year before the M&As for both acquiring firms and non-acquiring firms. Each acquiring firm is matched to a non-acquiring firm[2] within the same industry based on 2-digit SIC code, requiring that the non-acquirer firm have a minimum difference in propensity score based on firm size, market-to-book ratio, cash flow, leverage, tangibility, capital expenditure, R&D, dividends and cash flow volatility. These variables have been used by the previous research in the literature. For example, Harford (1999) use a probit model to predict the likelihood to be a bidder and use the variable such as size, market-to-book ratio, leverage, and so on.

"With replacement method" is used in the propensity score matching. For each acquiring firm, a comparable firm is selected if the firm has the nearest neighbour of propensity score. Suppose for another acquiring firm, the same comparable firm is chosen in this procedure, and this comparable firm is used twice in the

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[2] The non-acquiring firms are the firms do not make any mergers and acquisitions, no matter what sources of financing are involved.

sample. The details about the propensity score matching are provided in Table 3.4A.

Table 3.4B shows the univariate statistics concerning the difference in the propensity score between acquirer firms and their matched non-acquirer firms. The propensity scores are generated based on the data one year before the acquisitions for both acquirers and non-acquirers. The mean of the difference is 0.056 and the median is 0.022. The small difference in the propensity score implies a reasonable matching between acquirer firms and their matched non-acquirer firms.

3. 3. 2. 5 Institutional Ownership

An acquirer's level of corporate governance is measured with *Institutional Ownership*, which is the ratio of shares owned by institutional investors to the total shares outstanding at the end of a quarter before the announcement date. *Block* is a dummy variable which equals one if there exists a block institutional ownership which exceeds 5% of the total shares outstanding and equals zero otherwise.

3. 3. 2. 6 Bankruptcy Risk

Altman (1968) Z-score is used as the measure a firm's bankruptcy risk. Following Altman (1968), if a firm has a Z-score less than 1.81, then the firm is considered to have high bankruptcy risk. If a firm has a Z-score greater than 1.81, then the firm is considered to have low bankruptcy risk.

3. 3. 2. 7 Control Variables

The following control variables are used: *Relative Value* is the ratio of deal value to the sum of the acquirer's market value of equity and deal value, *Hostile* is a dummy variable that equals one if an M&A is hostile and zero otherwise, *Unused Lines of Credit* is the ratio of unused lines of credit to assets (e.g., Sufi, 2009), *Cash* is the ratio of cash and marketable securities to non-cash assets, where non-cash assets are total assets less corporate cash holdings, *Size* is the logarithm of non-cash assets, *Cash Flow* is the ratio of income before extraordinary items to non-cash assets, M/B is defined as the market value of equity plus non-cash assets minus book value of equity, divided by non-cash assets, *Leverage* is the ratio of long-term debts to non-cash assets, *Tangibility* is the ratio of plant, property and equipment to non-cash assets, *Capital Expenditure* is the ratio of capital expenditures to non-cash assets, *R&D* is the ratio of research and development expenses to non-cash assets, *Dividends* is the ratio of dividends to non-cash assets and *Cash Flow Volatility* is the standard deviation of *Cash Flow* in the prior five years.

The control variables are used because they can affect a firm's choice of the sources of financing. For example, it is expected that if a firm has more unused lines of credit (corporate cash holdings), then it is more likely that the firm will use bank lines of credit (corporate cash holdings) as the source of financing for the M&As. If a firm has a higher cash flow volatility, a firm may have a lower fraction of bank lines of credit in the corporate liquidity (e.g., Sufi, 2009), which can further affect a firm's choice of using bank lines of credit as the source of financing for

the M&As. Moreover, the above control variables such as size, market-to-book ratio, hostile dummy, and so on are used, because they have been commonly used in the literature to control for their impact on the performance of M&As. For example, Moeller, Schlingemann and Stulz (2004) argue that there is a size effect associated with gains from acquisitions, and show that large firms have lower announcement returns than small firms. Lang et al. (1991) find that bidder returns are significantly negatively related to cash flow for low q bidders but not for high q bidders. Servaes (1991) finds that hostile takeovers reduce bidder gains. Heron and Lie (2002) find that the improvement in the operating performance following acquisitions is positively related to the acquirer's market-to-book ratio.

3. 4 Results

This section reports the results. First, I report the summary statistics. Second, I report the univariate analysis based on announcement returns. Next, I analyse how do the sources of financing affect an acquiring firm's the stock return performance and operating performance. Then I examine the determinants of an acquirer's choice of sources of financing. Further, I report the results on acquisition premiums. I also report further analysis based on the fraction of bank lines of credit used and costs associated with bank lines of credit. In addition, I report the sub-groups analysis based on bankruptcy risk. Finally, I conduct robustness checks.

3. 4. 1 Summary Statistics

Table 3.1A reports the summary statistics. *CAR (-3, +3)* is used as the measure of stock return performance around announcement period. The mean of *CAR (-3, +3)* for all M&As in the sample is 0.0161 and the median is 0.0091. The table shows on average the M&As have positive announcement returns, which are slightly greater than zero. Regarding operating performance, the average changes in operating performance for all M&As in the sample is -0.0279, and the median is -0.0135. By matching with non-acquiring firms with propensity score matching, the mean of *Net Change in ROA* is 0.0111 and the median is 0.0120 for all firms in the sample. Therefore, the performance of all acquirers in the sample shows positive changes in operating performance compared with their peers who do not have acquisitions.

Table 3.1B reports the number of deals. In the sample, U.S. M&As with cash payment are chosen. The M&As in the sample are entirely financed by corporate cash holdings, financed by bank lines of credit or a mixed source of corporate cash holdings and bank lines of credit. In this sample, 271 M&As are entirely financed by corporate cash holdings, 308 M&As are entirely financed by bank lines of credit and 144 M&As are financed by a mixed source of bank lines of credit and corporate cash holdings.

3. 4. 2 Univariate Analysis of Announcement Returns

Table 3.2 shows the univariate analysis on acquirers' announcement returns based on three groups. *CAR (-3, +3)* is the cumulative abnormal return over days

(-3, +3) around announcement date based on the market model with the equally weighted index.

The first row shows that the mean of announcement returns for the M&As entirely financed by bank lines of credit (corporate cash holdings) is 0.031 (0.002). The difference is 0.029. A t-test shows that the difference is significant between the two groups. The second row shows that the mean of *CAR (-3, +3)* for the M&As financed by a mixed source of bank lines of credit and corporate cash holdings is not significantly different from the mean of announcement returns for the group of acquirers entirely financed by corporate cash holdings. The third row compares the M&As entirely financed by bank lines of credit with the M&As financed by a mixed source of bank lines of credit and corporate cash holdings. The difference in the mean of announcement returns between the two groups is significant. The results support the interpretation that the M&As entirely financed by bank lines of credit have the highest announcement returns. This is consistent with the agency hypothesis related to the shareholders-managers conflict.

3. 4. 3 Regression on Announcement Returns

The effect of the sources of financing between corporate cash holdings and bank lines of credit on acquirers' announcement returns is examined based on the following equation:

$$CAR_{i,t} = \alpha + \beta_1 Bank\ Lines\ of\ Credit\ Dummy + \beta_2\ Mixed\ Lines\ \&\ Cash\ Dummy$$

$$+ \beta_3 Relative\ Value + \beta_4 Hostile + \beta_5 Size_{t-1} + \beta_6 Cash\ Flow_{t-1}$$

$$+ \beta_7\ M/B_{t-1} + \beta_8 Leverage_{t-1} + \beta_9 Tangibility_{t-1}$$

$$+ \beta_{10} Capital\ Expenditure_{t-1} + \beta_{11} R\&D_{t-1} + \beta_{12} Dividends_{t-1}$$

$$+ \beta_{13} Cash\ Flow\ Volatility_{t-1} + Year\ Dummy\ Variables$$

$$+ Industry\ Dummy\ Variables + \varepsilon_{i,t} \qquad (3.1)$$

The results are reported in Table 3.3. The dependent variable is *CAR (-3, +3)*. The coefficient of *Bank Lines of Credit Dummy* is 0.020 (p-value = 0.01). It implies that on average the M&As entirely financed by bank lines of credit have an additional 2% announcement returns more than the M&As entirely financed by corporate cash holdings. The coefficient of *Mixed Lines & Cash Dummy* is 0.004 (p-value = 0.60). Among the control variables, the coefficient of *Size* is negative and significant. This is consistent with the findings in Moeller et al. (2004) who find the existence of a size effect on acquisition announcement returns. The results are consistent with the interpretation that the M&As entirely financed by bank lines of credit have the best stock market performance. This is consistent with the hypothesis based on agency problems between shareholders and managers.

3. 4. 4 Changes in Operating Performance

The effect of sources of financing on the changes in operating performance are analysed based on the following equation:

$\Delta ROA(or\ Net\ \Delta ROA)$

$$= \alpha + \beta_1 Bank\ Lines\ of\ Credit\ Dummy$$

$$+ \beta_2\ Mixed\ Lines\ \&\ Cash\ Dummy + \beta_3 Relative\ Value + \beta_4 Hostile$$

$$+ \beta_5 Size_{t-1} + \beta_6 ROA_{t-1} + \beta_7\ M/B_{t-1} + \beta_8 Leverage_{t-1}$$

$$+ \beta_9 Tangibility_{t-1} + \beta_{10} Capital\ Expenditure_{t-1} + \beta_{11} R\&D_{t-1}$$

$$+ \beta_{12} Dividends_{t-1} + \beta_{13} Cash\ Flow\ Volatility_{t-1}$$

$$+ Year\ Dummy\ Variables + Industry\ Dummy\ Variables$$

$$+ \varepsilon_{i,t} \quad\quad\quad (3.2)$$

The results are reported in Table 3.4C. Consistent with the stock return performance during announcement period, the results of the changes in operating performance show a similar pattern. The M&As financed by bank lines of credit have higher changes in operating performance than the M&As financed by corporate cash holdings.

The dependent variable in Column 1 is the *Change in ROA* from one year after the M&As and one year before the M&As.[3] The coefficient of *Bank Lines of Credit Dummy* is 0.022 (p-value = 0.06) and the coefficient of *Mixed Lines & Cash Dummy* is 0.012 (p-value = 0.25). This implies that the M&As entirely financed by bank lines of credit have higher changes in operating performance than the M&As entirely financed by corporate cash holdings. The dependent variable in Column 2 is *Net Change in ROA*. The *Net Change in ROA* compared with matched non-acquiring peers is employed to isolate the effect of the M&As. This filters out the

---

[3] Since the dependent variable requires the availability of the data from year t-1 to year t+1, the sample size is reduced to 676 M&As in this table.

general trend of the changes of the time. After matching with non-acquiring firms in the same industry, a positive effect for acquirers financed by bank lines of credit is found. The coefficient of *Bank Lines of Credit Dummy* is 0.048 (p-value = 0.02). The coefficient of *Mixed Lines & Cash Dummy* is 0.010 (p-value = 0.62). The results in Table 3.4C are consistent with the interpretation that the M&As entirely financed by bank lines of credit have the best operating performance. This is consistent with the agency hypothesis.

3. 4. 5 The Choice of Sources of Financing

Multinomial logistic regression is used to estimate the likelihood of an acquirer's choice between bank lines of credit and corporate cash holdings as the source of financing. The estimate is based on the following equation:

$$
\begin{aligned}
Y_{i,t} = \alpha &+ \beta_1 Relative\ Value + \beta_2\ Hostile + \beta_3 Cash_{t-1} \\
&+ \beta_4 Unused\ Lines\ of\ Credit_{t-1} + \beta_5 Institutional\ Ownership_{t-1} \\
&+ \beta_6 Size_{t-1} + \beta_7 Cash\ Flow_{t-1} + \beta_8 M/B_{t-1} + \beta_9 Leverage_{t-1} \\
&+ \beta_{10} Tangibility_{t-1} + \beta_{11} Capital\ Expenditure_{t-1} + \beta_{12} R\&D_{t-1} \\
&+ \beta_{13} Dividends_{t-1} + \beta_{14} Cash\ Flow\ Volatility_{t-1} \\
&+ Year\ Dummy\ Variables + Industry\ Dummy\ Variables \\
&+ \varepsilon_{i,t} \qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad (3.3)
\end{aligned}
$$

The dependent variable is categorical. It equals zero if an M&A is entirely financed by corporate cash holdings, equals one if an M&A is financed by bank lines of credit holdings and equals two if an M&A is entirely financed by a mixed

source of corporate cash holdings and bank lines of credit. It is expected that firms with better corporate governance are more likely to choose bank lines of credit as the sources of financing because they are more likely to meet either the monitoring requirements of the banks or the disciplinary effect associated with higher leverage.

The results are reported in Table 3.5.[4] Column 1 shows the likelihood of an acquirer's choice of the sources of financing between bank lines of credit and corporate cash holdings. The coefficient of *Cash* is -11.221 (p-value = 0.01), suggesting that firms with higher level of cash are less likely to use bank lines of credit as the source of financing for M&As. The coefficient of *Unused Lines of Credit* is 5.845 (p-value = 0.01), suggesting that firms with higher level of unused lines of credit are more likely to use bank lines of credit as the source of financing for M&As.[5] Regarding the effect of corporate governance, Column 1 shows that the coefficient of *Institutional Ownership* is 1.017 (p-value = 0.08). It implies that a firm with higher institutional ownership is more likely to choose bank lines of credit than corporate cash holdings as the source of financing. Moreover, similar results are found in Column 2 that an acquirer with higher institutional ownership is more likely to choose a mixed source of financing than corporate cash holdings as the only source of financing. Therefore, some evidence in Table 3.5 supports the interpretation that firms with better corporate governance are more likely to choose bank lines of credit as a source of financing for M&As. This is consistent

---

[4] Since the data of *Unused Lines of Credit* starts from 1995 when 10-K fillings are available online, the sample size reduced to 506 M&As. Among them, 191 M&As are entirely financed by corporate cash holdings, 220 M&As are entirely financed by bank lines of credit and 95 are financed by a mixed source of corporate cash holdings and bank lines of credit.
[5] Similar results are found when *Total Lines of Credit* is used in the regression.

with the hypothesis based on agency problems between shareholders and managers.

3. 4. 6 Acquisition Premiums

The choice of sources of funding and acquisition premiums are investigated in this section. The estimate is based on the regression with the same control variables as Equation (3.1). Three measures of acquisition premiums are used: the ratios of the offer price to the target share price one day, or one week, or four weeks before the announcement of M&As. Acquirers with greater agency problems between shareholders and managers may tend to overpay the target firms. From this viewpoint, acquirers financed by cash pay a higher premium, while acquirers financed by bank lines of credit pay a lower premium.

Table 3.6 shows the results. [6] Column 1 shows that the coefficient of *Bank Lines of Credit Dummy* is -0.154 (p-value = 0.05). It implies that M&As entirely financed by bank lines of credit are associated with lower acquisition premiums. The coefficient of *Mixed Lines & Cash Dummy* is insignificant. Similar results are shown in Column 2 and Column 3 when acquisition premiums are measured at different time intervals. Therefore, the results in Table 3.6 support the interpretation that self-interested managers waste their resources in acquisitions, while acquirers financed by bank financing alleviates agency problems, leading

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[6] There are 157 M&As in the sample whose data of acquisition premiums are available at Thomson One.

to a lower acquisition premium. This is consistent with the agency hypothesis related to shareholder-debtholder conflict.

3. 4. 7 Sub-Group Analysis on Corporate Governance

The sample is split into sub-groups depending upon whether the acquirer has an institutional blockholder. Acquirers with a blockholder indicate a higher level of corporate governance, while acquirers do not have a blockholder indicate a lower level of corporate governance.

Table 3.7A shows the results of the announcement returns. The estimate is based on Equation (3.1). Column 1 shows that the coefficient of *Bank Lines of Credit Dummy* is 0.025 (p-value = 0.06) when there is not a blockholder and Column 2 shows that the coefficient is insignificant when there is a blockholder. Table 3.7B shows the results of the *Net Change in ROA*. The estimate is based on Equation (3.2). Column 1 shows that the coefficient of *Bank Lines of Credit Dummy* is 0.076 (p-value = 0.01) when there is not a blockholder, and Column 2 shows that the coefficient is insignificant when there is a blockholder. Table 3.7C reports the results of acquisition premiums. The estimate is based on Equation (3.1). Column 1 shows that the coefficient of *Bank Lines of Credit Dummy* is -0.191 (p-value = 0.03) when there is not a blockholder and Column 2 shows that the coefficient is insignificant when there is a blockholder. Consistent results are found in Column 3 to Column 6 for the acquisition premiums at different time intervals.

The results in Table 3.7A, Table 3.7B and Table 3.7C consistently imply that as a source of financing, bank lines of credit improve the corporate governance in poorly governed firms due to the monitoring by banks. This results in a significantly positive relation between bank lines of credit as a source of financing and stock market performance as well as the operating performance. Moreover, this results in a significantly negative relation between bank lines of credit as a source of financing and the acquisition premiums. This effect is insignificant for well-governed firms because these firms already have good governance and there is less room for improvements in corporate governance for these firms when they use bank lines of credit as a source of financing. Moreover, these well-governed firms tend not to overpay for the M&As no matter whether bank lines of credit or corporate cash holdings are used as a source of financing. This is consistent with the agency hypothesis related to the shareholders-managers conflict.

3. 4. 8 Heckman Two-Stage Estimation

In the research setting, firms first self-select to undertake M&As, and then firms self-select to use different sources of financing. Heckman (1979) two-stage selection model is used to tackle self-selection problems. In the first stage, *Inverse Mills Ratio 1* is obtained from the prediction of logistic regression in Table 3.4A and *Inverse Mills Ratio 2* is obtained from the multinomial logistic regression in Table 3.5. In the second stage, *Inverse Mills Ratio 1* and *Inverse Mills Ratio 2* are included in the regressions. The extended Heckman two-stage selection model has been used in previous literature such as Wu and Shen (2013) and

Grace and Phillips (2008) who employ the multinomial logistic model as the first stage of the selection model. Also, a number of papers (e.g., Rutherford, Springer and Yavas, 2005; Muller III and Riedl, 2002; Huang and Rutherford, 2007; Daniels, Ejara and Vijayakumar, 2009; Grace and Phillips, 2008) include two or more Inverse Mills Ratios generate from several first stage regressions in the second stage of this analysis.

The second stage regression for acquiring firms' announcement returns are based on the following regression:

$$
\begin{aligned}
CAR_{i,t} \\
= \alpha + \beta_1 Bank\ Lines\ of\ Credit\ Dummy\ (or\ \beta_1 Mixed\ Lines\ \&\ Cash\ Dummy) \\
+ \beta_2 Relative\ Value + \beta_3 Hostile + \beta_4 Size_{t-1} + \beta_5 Cash\ Flow_{t-1} + \beta_6\ M/B_{t-1} \\
+ \beta_7 Leverage_{t-1} + \beta_8 Tangibility_{t-1} + \beta_9 Capital\ Expenditure_{t-1} + \beta_{10} R\&D_{t-1} \\
+ \beta_{11} Dividends_{t-1} + \beta_{12} Cash\ Flow\ Volatility_{t-1} + \beta_{13} Inverse\ Mills\ Ratio\ 1 \\
+ \beta_{14} Inverse\ Mills\ Ratio\ 2 + Year\ Dummy\ Variables \\
+ Industry\ Dummy\ Variables + \varepsilon_{i,t} \qquad\qquad (3.4)
\end{aligned}
$$

The results of announcement returns are reported in Table 3.8A. After controlling the self-selection problems, Column 1 shows that the coefficient of *Bank Lines of Credit Dummy* is 0.041 (p-value = 0.01). The result is not significant for the coefficient of *Mixed Lines & Cash Dummy*.

The second stage regression for acquiring firms' operating performance is based on the following equation:

$$Net\ \Delta ROA$$

$$= \alpha + \beta_1 Mixed\ Lines\ \&\ Cash\ Dummy\ (or\ \beta_1 Mixed\ Lines\ \&\ Cash\ Dummy)$$

$$+ \beta_2 Relative\ Value + \beta_3 Hostile + \beta_4 Size_{t-1} + \beta_5 ROA_{t-1} + \beta_6\ M/B_{t-1}$$

$$+ \beta_7 Leverage_{t-1} + \beta_8 Tangibility_{t-1} + \beta_9 Capital\ Expenditure_{t-1} + \beta_{10} R\&D_{t-1}$$

$$+ \beta_{11} Dividends_{t-1} + \beta_{12} Cash\ Flow\ Volatility_{t-1} + \beta_{13} Inverse\ Mills\ Ratio\ 1$$

$$+ \beta_{14} Inverse\ Mills\ Ratio\ 2 + Year\ Dummy\ Variables$$

$$+ Industry\ Dummy\ Variables + \varepsilon_{i,t} \qquad\qquad (3.5)$$

The results of changes in operating performance in Table 3.8B. A similar pattern with Table 3.8A is found. Column 1 shows that the coefficient of *Bank Lines of Credit Dummy* is 0.051 (p-value = 0.06). No significant coefficient for *Mixed Lines & Cash Dummy* is found. The results in Table 3.8A and Table 3.8B are consistent with the findings in Table 3.3 and Table 3.4C in that the M&As entirely financed by bank lines of credit have both better stock market performance and better operating performance than the M&As entirely financed by corporate cash holdings. Therefore, similar results after controlling for the self-selection problems are found.

3. 4. 9 Further Analysis

This section shows further analysis.

3. 4. 9. 1 Fractions of Bank Lines of Credit in the Mixed Source of Financing

In the previous analysis, *Mixed Lines & Cash Dummy is* used to indicate the situation when an M&A is financed by a mix of bank lines of credit and corporate cash holdings. In this section, further analysis is conducted as to how the fraction of bank lines of credit in the mixed source of financing affects the performance of M&As. Data on the fraction of bank lines of credit in the mixed source of financing is collected from 10-K annual reports. Since the data are only available for a subset of the M&As in our sample, analysis for 42 M&As is carried out for which such data are available. A variable called *Fraction of Lines of Credit*, which is the fraction of bank lines of credit used is constructed when an M&A is financed by a mix of bank lines of credit and corporate cash holdings.

The analysis of acquiring firms' announcement returns used the control variables in Equation (3.1). Table 3.9A shows the results. Column 1 shows the regression whose dependent variable is *CAR (-3, +3).* The coefficient of *Fraction of Lines of Credit* is 0.301 (p-value = 0.04). It implies that a higher announcement return is associated with a higher fraction of bank lines of credit used in the mixed source of financing. Table 3.9B shows the regression whose dependent variable is the *Net Change in ROA*. The model uses the control variables in Equation (3.2). The coefficient of *Fraction of Lines of Credit* is 0.350 (p-value = 0.02). It implies that a higher net change in operating performance is associated with a higher fraction of bank lines of credit used in the mixed source of financing. Therefore, the results in Table 3.9A and Table 3.9B are consistent with the agency hypothesis.

3. 4. 9. 2 Commitment Fee and Predetermined Interest Rate

Further analysis to examine how the costs associated with bank lines of credit affect the performance of M&As is conducted. After a firm obtains the bank lines of credit, the firm pays a commitment fee for a certain percentage of the unused amount of lines of credit and pays a predetermined interest rate on the used amount of lines of credit. It predicts that the performance of the M&As is higher if the costs associated with bank lines of credit are lower. Data of the commitment fee and the predetermined interest rate associated with bank lines of credit are manually collected from 10-K annual reports. Two variables *Commitment Fee* and *Predetermined Interest Rate* are included in the regressions, which correspond to the weighted average commitment fee and the weighted average predetermined interest rate associated with bank lines of credit as reported in the 10-K annual reports at year $t - 1$, where the weighting is the amount of each bank line of credit that a firm has.

Table 3.10A shows the univariate statistics of the commitment fee and predetermined interest rate. The mean of *Commitment Fee* is 0.0036, and the median is 0.0038. The mean of *Predetermined Interest Rate* is 0.0518, and the median is 0.0572. Table 3.10B shows the regressions on announcement returns. The control variables are the same as Equation (3.1). In Column 1, the coefficient of *Commitment Fee* is -18.991 (p-value = 0.03). In Column 2, the coefficient of *Predetermined Interest Rate* -0.775 (p-value = 0.08). The results imply that either a higher commitment fee or a higher predetermined interest rate is associated with a lower announcement return. Table 3.10C shows the regressions on

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operating performance. The control variables are the same as Equation (3.2). In Column 1, the coefficient of *Commitment Fee* is -12.238 (p-value = 0.05). It implies that a higher commitment fee is associated with a lower net change in operating performance. In Column 2, the coefficient of *Predetermined Interest Rate* is -1.049 (p-value = 0.08). The results imply that either a higher commitment fee or a higher predetermined interest rate is associated with a lower net change in operating performance. Therefore, the results in Table 3.10B and Table 3.10C support the interpretation that the performance of the M&As is higher if the costs associated with bank lines of credit are lower. It implies that while bank lines of credit can reduce the agency problems between shareholders and managers as revealed by the findings in the previous tables, bank lines of credit are themselves associated with the costs that can affect the performance of M&As.

3. 4. 9. 3 Sub-Group Analysis on Bankruptcy Risk

Sub-group analysis is conducted to differentiate the hypotheses related to the shareholders-managers conflict and the hypotheses related to the shareholders-debtholders conflict. Further, the sample is divided into two sub-groups based on the bankruptcy risk. Agency problems between shareholders and debtholders are more severe in the sub-group of firms with higher bankruptcy risk. Altman Z-score is used as the measure of bankruptcy risk. Following the literature (e.g., Altman, 1968), a firm is classified into the sub-group with higher (lower) bankruptcy risk if the firm's Altman Z-score is below (above) 1.81.

Table 3.11A reports the results of announcement returns. The estimate is based on Equation (3.1). The dependent variable is *CAR (-3, +3).* Column 1 shows the regression for the sub-group with lower bankruptcy risk the coefficient of *Bank Lines of Credit Dummy* is 0.021 (p-value =0.01). Column 2 shows the regression for the sub-group with higher bankruptcy risk the coefficient of *Bank Lines of Credit Dummy* is insignificant. Table 3.11B reports the results of operating performance. The estimate is based on Equation (3.2). The dependent variable is *Net Change in ROA*. The results show a similar pattern with the stock return performance. The coefficient of *Bank Lines of Credit Dummy* is 0.047 (p-value =0.06). In Column 1 for the sub-group of firms with lower bankruptcy risk, and that is insignificant in Column 2 for the sub-group of firms with higher bankruptcy risk.

The results in Table 3.11A and Table 3.11B are interpreted as follows. When a firm has lower bankruptcy risk, the agency problems focus on the conflict of interest between shareholders and managers. Due to the monitoring effect of bank financing and disciplinary effect of higher leverage, positive and significant coefficients of *Bank Lines of Credit Dummy* are found in the sub-group of firms with lower bankruptcy risk. However, the conflict of interest between shareholders and debtholders increases when a firm has higher bankruptcy risk. In this case, bank lines of credit will have a negative impact on shareholder value due to the agency problems between shareholders and debtholders. This negative effect offsets the positive monitoring or disciplinary effect, resulting in the insignificant coefficients of *Bank Lines of Credit Dummy* as observed in the table. Therefore, the results in Table 3.11A and 3.11B are consistent with both the agency

hypotheses related to the shareholders-managers conflict and the agency hypotheses related to the shareholders-debtholders conflict.

3. 4. 10 Robustness Testing

I conduct the following tests for robustness testing.

3. 4. 10. 1 Acquiring Firms with Multiple M&As

Some acquirers in our sample have more than one M&A in a fiscal year. Since the announcement return is used as a measure of the performance of M&As, the market reaction of shareholders for these acquirers with more frequent M&As can be different from the market reaction of shareholders for a firm with only one M&A in a fiscal year. Robustness checks are conducted on this issue. For an acquirer with more frequent M&As, the first M&A in a fiscal year is retained but the subsequent M&As in the same fiscal year are excluded. This reduces the sample size to 680 M&As.

The results of announcement returns are reported in Table 3.12A. Equation (3.1) is used in this estimation. The coefficient for *Bank Lines of Credit Dummy* is positive and significant. The results show a similar pattern with Table 3.3 in that acquirer financed by bank lines of credit outperform acquires financed by corporate cash holdings. The results of the changes in operating performance are reported in Table 3.12B. Equation (3.2) is used in this estimation. A similar pattern is found with the results on Table 3.4 that the coefficients for *Bank Lines of Credit Dummy* are positive and significant in the two columns. After conducting

robustness testing for firms with frequent M&As, the results are consistent with the agency hypothesis.

3. 4. 10. 2 Completion Year

The announcement year is defined as the year t in the analysis in previous sections. Since some M&As may take a longer time to complete, the completion year for these M&As can be different from the announcement year. Robustness checks are conducted about this issue. The completion year is defined as the year t and examine how various sources of financing affect the changes in the operating performance around the M&As. This analysis uses the regression in Equation (3.2).

Table 3.13 shows the results. Column 1 shows the regression whose dependent variable is the *Change in ROA*. Column 2 shows the regression whose dependent variable is the *Net Change in ROA*. In both columns, the coefficients of *Bank Lines of Credit Dummy* are positive and significant. Therefore, similar results as in Table 3.4C are found when the completion year is defined as the year t.

3. 4. 10. 3 Alternative Windows

CAR (-3, +3) is used as the announcement return in the analysis. Robustness checks are carried out by using alternative windows for the announcement return. The regression uses the same specification as Equation (3.1). Table 3.14 shows the results. The dependent variable in is Column 1 is *CAR (0, 0).* The dependent variable in Column 2 is *CAR (-1, +1).* The coefficients of *Bank Lines of Credit*

Dummy for both columns are positive and significant. Therefore, similar results as in Table 3.3 are found that the announcement returns are higher for the M&As entirely financed by bank lines of credit.

3. 4. 10. 4 Alternative Measure of Corporate Governance

Block institutional ownership is used as the measure of corporate governance in the previous section. Robustness testing with alternative measures of corporate governance is conducted. The sample is divided into sub-groups based on the median of the institutional ownership. Acquirers with above median institutional ownership indicate a higher level of corporate governance, while acquirers with below median institutional ownership indicate a lower level of corporate governance.

The results of announcement returns are reported in Table 3.15A. The analysis is based on Equation (3.1). The coefficient of *Bank Lines of Credit Dummy* is positive and significant when acquirers have lower institutional ownership and that is insignificant when acquirers have higher institutional ownership. The results of the changes in operating performance in Table 3.15B. The analysis is based on Equation (3.2). The coefficient of *Bank Lines of Credit Dummy* is positive and significant when acquirers have lower institutional ownership, and that is insignificant when acquirers have higher institutional ownership. Therefore, consistent results with Table 3.7A and Table 3.7B are found that firms with a lower level of corporate governance benefit from the monitoring of banks.

3. 4. 10. 5 The Public Status of Target Firms

While the acquirers in the sample are public firms, the targets can be either public firms or private firms. The degree of agency problems and the degree of information asymmetry are different between public firms and private firms. Generally speaking, public firms have a lower degree of information asymmetry than private firms due to more disclosure requirements, but public firms have a higher degree of agency problems between shareholders and managers due to the separation of ownership and control. Further analysis is conducted to examine whether there is a difference in the impact of the sources of financing on the performance of M&As between the situation when the targets are public firms and the situation when the targets are private firms. A dummy variable called *Public* is conducted which equals one if a target firm is a public firm, and equals zero otherwise.

Table 3.16A shows the results of announcement returns. The regression uses the same control variables as Equation (3.1). The coefficient of *Bank Lines of Credit Dummy* is positive and significant. Table 3.16B shows the results of the changes in operating performance. The regression uses the same control variables as Equation (3.2). The coefficients of *Bank Lines of Credit Dummy* are found to be positive and significant for both columns. Therefore, similar results as in Table 3.3 and Table 3.4C are found after the public status of target firms is included as an additional control variable in the regressions.

3. 4. 10. 6 Alternative Comparable Firms

When a sample of comparable firms with propensity score matching is constructed, a comparable firm can occur more than once as long as it meets the requirement of a minimum difference in propensity score. This is called the "with replacement method" in the propensity score matching. Robustness checks by using the, "without replacement method", in the propensity score are conducted. Namely, in the "without replacement method", once a comparable firm is chosen, this firm is no longer available for consideration as a potential match for subsequent event firms.

Table 3.17 shows the results. The regression uses the model in Equation (3.2).The dependent variable is the *Net Change in ROA*, which is the difference between the *Change in ROA* of the event firm and the *Change in ROA* of the comparable firm chosen based on the "without replacement method". The coefficient of *Bank Lines of Credit Dummy* is positive and significant. Therefore, similar results are found after using the alternative comparable firms based on the "without replacement method" in the propensity score matching.

3. 4. 10. 7 Institutional Ownership

The findings in the previous tables reveal that a firm with higher institutional ownership is more likely to choose bank lines of credit than corporate cash holdings as the source of financing for M&As, and that there is a significantly positive relation between bank lines of credit as a source of financing and stock market performance as well as the operating performance in the sub-group of

firms that do not have a blockholder of institutional ownership. This raises a potential question about whether the results are driven by the situation that bank lines of credit are not available to some firms with lower institutional ownership. For example, if a firm with lower institutional ownership does not have access to bank lines of credit, then by extrapolation it will be observed that a firm with higher institutional ownership is more likely to use bank lines of credit than corporate cash holdings as the source of financing for M&As. However, this is driven by the availability of bank lines of credit, instead of driven by corporate governance, as have argued before.

Robustness checks are conducted to explore this potential issue. Table 3.18 shows the regressions based on the specification in Sufi (2009) and the variable *Institutional Ownership* is added as an additional independent variable.[7] The regression is as follow:

$$
\begin{aligned}
Bank\ Lines\ of\ Credit \\
= \beta_1 Institutional\ Ownership_{t-1} + \beta_2 EBITDA_{t-1} \\
+ \beta_3 Tangibility_{t-1} + \beta_4 Size_{t-1} + \beta_5 Net\ Worth_{t-1} + \beta_6 M/B_{t-1} \\
+ \beta_7 Industry\ Sales\ Volatility_{t-1} + \beta_8 Cash\ Flow\ Volatility_{t-1} \\
+ \beta_9 Not\ in\ an\ S\&P\ Index_{t-1} + \beta_{10} Trade\ Over\ the\ Counter_{t-1} \\
+ \beta_{11} Firm\ Age_{t-1} + Year\ Dummy\ Variables \\
+ Industry\ Dummy\ Variables + \varepsilon_{i,t} \quad\quad\quad (3.6)
\end{aligned}
$$

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[7] Following Sufi (2009), the independent variables are one-year lagged variables.

Three measures of bank lines of credit have been used as the dependent variables. The results are shown in Table 3.18. Column 1 shows a probit regression on the likelihood that a firm has bank lines of credit. The dependent variable is a dummy variable that equals one if a firm has bank lines of credit, and equals zero otherwise. The coefficient of *Institutional Ownership* is 0.164 (p-value = 0.66). Column 2 and Column 3 show the regressions about the portion of bank lines of credit in the corporate liquidity. The dependent variable in Column 2 is *Total Line / (Total Line + Cash)*, which is the ratio of total bank lines of credit to the sum of total bank lines of credit and corporate cash holdings. The coefficient of *Institutional Ownership* is -0.054 (p-value = 0.21). The dependent variable in Column 3 is *Unused Line / (Unused Line + Cash)*, which is the ratio of unused bank lines of credit to the sum of unused bank lines of credit and corporate cash holdings. The coefficient of *Institutional Ownership* is -0.041 (p-value = 0.35). Therefore, the insignificant coefficients of *Institutional Ownership* support the interpretation that institutional ownership does not affect either the likelihood that a firm has bank lines of credit or the amount of bank lines of credit held by a firm.

3. 4. 11 Discussion

The empirical results above show that acquiring firms financed by bank lines of credit have higher performance than the acquiring firms financed by corporate cash holdings. The results are consistent with the free cash flow theory (Jensen, 1986) that self-interested managers are likely to waste their resources in value-destructive acquisitions. The results reveal that banks play an important role in corporate governance by imposing discipline to borrowers, thereby mitigate

agency problems. This is consistent with previous literature which shows the corporate governance role of bank lines of credit, such as Yun (2009) who find that firms with severe agency problems switch from bank lines of credit to cash holdings, and Nini et al. (2012) who find that the performance of borrower improved after violations of covenants.

The results from sub-group analysis based on corporate governance are consistent with Bharadwaj and Shivdasani (2003) and Byers et al. (2008) who find that the bank's monitoring effect is mainly concentrated on poor performers. This can be interpreted as the acquirers with block institutional owners already subjected to monitoring from the blockholders, so the potentials for improvement are limited, while the performance of poorly governed firms improved due to banks' involvement. Also, the results from sub-group analysis based on bankruptcy risk suggest that the monitoring effect does not benefit shareholders when there is substantial conflict of interest between shareholders and debtholders. This is consistent with Rajan (1992) who find that bank monitoring adversely affects firm's shareholder wealth maximisation by interfering a firm's investment decisions.

3. 5 Conclusion

I examine how sources of financing between corporate cash holdings and bank lines of credit affect the performance of M&As. I develop three hypotheses based on agency problems between shareholders and managers, agency problems between shareholders and debtholders and information asymmetry.

I find that the M&As entirely financed by bank lines of credit have higher performance than the M&As entirely financed by corporate cash holdings in both announcement returns and changes in operating performance. Firms with higher institutional ownership are more likely to use bank lines of credit than corporate cash holdings as the source of financing. Moreover, I find that lower acquisition premiums are consistently associated with the M&As entirely financed by bank lines of credit. The evidence from the sub-group analysis based on corporate governance shows acquirers with a lower level of corporate governance benefit from the choice of bank lines of credit. I conduct further analysis of the issues including the fraction of bank lines of credit in the mixed source of financing, the commitment fee and the predetermined interest rate associated with bank lines of credit, the sub-group analysis based on bankruptcy risk, as well as a batch of robustness checks.

Overall, the results show strong evidence supporting the interpretation that the performance is higher for the M&As entirely financed by bank lines of credit. The positive effect of bank monitoring is pronounced for acquirers with lower level of corporate governance. This is consistent with the hypotheses based on the agency problems between shareholders and managers.

Chapter 4. Debt Issues, Bank Loans, Equity Issues and the Performance of M&As

4. 1 Introduction

Previous literature indicates for M&As paid with cash, a large proportion of the deals are financed by external sources of financing (Martynova and Renneboog, 2008). The sources of financing between corporate cash holdings, different types of debt and equity issues may generate different performance for acquiring firms. Jensen (1986) shows that internally generated free cash flow can be used easily by managers on value-decreasing acquisitions, while debt financing limits such activities. Myers (1977) and Jensen and Meckling (1976) show that there is also agency cost of debt associated with leverage. The conflict of interest between shareholders and debtholders affect the value of the firm. Also, the pecking order theory (Myers and Majluf, 1984) shows that the cost of capital is different for internally generated cash, debt and equity. Given such differences among cash, debt and equity, the performance of M&As financed by different sources of financing is different.

Previous empirical literature show evidence on sources of financing and the performance of M&As. Schlingemann (2004) shows that bidder returns are positively related to the cash raised from equity issuance and negatively relative to internally generated free cash flow. Martynova and Renneboog (2009) show that acquisitions financed by equity have negative returns. Moreover, acquisitions

financed by internally generated funds underperform debt. Bharadwaj and Shivdasani (2003) show that the acquirers of tender offers entirely financed by bank loans have significantly higher stock return performance than those financed by corporate cash holdings. Though the literature shows evidence of the impact of sources of financing and the performance of M&As, there remains the issue of whether different types of debt (bank debt and non-bank debt) affect the performance differently and how equity issues affect the performance of M&As.

In order to link with the previous chapter, I further examine how the sources of financing between corporate cash holdings, other bank loans[8], debt issues and equity issues affect the performance of M&As.

I develop three hypotheses based on agency problems between shareholders and managers, agency problems between shareholders and debtholders and information asymmetry. First, entrenched managers may pursue their personal benefits with internally generated funds, while external financing reduces agency problems between managers and shareholders. Therefore, I expect the acquirers that subject to higher level of monitoring from external markets will generate higher performance in M&A. Second, the conflict of interest between shareholders and debtholders contributes to agency cost of debt. In the circumstance that substantial agency conflict exists between shareholders the debt claimants, debt financing is associated with debt-overhang and risk-shifting problems. Therefore, I expect that M&As financed by cash and equity have higher

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[8] In Chapter Four, "other bank loans" is used to indicate the bank loans other than bank lines of credit.

performance than those financed by both bank debt and non-bank debt when there are higher agency problems between shareholders and debtholders. Third, with the presence of information asymmetry, the costs of capital for different sources of funds are influenced by the degree of information asymmetry. Therefore, I expect acquirers financed by the sources of financing with lower cost, will generate higher performance.

I use a sample of 449 U.S. M&As with cash payment from 1985 to 2013. To link with the previous chapter, I use the M&As entirely financed by one of the following sources of financing: corporate cash holdings, other bank loans, debt issues and equity issues. I find that acquirers financed by other bank loans and debt issues are associated with higher performance in both announcement returns and changes in operating performance. I do not find that institutional ownership affects the choices between different sources of financing. Further, I find that acquirers financed by bank loans and debt issues pay lower premiums for the targets than those financed by corporate cash holdings. The evidence from the sub-group analysis based on corporate governance shows poorly-governed firms benefit from the use of debt financing. Also, the sub-group analysis based on agency conflicts between shareholders and debtholders implies that the positive effect of using bank financing and debt financing on M&As is only pronounced among firms with a lower level of bankruptcy risk. The results are consistent with the interpretation that the performance of M&As is higher for firms use other bank loans and debt issues as sources of financing. I conclude this is consistent with the hypothesis of agency problems between shareholders and managers.

This chapter contributes to the literature on the sources of financing of M&As in the following aspects:

First, a limited number of papers examine the relation between sources of financing of cash-paid M&As and the performances. To my knowledge, these studies do not examine different types of debt separately. For example, Schlingemann (2004) and Martynova and Renneboog (2009) examine debt financing in general without differentiating bank debt and non-bank debt. Bharadwaj and Shivdasani (2003) examine bank financing without separating bank lines of credit and other bank loans. Moreover, Schlingemann (2004) and Martynova and Renneboog (2009) show different results in the performance of equity financed M&As, therefore, the effect of equity financing is unclear. My research extends the literature in that I distinguish between different types of debt among other bank loans and debt issues.

Second, my research also contributes to the literature on the performance of M&As by providing a more comprehensive analysis. For example, my research extends Bharadwaj and Shivdasani (2003) by conducting analysis of general M&As instead of tender offers only. I also examine various performance measures such as operating performance and acquisition premiums, which have not been studied in Schlingemann (2004), Martynova and Renneboog (2009) and Bharadwaj and Shivdasani (2003).

The rest of the chapter is organised as follows. Section 4. 2 develops the hypotheses. Section 4. 3 describes the data and the variables. Section 4. 4 presents the results. Section 4. 5 concludes the chapter.

4. 2 Hypotheses

In this section, I develop hypotheses based on three different perspectives: (1) Agency problems between shareholders and managers, (2) Agency problems between shareholders and debtholders and (3) Information asymmetry.

4. 2. 1 Agency Problems between Shareholders and Managers

Agency theory (Jensen and Meckling, 1976) suggests that managers as the agent, may not act in the best interests of shareholders. Since there is an agency cost of managerial discretion, the performance of M&As financed by corporate cash holdings, equity and debt may be different.

4. 2. 1. 1 Corporate Cash Holdings

Corporate cash holdings avoid the monitoring from external markets, and thus provides flexibility for entrenched managers to derive private benefits at the expenses of shareholders (Jensen, 1986). From the agency perspective, entrenched managers are likely to use cash in value-destructive M&As to pursue their benefits, and thereby the performance of acquirers is lower than the those financed by external financing.

4. 2. 1. 2 Other Bank Loans

Banks alleviate agency problems between shareholders and managers. Shleifer and Vishny (1997) show that banks have a whole range of controls and cash flow rights can interfere in the major decisions of the firm. Diamond (1984) mentions that banks can monitor much information of borrowers and thus are able to renegotiate the interest and contingent promises, forcing firms to comply with the covenants. Other literature including Byers, Fields and Fraser (2008) and Ahn and Choi (2009) also provides evidence of the positive effect of bank financing on corporate governance. Regarding the M&As literature, Bharadwaj and Shivdasani (2003) show tender offers entirely financed by banks are associated with larger and significant positive announcement returns. Since banks provide an incentive to avoid value-destructive M&As, I expect the performance is the higher for the M&As financed by bank loan than M&As financed by corporate cash holdings. I have the following hypothesis:

Hypothesis 1A: The performance is higher for acquirers financed by other bank loans in M&As than those financed by corporate cash holdings in M&As.

4. 2. 1. 3 Debt Issues

The monitoring effect of debt has been studied by a number of papers. Grossman and Hart (1982) demonstrate that debt increases managers' incentive to maximise shareholders' value due to the threat of bankruptcy. Jensen (1986) indicates that debt plays an important role in reducing the agency problems

associated with free cash flow. By promising to pay back the principal and interests, managers are monitored by debtholders. When acquirers financed by debt, they may receive higher performance than those financed by cash since debt limit the managerial discretion. Moreover, Stulz (1990) argues that debt issues can reduce the overinvestment problem stemmed from managerial discretion. D'Mello and Miranda (2010) empirically tested the effect of debt issues on unlevered firms, and find that overinvestment problems largely reduced after the introduction of debt issues among firms with poor investment opportunities. Chava and Roberts (2008) show that firms with severe agency problems significantly decline their capital investment after debt covenant violations, supporting the monitoring role of debt. The literature in M&As also shows that acquiring firms benefit from the monitoring effect of debt. Maloney, McCormick and Mitchell (1993) find that an acquirer's preannouncement leverage is positively related to its abnormal returns at announcement, indicating debt enhances managerial decision making. Martynova and Renneboog (2009) find that acquisitions financed with internally generated funds underperform those financed with debt. Since debt issues are associated with lower agency problems between shareholders and managers than corporate cash holdings, I expect that the performance of M&As is higher if debt issues are used as the source of financing. I have the following hypothesis:

Hypothesis 1B: The performance is higher for acquirers financed by debt issues in M&As than those financed by corporate cash holdings in M&As.

4. 2. 1. 4 Equity Issues

On the one hand, Jensen (1986) indicates that raising equity decreases the leverage, and leverage-reducing transactions are associated with significant decreases in stock prices due to the increase of agency problems. Stulz (1990) argues equity issue increases the funds under the control of managers, leading to the increase in managerial discretion. Therefore, self-interested managers may use equity financing in M&As and external markets may provide limit monitoring. Jung, Kim and Stulz (1996) find the evidence that some firms issue equity to benefit managers instead of shareholders. Since equity issues not only bring additional resources available to managerial discretion but also reduce the leverage and its associated disciplinary effect on managers. This is more severe than the situation that corporate cash holdings are used as the source of financing where leverage is not affected. From this aspect, I have the following hypothesis:

Hypothesis 1C: The performance is lower for acquirers financed by equity issues in M&As than those financed by corporate cash holdings in M&As.

On the other hand, equity issues allow the external capital markets to review a firm and its managers. Easterbrook (1984) argues that keeping access to external capital markets can result in the monitoring of the managers. Existing investors can influence manager's actions only by voting and selling, but new investors can examine the behaviour of managers before investing. Thus, managers in capital market have the incentive to reduce agency problems between shareholders and managers. If a firm uses corporate cash holdings as the source of financing, it

will be less subject to the monitoring by the external capital markets. From this aspect, I expect that the performance of M&As is higher if equity issues are used as the source of financing. I have the following hypothesis:

Hypothesis 1D: The performance is higher for acquirers financed by equity issues in M&As than those financed by corporate cash holdings in M&As.

From the agency perspective, the performance of M&As financed by equity depends on the trade-off between the negative effect of reduction in leverage and the positive effect of monitoring from the external markets.

4. 2. 2 Agency Problems between Shareholders and Debtholders

With the presence of agency problems between shareholders and debtholders, raising debt will be costly. When agency problems exist between shareholders and debtholders, using internally generated cash and debt in M&As, bring different performance to the firm.

4. 2. 2. 1 Corporate Cash Holdings

Firms have the incentive to holding cash to fund future investments. Corporate cash holdings are internally generated funds, which avoid underinvestment problems when firms have good investment opportunities (Opler et al., 1999). From this viewpoint, using internally generated funds to finance M&As does not destroy shareholder value.

4. 2. 2. 2 Other Bank Loans

As I discussed in the previous section, bank financing mitigates agency problems between shareholders and managers. Diamond (1984) demonstrates that banks can monitor borrowers through delegated monitoring. Shleifer and Vishny (1997) show that banks can interfere borrowers' decision making. Byers, Fields and Fraser (2008), Ahn and Choi (2009), and Bharadwaj and Shivdasani (2003) provide empirical evidence on the positive effect of bank monitoring on borrower's corporate governance. However, the use of bank loans is associated with hold-up problems. A bank can use its informational advantage to pursue its own interest which does not benefit the shareholders of the firm. Previous findings including Rajan (1992), Houston and James (1996), and Santos and Winton (2008) show that the cost of using bank loans is higher for bank-dependent firms. Moreover, used bank lines of credit are debt obligations. Leverage increasing activities increase the agency cost of debt (Jensen, 1986), leading to the problems including debt-overhang and risk-shifting. Since bank financing increases the agency problems between shareholders and debtholders, I expect that the performance of M&As is lower when bank loans are used as the source of financing. I have the following hypothesis:

Hypothesis 2A: The performance is lower for acquirers financed by other bank loans in M&As than those financed by corporate cash holdings in M&As.

4. 2. 2. 3 Debt Issues

As I mentioned in the previous section, debt issues reduce agency problems by limiting managerial discretion via the threat of bankruptcy (Grossman and Hart, 1982), reduction of resources under management control (Jensen, 1986) and debt covenants (Chava and Roberts, 2008). Debt issues reduce overinvestment problem (Stulz, 1990; D'Mello and Miranda, 2010) and create positive announcement effect in M&As (Maloney et al., 1993; Martynova and Renneboog, 2009). On the other hand, the use of debt issues increases the leverage. Jensen and Meckling (1976) argue that the agency problems between shareholders and debtholders increase with the leverage. Debt-overhang and risk-shifting problems arise when cost of external financing increases, and thus force firms to forgo good investment projects. Since debt issues increase the agency problems between shareholders and debtholders, I expect that the performance of M&As is lower if debt issues are used as the source of financing. I have the following hypothesis:

Hypothesis 2B: The performance is lower for acquirers financed by debt issues in M&As than those financed by corporate cash holdings in M&As.

4. 2. 2. 4 Equity Issues

Equity issues are at the opposite direction to the point mentioned above. Equity issues reduce a firm's leverage, issuing equity can alleviate agency problems. Therefore, firms can finance valuable projects to avoid underinvestment problems. Since equity issues decrease the agency problems between

shareholders and debtholders, I expect that the performance of M&As is higher if equity issues are used as the source of financing. I have the following hypothesis:

Hypothesis 2C: The performance is higher for acquirers financed by equity issues in M&As than those financed by corporate cash holdings in M&As.

4. 2. 3 Information Asymmetry

4. 2. 3. 1 Corporate Cash Holdings

Information asymmetry makes external financing more expensive than internal sources (Myers and Majluf, 1984). Given the assumption that different sources of financing have different costs, M&As financed by the source of funding with the lowest cost will receive the highest performance. Corporate cash holdings, as internally generated funds, are the least expensive source of funding.

4. 2. 3. 2 Other Bank Loans

The literature on financial intermediation shows the informational advantage of banks alleviating information asymmetry. For example, Leland and Pyle (1977) argue that financial intermediations provide a validation role for the credibility of information. Campbell and Kracaw (1980) show an information production role of financial intermediation. Myers and Majluf (1984) argue that informed bank debt can substitute for financial slack. Since bank financing mitigates information asymmetry and can substitute for financial slack such as corporate cash holdings,

I expect that bank financing and corporate cash holdings have a similar impact on the performance of M&As. I have the following hypothesis:

Hypothesis 3A: The performance of the acquirers financed by other bank loans in M&As is NOT significantly different from those financed by corporate cash holdings in M&As.

4. 2. 3. 3 Debt Issues

In the pecking order theory proposed by Myers and Majluf (1984), debt issues are a more expensive source of financing than corporate cash holdings. Empirical findings reveal that the announcements of public bond issues are associated with zero or slightly negative equity returns (e.g., Eckbo, 1986; Jung et al., 1996). I expect that the performance of M&As is lower if debt issues are used as the source of financing because debt issues are a more expensive source of financing. I have the following hypothesis:

Hypothesis 3B: Acquirers financed by debt issues have lower performance than acquirers financed by corporate cash holdings in M&As..

4. 2. 3. 4 Equity Issues

In the pecking order theory proposed by Myers and Majluf (1984), equity issues are the most expensive source of financing. Empirical studies in the literature reveal that the seasoned equity offering is associated with significant negative

announcement returns (e.g., Asquith and Mullins, 1986). I expect that the performance of M&As is lower if equity issues are used as the source of financing because equity issues are the most expensive source of financing. I have the following hypothesis:

Hypothesis 3C: The performance is lower for acquirers financed by equity issues in M&As than those financed by corporate cash holdings in M&As.

4. 2. 4 Summarising the Hypotheses

The following table summarises the above hypotheses. "+" ("-") indicates that the performance of M&As with a particular source of financing is higher (lower) than the benchmark situation when corporate cash holdings are used as the source of financing. "Not different" indicates that the performance of M&As with a particular source of financing is not significantly different from the benchmark situation when corporate cash holdings are used as the source of financing. I indicate the number of the hypotheses in the parentheses.

Comparison between the performance of M&As with a particular source of financing; Corporate Cash Holdings is the benchmark.		
	Agency Problems Between Shareholders and Managers	Agency Problems between Shareholders and Debtholders	Information Asymmetry
Other Bank Loans	+ (H1A)	- (H2A)	Not different (H3A)
Debt Issues	+ (H1B)	- (H2B)	- (H3B)
Equity Issues	- (H1C)/ +(H1D)	+ (H2C)	- (H3C)

4. 3 Data and Variables

4. 3. 1 Data

A sample of U.S. M&As between 1985 and 2013 with cash payment is obtained from Thomson One database. Financial data are collected from Compustat database and stock return data are collected from CRSP. Institutional ownership data are collected from Thomson Financial/ Institutional database. Both the acquirers and targets are U.S. firms. All of the acquiring firms are publicly traded firms and the target firms can be either public or private firms.

The sample fulfils the following requirements: (i) The source of funding of the M&As is identifiable from Thomson One database and the source of funding should be one of the following categories, "corporate funds", "borrowings", "debt issue", and, "common stock issue". Moreover, the descriptions for M&As financed by, "borrowings", contains the information of, "bank loans", and,"bank loans", is the only source of borrowings (where bank loans are the loans apart from bank lines of credit), (ii) The deal value is no less than 1 million US dollars, (iii) Neither the acquirers nor the targets are financial service firms. With these procedures, a sample of 449 M&As with complete data is obtained. Among the 449 M&As, 271 M&As are entirely financed by corporate cash holdings, 82 M&As are entirely financed by other bank loans, 56 M&As are entirely financed by debt issues and 40 M&As are entirely financed by equity issues.

4. 3. 2 Variables

4. 3. 2. 1 Source of Financing

To link with the previous chapter, only the M&As with sources of funding which are 100% financed with other bank loans, debt issues and equity issues are considered in this sample. The source of funding data is available from Thomson One database. The variable, "source of funds," is identified.

For example, the database records an acquisition made by, "Performance Food Group Co", with the announcement date on 04 November 1994. The source of funding is "Borrowings", and its detailed description is, "The transaction was to be financed through a bank loan". Thomson One database shows this is the only source of financing of the M&A.

For another example, the database has a record that, "Republic Group Inc", announced an acquisition on 23 January 1995. The source of funding is, "Debt Issue", and the detail records as, "The transaction was to be financed through the issuance of debt". Thomson One database shows this is the only source of financing of the M&A.

For another example, the database records there is an acquisition made by, "Northland Cranberries Inc", on 20 May 1998, with the source of funding is "Common Stock Issue ". The detail information is, "The transaction was financed

through the issuance of 5 mil common shares, raising $65.3 mil". Thomson One database shows this is the only source of financing of the M&A.

Three dummy variables are used to identify the source of funding for M&As. *Other Bank Loans Dummy* equals one if an M&A is financed by bank loan, and zero otherwise. *Debt Issues Dummy* equals one if an M&A is financed by debt issue, and zero otherwise. *Equity Issues Dummy* equals one if an M&A is financed by common stock issue and zero otherwise.

4. 3. 2. 2 Announcement Returns

The announcement returns are measured by the cumulative abnormal return over days (–3, +3). The cumulative abnormal return is calculated using the market model with the CRSP equally weighted index as the market return. Acquirer's daily return is used, together with the return on the CRSP equally weighted index over days -200 to -20, where day 0 is the event date.

4. 3. 2. 3 Changes in Operating Performance

In order to examine the effect of sources of financing to change in operating performance of M&As, the *Change in ROA* from year $t - 1$ to $t + 1$ is used as the measure. *ROA* is the ratio of earnings before interest and tax to non-cash total assets. Non-cash total assets is used to link with the previous chapter.

4. 3. 2. 4 Net Changes in Operating Performance

Considering the time trend, the net change in operating performance is used to capture the net effect of an M&A. Each acquirer firm is matched with non-acquiring peers without any M&As at the announcement year. The sample of acquirer-comparable pairs is constructed by propensity score matching with firms have the same 2-digit SIC code in Compustat. The propensity scores are calculated based on the estimates from the logistic regression using the data one year before the M&As for both acquiring firms and non-acquiring firms. The nearest neighbour of propensity scores is matched based on firm size, market-to-book ratio, cash flow, leverage, tangibility, capital expenditure, R&D, dividends and cash flow volatility.

"With replacement method" is used in the propensity score matching. For each acquiring firm, a comparable firm is selected if the firm has the nearest neighbour of propensity score. Suppose for another acquiring firm, the same comparable firm is chosen in this procedure, and this comparable firm will be used twice in the sample. The details about the propensity score matching are provided in Table 4.4A.

Table 4.4B shows the univariate statistics about the differences in the propensity score between acquirer firms and their matched non-acquirer firms. The propensity scores are generated based on the data of both acquirers and non-acquirers one year before the M&As. The mean of the difference is 0.050, and the median is 0.017. The small difference in the propensity score implies a

reasonable matching between acquirer firms and their matched non-acquirer firms.

4. 3. 2. 5 Institutional Ownership

The acquirer's level of corporate governance is measured of *Institutional Ownership*. *Institutional Ownership* is the ratio of shares owned by institutional investors to the total shares outstanding at the end of a quarter before the announcement date. *Block* is a dummy variable that equals one if there exists a block institutional ownership which exceeds 5% of the total shares outstanding and equals zero otherwise.

4. 3. 2. 6 Bankruptcy Risk

Altman (1968) Z-score is used as the measure of a firm's bankruptcy risk. Following Altman (1968), if a firm has a Z-score less than 1. 81, then the firm is considered to have high bankruptcy risk. If a firm has a Z-score greater than 1. 81, then the firm is considered to have low bankruptcy risk.

4. 3. 2. 7 Control Variables

The following control variables are used: *Relative Value* is the ratio of deal value to the sum of the acquirer's market value of equity and deal value, *Hostile* is a dummy variable that equals one if an M&A is hostile and zero otherwise, *Cash* is the ratio of cash and marketable securities to non-cash assets, where non-cash

assets are total assets less corporate cash holdings, *Size* is the logarithm of non-cash assets, *Cash Flow* is the ratio of income before extraordinary items to non-cash assets, *M/B* is defined as the market value of equity plus non-cash assets minus book value of equity, divided by non-cash assets, *Leverage* is the ratio of long-term debts to non-cash assets, *Tangibility* is the ratio of plant, property and equipment to non-cash assets, *Capital Expenditure* is the ratio of capital expenditures to non-cash assets, *R&D* is the ratio of research and development expenses to non-cash assets, *Dividends* is the ratio of dividends to non-cash assets and *Cash Flow Volatility* is the standard deviation of *Cash Flow* in the prior five years. The above control variables such as size, market-to-book ratio, hostile dummy etc., have been widely used in a vast number of studies (e.g., Moeller et al., 2004; Servaes, 1991; Lang et al., 1991; Heron and Lie, 2002) as control variables to examine the performance of M&As.

4. 4 Results

This section reports the results. First, I report the summary statistics. Second, I report the univariate analysis based on announcement returns. Next, I examine how do the sources of financing affect the acquiring firm's stock return performance and operating performance. Then I investigate the determinants of an acquirer's choice of sources of financing. Further, I analyse the results of acquisition premiums. In addition, I report the results of sub-group analysis based on corporate governance, and sub-group analysis based on bankruptcy risk. Finally, I report the result of robustness checks.

4. 4. 1 Summary Statistics

Table 4.1A shows the summary statistics. The mean of *CAR (-3, +3)* for all M&As in the sample is 0.0138, and the median is 0.0055. Therefore, on average the announcement returns of M&As are slightly greater than zero. Moreover, the mean of changes in operating performance for all M&As in the sample is -0.0181 and the median of changes in operating performance is -0.0116. *Net Change in ROA* is calculated based on propensity score matching with peers. The mean of *Net Change in ROA* of the sample is 0.0135 and the median is 0.0149. This suggests that compared with their peers who do not have acquisitions, the acquiring firms generate higher operating performance.

Table 4.1B shows the summary of the number of deals. In this sample, U.S. M&As with cash payment are chosen. The M&As in the sample are entirely financed by one of the following sources: corporate cash holdings, bank loans, debt issues and equity issues. The sample is to link with the previous chapter which compares the performance of M&As financed by bank lines of credit with corporate cash holdings. In this sample, 271 M&As are entirely financed by corporate cash holdings, 82 M&As are entirely financed by other bank loans, 56 M&As are entirely financed by debt issues, and 40 M&As are entirely financed by equity issues.

4. 4. 2 Univariate Analysis of Announcement Returns

Table 4.2 reports the univariate analysis on acquirers' announcement returns. *CAR (-3, +3)* is the cumulative abnormal return over days (-3, +3) around announcement date based on the market model with the equally weighted index. A mean test and a Wilcoxon median test based on three groups are reported.

The first row compares the *CAR (-3, +3)* for acquirers financed by other bank loans and corporate cash holdings. The mean of *CAR (-3, +3)* for acquirers financed by bank loans (corporate cash holdings) is 0.031 (0.002). The difference is 0.029, and the t-test shows the difference in mean is significant at 0.01. The median of *CAR (-3, +3)* for acquirers financed by bank loans (corporate cash holdings) is 0.022 (0.002), and the median test shows a p-value of 0.04. The results indicate that the M&As financed by other bank loans have higher announcement shareholder returns than the M&As financed by corporate cash holdings. The evidence is consistent with prior findings. For example, Bharadwaj and Shivdasani (2003) find that the acquirers financed by banks have higher abnormal returns in tender offers. The second row compares the *CAR (-3, +3)* for acquirers financed by debt issues and corporate cash holdings. The mean of CAR for acquirers financed by debt issues (corporate cash holdings) is 0.049 (0.002). The t-test shows the difference is statistically significant at 0.01 between the sample mean. Moreover, the median of *CAR (-3, +3)* for acquirers financed by debt issues (corporate cash holdings) is 0.030 (0.002) and also significant at 0.01. This is consistent with Martynova and Renneboog (2009) in that acquisitions financed by debt have higher performance than those financed by internally

generated funds. The third row compares the *CAR (-3, +3)* for acquirers financed by equity and acquirers financed by corporate cash holdings. Both the mean and median of CAR for the acquirers with the two sources of funding are close to zero and the difference is not statistically significant.

4. 4. 3 Regression on Announcement Returns

Table 4.3 shows the regression on the sources of financing between equity issue, debt issue, bank loans and corporate cash holdings on acquirers' announcement returns. The estimate is based on the following equation:

$$
\begin{aligned}
CAR_{i,t} = \alpha &+ \beta_1 Other\ Bank\ Loans\ Dummy + \beta_2\ Debt\ Issues\ Dummy \\
&+ \beta_3 Equity\ Issues\ Dummy + \beta_4 Relative\ Value + \beta_5 Hostile \\
&+ \beta_6 Size_{t-1} + \beta_7 Cash\ Flow_{t-1} + \beta_8 M/B_{t-1} + \beta_9 Leverage_{t-1} \\
&+ \beta_{10} Tangibility_{t-1} + \beta_{11} Capital\ Expenditure_{t-1} + \beta_{12} R\&D_{t-1} \\
&+ \beta_{13} Dividends_{t-1} + \beta_{14} Cash\ Flow\ Volatility_{t-1} \\
&+ Year\ Dummy\ Variables + Industry\ Dummy\ Variables \\
&+ \varepsilon_{i,t} \quad\quad\quad\quad\quad\quad\quad\quad\quad\quad\quad\quad\quad\quad\quad (4.1)
\end{aligned}
$$

The results show that the M&As financed by debt (other bank loans and debt issues) outperform the M&As financed by corporate cash holdings, while the performance of M&As financed by equity issues is insignificant. Specifically, the coefficient of *Other Bank Loans Dummy* is 0.021 (p-value = 0.08), suggesting acquirers financed by bank loans also have higher performance than acquirers financed by internally generated cash. The results of bank loans are consistent

with previous findings (e.g., Bharadwaj and Shivdasani, 2003). In addition, the coefficient of *Debt Issues Dummy* is 0.028 (p-value = 0.05). The results indicate that the performance of M&As with all cash payment are different when firms use different sources of funding and acquirers financed by other bank loans and debt issues receive significantly higher stock return performance around announcement period than acquirers financed by corporate cash holdings. The results are consistent with the hypothesis based on agency problems between shareholders and managers in that acquirers benefit from the monitoring of debt in M&As.

4. 4. 4 Changes in Operating Performance

Table 4.4C shows the effect of sources of financing on the changes in operating performance.[9] The estimate is based on the following equation:

$$\Delta ROA(or\ Net\ \Delta ROA)$$

$$= \alpha + \beta_1 Other\ Bank\ Loans\ Dummy + \beta_2\ Debt\ Issues\ Dummy$$

$$+ \beta_3 Equity\ Issues\ Dummy + \beta_4 Relative\ Value + \beta_5 Hostile$$

$$+ \beta_6 Size_{t-1} + \beta_7 ROA_{t-1} + \beta_8 M/B_{t-1} + \beta_9 Leverage_{t-1}$$

$$+ \beta_{10} Tangibility_{t-1} + \beta_{11} Capital\ Expenditure_{t-1} + \beta_{12} R\&D_{t-1}$$

$$+ \beta_{13} Dividends_{t-1} + \beta_{14} Cash\ Flow\ Volatility_{t-1}$$

$$+ Year\ Dummy\ Variables + Industry\ Dummy\ Variables$$

$$+ \varepsilon_{i,t} \hspace{4cm} (4.2)$$

---

[9] Since the dependent variable requires the availability of the data from t-1 to year t+1, the sample size is reduced to 425 M&As in this regression.

The results are consistent with the stock return performance, showing a similar pattern. The M&As financed by debt outperform the M&As financed by internally generated funds, and the M&As financed by equity does not show a significant effect.

In Column 1, the dependent variable is *Change in ROA* from one year before the M&As and one year after the M&As. The coefficient for *Other Bank Loans Dummy* is 0.043 (p-value = 0.01), and the coefficient for *Debt Issues Dummy* is 0.027 (p-value = 0.06). This implies the operating performance is positively related to other bank loans and debt issues. Moreover, *Equity Issues Dummy* is not significant in this column. In Column 2, the dependent variable is *Net Change in ROA* compared with matched non-acquiring peers. This is to isolate the effect of the M&As. The coefficient of *Debt Issues Dummy* is 0.051(p-value = 0.08), and the coefficient of *Bank Loans Dummy* is 0.043, showing a significant positive effect (p-value = 0.06). The coefficient of *Equity Issues Dummy* is not significant. Overall, the results in Table 4.4C show the M&As financed by both debts from financial intermediaries and directly placed debt have the higher operating performance than the M&As financed by internally generated funds. The results are consistent with the hypothesis based on shareholder-debtholder conflict.

4. 4. 5 The Choice of Sources of Financing

Multinomial logistic regression is used to investigate the determinants of the choices between different sources of financing between corporate cash holdings,

other bank loans, debt issues and equity issues. The model is based on the following equation:

$$Y_{i,t} = \alpha + \beta_1 Relative\ Value + \beta_2\ Hostile + \beta_3 Cash_{t-1}$$

$$+ \beta_4 Institutional\ Ownership_{t-1} + \beta_5 Size_{t-1} + \beta_6 Cash\ Flow_{t-1}$$

$$+ \beta_7\ M/B_{t-1} + \beta_8 Leverage_{t-1} + \beta_9 Tangibility_{t-1}$$

$$+ \beta_{10} Capital\ Expenditure_{t-1} + \beta_{11} R\&D_{t-1} + \beta_{12} Dividends_{t-1}$$

$$+ \beta_{13} Cash\ Flow\ Volatility_{t-1} + Year\ Dummy\ Variables$$

$$+ Industry\ Dummy\ Variables + \varepsilon_{i,t} \qquad (4.3)$$

The model assumes the choices of the source of funding are mutually exclusive. The dependent variable is sources of financing. It equals zero if an M&A is entirely financed by corporate cash holdings, equals one if an M&A is entirely financed by other bank loans, equals two if an M&A is entirely financed by debt issues, and equals three if an M&A is entirely financed by equity issues.

Table 4.5 displays the results. Column 1 shows the likelihood of acquirers' choice between other bank loans and corporate cash holdings, Column 2 indicates the choice between debt issues and corporate cash holdings, and Column 3 shows the choice between equity issues and corporate cash holdings. When firms have the higher level of cash, they are less likely to use other bank loans and debt issues than corporate cash holdings. No evidence as to the effect of institutional ownership on the choice of sources of funding is found, although the choice affects the performance of M&As.

4. 4. 6 Acquisition Premiums

The sources of funding and acquisition premiums are examined. The estimate is based on the same specification in Equation (4.1). Three intervals are used to measure acquisition premiums: the ratios of the offer price to the target share price one day, one week, or four weeks before the announcement of M&As. Acquirers with greater agency problems between shareholders and managers may tend to overpay the target firms. From this viewpoint, acquirers financed by cash pay higher premiums, while acquirers financed by debt pay lower premiums.

Table 4.6 reports the results.[10] In Column 1, coefficient of *Other Bank Loan Dummy* is -0.206 (p-value = 0.04) and the coefficient of *Debt Issues Dummy* is -0.196 (p-value = 0.07). This implies that the acquirers financed by other bank loans and debt issues pay a lower premium for the acquisition than the acquirers financed by corporate cash holdings. Column 2 and Column 3 show a similar pattern. Concerning the equity issues, the coefficient is not significant. This is consistent with the interpretation that entrenched managers waste their resources in value-destructive acquisitions, and acquiring firms benefit from the monitoring of debtholders thus pay a lower premium. The evidence as to acquisition premiums is consistent with the agency hypothesis that M&As financed by other bank loans and M&As financed by debt issues have higher performance than those financed by corporate cash holdings.

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[10] There are 125 M&As in the sample whose data of acquisition premiums are available at Thomson One.

4. 4. 7 Sub-Group Analysis on Corporate Governance

Sub-group analysis based on block institutional ownership is conducted. Acquirers with a blockholder indicate a higher level of corporate governance, while acquirers do not have a blockholder indicate a lower level of corporate governance.

Table 4.7A displays the results of announcement returns. The model is based on Equation (4.1). As shown in Column 1, in the sub-group of acquirers without a blockholder, the coefficient of *Other Bank Loans Dummy* is 0.033 (P-value = 0.07), and the coefficient of *Debt Issues Dummy* is 0.038 (p-value = 0.05). In Column 2, the sub-group of acquirers with a blockholder, both Other *Bank Loans Dummy* and *Debt Issues Dummy* are insignificant. In addition, the coefficients of *Equity Issues Dummy* are not significant in any of the groups. Table 4.7B displays the results of the changes in operating performance. The model is based on Equation (4.2). For the sub-group of acquirers without a blockholder, the coefficient of *Other Bank Loans Dummy* is 0.110 (p-value = 0.02) and the coefficient of *Debt Issues Dummy* is 0.179 (p-value = 0.01). For the sub-group of acquirers with a blockholder, the coefficient of both *Other Bank Loans Dummy* and *Debt Issues Dummy* are insignificant. The coefficients of *Equity Issues Dummy* are not significant in both groups. Table 4.7C reports the results of acquisition premiums. The model uses the same independent variables in Equation (4.1). Similar to the stock return performance and changes in operating performance, M&As financed by other bank loans and debt issues have higher performance for the sub-group of acquirers without a blockholder. In Column 1, the coefficient of *Other Bank*

Loans Dummy is -0.292 (p-value = 0.06) and the coefficient of *Debt Issues Dummy* is -0.480 (p-value = 0.01). In Column 2, both *Other Bank Loans Dummy* and *Debt Issues Dummy* are not significant. Similar results for premiums with other intervals are found.

The evidence of the performance of sub-group analysis indicates that the positive effects of debt financing on the performance M&As are only significant among weaker-governed firms. This indicate for firms already have good corporate governance, there is little potential for them to improve the performance with debt financing. Poorly governed firms benefit more from the monitoring from debtholders. Thus, M&As financed by other bank loans and debt issues have higher performance than those financed by corporate cash holdings in such group. The results support the hypothesis based on agency problems between shareholders and managers.

4. 4. 8 Heckman Two-Stage Estimation

Heckman (1979) two-stage selection model is used to tackle self-selection problems. In the first stage, *Inverse Mills Ratios 1* is from the prediction of logistic regression in Table 4.4A and *Inverse Mills Ratio 2* is from the multinomial logistic regression in Table 4.5. In the second stage, *Inverse Mills Ratios 1* and *Inverse Mills Ratio 2* are included in the regressions. The extended Heckman two-stage selection model has been used in previous literature. Wu and Shen (2013) and Grace and Phillips (2008) adopt the multinomial logistic model in the first stage of the selection model. Also, a number of papers (e.g., Rutherford et al., 2005;

Muller III and Riedl, 2002; Huang and Rutherford, 2007; Daniels et al., 2009; Grace and Phillips, 2008) include two or more Inverse Mills Ratios generate from several first stage models in the second stage of this analysis.

The second stage regression of acquiring firms' announcement effect is based on the following equation:

$$CAR_{i,t}$$
$$= \alpha$$
$$+ \beta_1 Other\ Bank\ Loans\ Dummy\ (\beta_1 Debt\ Issues\ Dummy, or\ \beta_1 Equity\ Issues\ Dummy)$$
$$+ \beta_2 Relative\ Value + \beta_3 Hostile + \beta_4 Size_{t-1} + \beta_5 Cash\ Flow_{t-1} + \beta_6 M/B_{t-1}$$
$$+ \beta_7 Leverage_{t-1} + \beta_8 Tangibility_{t-1} + \beta_9 Capital\ Expenditure_{t-1} + \beta_{10} R\&D_{t-1}$$
$$+ \beta_{11} Dividends_{t-1} + \beta_{12} Cash\ Flow\ Volatility_{t-1} + \beta_{13} Inverse\ Mills\ Ratio\ 1$$
$$+ \beta_{14} Inverse\ Mills\ Ratio\ 2 + Year\ Dummy\ Variables$$
$$+ Industry\ Dummy\ Variables + \varepsilon_{i,t} \qquad\qquad (4.4)$$

Table 4.8A shows the results of announcement returns. The coefficient of *Other Bank Loans Dummy* is 0.029 (p-value = 0.08) and the coefficient of *Debt Issues Dummy* is 0.039 (p-value = 0.07). The coefficient of *Equity Issues Dummy* is not significant.

The second stage regression of operating performance is based on the equation:

$$Net \ \Delta ROA$$

$$= \alpha$$

$$+ \ \beta_1 Other \ Bank \ Loans \ Dummy \ (\beta_1 Debt \ Issues \ Dummy, or \ \beta_1 Equity \ Issues \ Dummy)$$

$$+ \ \beta_2 Relative \ Value + \beta_3 Hostile + \beta_4 Size_{t-1} + \beta_5 ROA_{t-1} + \beta_6 \ M/B_{t-1}$$

$$+ \ \beta_7 Leverage_{t-1} + \beta_8 Tangibility_{t-1} + \beta_9 Capital \ Expenditure_{t-1} + \beta_{10} R\&D_{t-1}$$

$$+ \ \beta_{11} Dividends_{t-1} + \beta_{12} Cash \ Flow \ Volatility_{t-1} + \beta_{13} Inverse \ Mills \ Ratio \ 1$$

$$+ \ \beta_{14} Inverse \ Mills \ Ratio \ 2 + Year \ Dummy \ Variables$$

$$+ \ Industry \ Dummy \ Variables + \varepsilon_{i,t} \tag{4.5}$$

Table 4.8B shows the results of changes in operating Performance. The coefficient of *Other Bank Loans Dummy* is 0.078 (p-value = 0.06) and the coefficient of *Debt Issues Dummy* is 0,085 (p-value = 0.07). The coefficient of *Equity Issues Dummy* is not significant. Overall, after controlling for self-selection problems, the evidence is consistent with the findings in Table 4.3 and Table 4.4C that M&As financed by other bank loans and debt issues receive higher performance than those financed by corporate cash holdings. The results support the hypothesis of agency problems between shareholders and managers.

4. 4. 9 Sub-Group Analysis on Bankruptcy Risk

The sample is divided into sub-groups by the level of agency conflict between shareholders and debtholders. Altman's Z-score (Altman, 1968) is taken as the measure of bankruptcy risk. An Altman Z-score less than 1.81 indicates a high bankruptcy risk, while an Altman Z-score greater than 1.81 indicates a low bankruptcy risk. The hypothesis based on agency problems between

shareholders and debtholders predicts that when there is a higher level of conflict of interest between them, using debt to finance M&As will not generate high performance to acquirers.

The results of announcement returns are reported in Table 4.9A. The model is based on Equation (4.1). Column 1 shows the results for acquirers with lower bankruptcy risk. The coefficient of *Other Bank Loans Dummy* is at 0.031 (p-value = 0.04), and the coefficient of *Debt Issues Dummy* is 0.027 (p-value = 0.08). Column 2 shows the results for acquirers with higher bankruptcy risk. In this column, I do not find the coefficients of any dummy variables are significant. The results of operating performance are reported in Table 4.9B. The model is based on Equation (4.2). The results show a similar pattern with the stock return performance. In Column 1, for firms with lower bankruptcy risk, the coefficient for *Other Bank Loans Dummy* is 0.055 (p-value = 0.06) and the coefficient for *Debt Issues Dummy* is 0.066 (p-value = 0.05). When firms have higher bankruptcy risk, the coefficients for *Other Bank Loans Dummy* and *Debt Issues Dummy* are insignificant.

The evidence from Table 4.9A and Table 4.9B implies that there are positive effects associated with bank financing and debt financing due to the corporate governance role of debtholders, however, when agency problems between shareholders and debtholders are severe, the positive effect of bank financing and debt financing are eliminated by the negative effect of leverage. Overall, the findings support both the hypothesis of agency problems between shareholders

and debtholders and the agency problems between shareholders and debtholders.

4. 4. 10 Robustness Testing

This section reports robustness testing.

4. 4. 10. 1 Acquiring Firms with Multiple M&As

Since an acquirer may make multiple M&As during one year, and each M&A may bring to different effects to the firm. In order to avoid the possible inaccuracy, a sample is constructed by including only one deal for each acquirer during one fiscal year.

Table 4.10A shows the results of announcement returns. The model is based on Equation (4.1). The coefficient of *Other Bank Loans Dummy* and the coefficient of *Debt Issue Dummy* are positive and significant. Table 4.10B shows the results of changes in operating performance. The model is based on Equation (4.2). Column1 reports the *Change in ROA* and Column 2 reports *Net Change in ROA*. The coefficients of *Other Bank Loans Dummy* and the coefficient of *Debt Issues Dummy* are both positive and significant in the two columns. The results in Table 4.10A and Table 4.10B show the performance of M&As are positively related to other bank loans and debt issues. After excluding firms with more than one M&As, the results are consistent with the hypothesis based on agency problems between shareholders and managers.

4. 4. 10. 2 Completion Year

In the previous analysis, announcement year is taken as the year t in the analysis of changes in operating performance. Since the completion year may be later than the announcement year, robustness testing is conducted on the changes in operating performance with the completion year as the year t.

The results are displayed in Table 4.11. The model is based on Equation (4.2). The dependent variable in Column 1 is the *Change in ROA*. The dependent variable in Column 2 is the *Net Change in ROA*. The coefficients of *Other Bank Loans Dummy* and *Debt Issues Dummy* are positive and significant in the two columns, consistent with Table 4.4C. This supports the hypothesis based on agency problems between shareholders and managers.

4. 4. 10. 3 Alternative Windows

CAR (0, 0) and CAR (-1, +1) are used as alternative event windows to conduct robustness check and report the results in Table 4.12. The model is based on Equation (4.1). In both columns, the coefficients of *Other Bank Loans Dummy* and *Debt Issues Dummy* are positive and significant. This is consistent with the results in Table 4.3 that the announcement returns are higher for the M&As financed by other bank loans and debt issues.

4. 4. 10. 4 Alternative Measure of Corporate Governance

Institutional ownership is used as an alternative measure of corporate governance. The sample is divided into sub-groups based on the median of the ratio of institutional ownership, where above median institutional ownership indicates a higher level of corporate governance and below median institutional ownership indicates a lower level of corporate governance.

Table 4.13A shows the results of announcement returns. The model is based on Equation (4.1). For firms with below median institutional ownership, the coefficient of *Other Bank Loans Dummy* and the coefficient of *Debt Issues Dummy* are positive and significant, and those are not significant for firms with above median institutional ownership. Table 4.13B shows the results of the changes in operating performance. The model is based on Equation (4.2). For firms with below median institutional ownership, the coefficient of *Other Bank Loans Dummy* and the coefficient of *Debt Issues Dummy* are positive and significant, and those are not significant for firms with above median institutional ownership. The results are consistent with the agency hypothesis based on shareholder-debtholder conflict.

4. 4. 10. 5 The Public Status of Target Firms

Robustness testing is conducted by considering the public status of target firms to test if the performance is different for M&As with public and private targets. The public status of targets shows differences in the degree of agency problems and

the degree of information asymmetry. Public firms show a lower degree of information asymmetry and a higher degree of agency problems comparing with private firms. A dummy variable *Public* is used as an additional control variable. It equals one if a target firm is a public firm, and equals zero otherwise.

The results of announcement returns are reported in Table 4.14A. The control variables are the same as Equation (4.1). The coefficient of *Other Bank Loans Dummy* and the coefficient of *Debt Issues Dummy* are positive and significant. The results of changes in operating performance are reported in Table 4.14B. The control variables are the same as Equation (4.2). The coefficient of *Other Bank Loans Dummy* and the coefficient of *Debt Issues Dummy* are positive and significant in both columns. The results are consistent with the agency hypothesis after including the public status of target firms as an additional control variable.

4. 4. 10. 6 Alternative Comparable Firms

In the previous analysis, the comparable firms are matched based on propensity score matching "with replacement method". In this section, "without replacement method" is used as an alternative method for robustness checks.

The results are displayed in Table 4.15. The dependent variable is the *Net Change in ROA*. The estimate is based on Equation (4.2). The coefficient of *Other Bank Loans Dummy* and the coefficient of *Debt Issues Dummy* are positive and significant. Consistent results are found after using, "without replacement method", as an alternative matching method for the propensity score matching.

4. 4. 11 Discussion

The empirical results above show that acquiring firms financed by other bank loans and acquiring firms financed by debt issues have higher performance than those financed by corporate cash holdings. This is consistent with the free cash flow theory (Jensen, 1986) that internally generated cash is more flexible for managers to peruse their own agenda through acquisitions than debt financing. The effect of bank loans is consistent with the literature in bank monitoring effect, such as the corporate governance role as mentioned by Byers et al. (2008) and Ahn and Choi (2009), and the information transmitter role as demonstrated by Fama (1985),James (1987), and Lummer and McConnell (1989). The effect of debt issues is consistent with the literature of debt monitoring effect, such as Stulz (1990), D'Mello and Miranda (2010), Chava and Roberts (2008), Maloney et al. (1993), and etc.. The results are also consistent with Bharadwaj and Shivdasani (2003) and Martynova and Renneboog (2009) who show that acquirers with bank financing and debt financing, respectively, have higher announcement effect than those financed internally.

The sub-group analysis based on corporate governance show that bank financing and debt financing benefit the poorly governed firm. This is consistent with Bharadwaj and Shivdasani (2003) and Byers et al. (2008) that bank monitoring improves the performance of poor performers. Moreover, the sub-group analysis based on bankruptcy risk show that when bankruptcy risk is high, using bank loans and debt issues in M&As does not increase firm value. This supports the argument of Jensen and Meckling (1976) that leverage increases the agency cost

of debt. The results of bank loans are also consistent with the findings of Rajan (1992), Houston and James (1996) and Santos and Winton (2008) who indicate that banks can use their advantages to benefit themselves instead of shareholders of the borrowers.

4. 5 Conclusion

I examine how sources of financing between corporate cash holdings, bank loans, equity issues, and debt issues and affect the performance of M&As. I develop three hypotheses based on agency problems between shareholders and managers, agency problems between shareholders and debtholders and information asymmetry.

I find that acquirers financed by other bank loans and debt issues have higher performance than acquirers financed by corporate cash holdings in both announcement returns and changes in operating performance. I do not find that significant effect of equity financing on the performance of M&As. Moreover, I find acquirers financed by bank loans and debt issue pay lower premiums to the targets. The evidence from the sub-group analysis based on corporate governance shows acquirers with a lower level of corporate governance benefit from the choice of debt financing. The results are consistent with the agency hypothesis associated with shareholder-debtholder conflict. I also find some evidence supports the hypothesis of conflict of interest between shareholders and debtholders. The positive effect of using debt on the performance of M&As is only significant when acquirers have lower of bankruptcy risk.

Overall, the results imply that acquirers benefit from the monitoring of debt in M&As. The positive effect of debt financing is pronounced for acquirers with a lower level of corporate governance, suggesting the monitoring of debt improves the corporate governance for weaker-governed firms. However, when there is substantial conflict of interest between shareholders and debtholders, using debt financing may not able to generate higher performance than those financed by corporate cash holdings. I conclude that agency problems play an important role in determining the performance of M&As when acquirers use different sources of financing with all cash payment.

Chapter 5. Corporate Cash Holdings, Bank Lines of Credit and the Value of Firm Diversification in M&As

5. 1 Introduction

Previous literature shows mixed views on the value associated with firm diversification. Lang and Stulz (1994) and Berger and Ofek (1995) find that there is a significant discount associated with diversification. A vast number of papers (e.g., Servaes, 1996; Denis et al., 1997; Aggarwal and Samwick, 2003; Hoechle et al., 2012) show that diversification discount is due to agency problems. Shin and Stulz (1998), Rajan et al. (2000) and Scharfstein and Stein (2000) argue that diversified firms suffer from misallocation of internal capital. While other literature argues that diversification does not destroy value and that the discount of diversified firms is due to endogeneity problems (e.g., Campa and Kedia, 2002), acquisitions to already discounted firms (e.g., Graham et al., 2002), measurement bias (e.g., Custodio, 2014) and the result of risk reduction effects of diversification (e.g., Mansi and Reeb, 2002; Glaser and Müller, 2010).

Though there is a debate regarding the value of firm diversification, event studies (e.g., Moeller and Schlingemann, 2005; Dos Santos et al., 2008), which link diversification and M&As, show that diversifying M&As have lower performance and firms have a significant decrease in excess value. The literature on M&As shows that different sources of financing affect the performance of the M&As differently (Schlingemann, 2004; Martynova and Renneboog, 2009). Since different sources of financing represent different degree of agency problems, and

agency problems are associated with the value of firm diversification, thus, the value of firm diversification may be affected by the sources of financing of M&As. Therefore, it is important to examine the impact of sources of financing of M&As on the value of firm diversification.

Corporate cash holdings and bank lines of credit are two important forms of corporate liquidity, both account for a large proportion of total assets. Corporate cash holdings are more flexible for managers to peruse their own agenda through value-destructive acquisitions than debt financing (Jensen, 1986). Firms with excess cash are more likely to make diversifying acquisitions to unattractive targets Harford (1999), while bank lines of credit, as substitutes for corporate cash holdings, are monitored by banks (Sufi, 2009; Yun, 2009; Nini et al., 2009). The acquiring firms may use different forms of corporate liquidity to pursue different diversification strategies, leading to changes in the value of firm diversification.

In this chapter, I examine how the sources of financing between bank lines of credit and corporate cash holdings in M&As affect the value of firm diversification. I develop two hypotheses based on agency problems between shareholders and managers, and agency problems between shareholders and debtholders. First, self-interested managers are able to derive their personal benefits through value-destructive diversification strategy, while bank lines of credit limit managerial discretion. Therefore, I expect that firms financed by bank lines of credit in M&As have a higher value of firm diversification than the firms financed by corporate cash holdings. Second, bank lenders prefer lower default risks via diversification.

They have the incentive and power to interfere in firms' decisions on investment, enhancing debtholder value while reducing shareholder value. Therefore, I expect that firms financed by bank lines of credit in M&As have a lower value of firm diversification than the firms financed by corporate cash holdings.

I construct a sample of 623 U.S. M&As paid by cash from 1985 to 2013. I find that the firms entirely financed by bank lines of credit in M&As have a smaller reduction in excess value than the firms financed by corporate cash holdings. I also find that the firms financed by bank lines of credit are associated with more efficient internal resources transfers and a higher value added by allocation than those financed by corporate cash holdings. I find that firms with higher institutional ownership are more likely to use bank lines of credit in M&As. Consistent results are found after controlling self-selection problems with Heckman (1979) two-stage selection model. I conduct sub-group analysis based on corporate governance and find in the sub-group of firms with a lower degree of corporate governance the firms have a smaller reduction in excess value, more efficient internal resources transfers and a higher value added by allocation. Moreover, bank lines of credit are associated with a higher value of firm diversification when firms have a lower level of corporate governance and a lower level of bankruptcy risk. I conclude that this is consistent with the hypothesis of agency problems between shareholders and managers.

This chapter contributes to the literature in the following ways:

First, my research contributes to the literature on how the source of financing affect the value of firm diversification. To my knowledge, only a few papers examine the source of funding of cash M&As (e.g., Bharadwaj and Shivdasani, 2003; Martynova and Renneboog, 2009). Previous papers do not differentiate between bank lines of credit and other bank loans, bank financing and non-bank financing. Given a large magnitude of bank lines of credit, I believe that it is important to examine bank lines of credit as a source of financing separately. Moreover, these papers focus on the stock return performance of the M&As, and I extend both papers in that I conduct analysis that links sources of financing in M&As and the changes in the value of firm diversification.

Second, my research contributes to the literature on corporate diversification in M&As settings. Previous literature in corporate diversification focuses on how agency problems affect the value of firm diversification (e.g., Servaes, 1996; Denis et al., 1997). Other papers such as Moeller and Schlingemann (2005) and Dos Santos et al. (2008) examine the effect of diversification on the performance of M&As and the changes in excess value. While these studies do not examine how sources of financing in M&As affect the value of diversification differently, I complement the literature by investigating how sources of financing in M&As affect the changes in the value of firm diversification.

Third, my research contributes to the literature on the agency perspective about bank lines of credit. Previous literature focuses on how agency

problems affect a firm's choice between bank lines of credit and corporate cash holdings. Both Sufi (2009) and Yun (2009) show that poorly governed firms are less likely to hold bank lines of credit. My research differs from existing literature in that I conduct analysis on how bank lines of credit affect the value of firm diversification.

The chapter is organised as follows. Section 5. 2 develops the hypotheses. Section 5. 3 describes the data and the variables. Section 5. 4 presents the results. Section 5. 5 concludes the chapter.

5. 2 Hypotheses

I develop the hypothesis in this section. I discuss the relation of sources of financing between corporate cash holdings and bank lines of credit and value of firm diversification from the two perspectives: (1) Agency problems between shareholders and managers and (2) Agency problems between shareholders and debtholders.

5. 2. 1 Agency Problems between Shareholders and Managers

The agency theory (Jensen and Meckling, 1976) shows that there is the conflict of interest between shareholders and managers. Managers will engage in the activities which benefit themselves instead of shareholder value maximisation. Shleifer and Vishny (1989) show that managers are likely to entrench themselves through diversifying acquisitions.

Corporate cash holdings can be used in a discretionary way and thus they are more flexible for managers to pursue their own agenda than external sources of financing. The free cash flow theory (Jensen, 1986) indicates entrenched managers will spend their cash on value-decreasing M&As instead of paying out to shareholders. Other studies including Lang et al. (1991), Myers and Rajan (1998) and Harford (1999) also show evidence that supports the agency problems associated with corporate cash holdings.

The literature on firm diversification shows that diversification discount in virtue of agency problems. Servaes (1996) and Denis et al. (1997) show that firms with higher insider ownership and outside blockholders are associating to a lower diversification discount. Aggarwal and Samwick (2003) address that managers choose to diversify for their private benefits instead of reducing risks. Shin and Stulz (1998), Rajan et al. (2000) and Scharfstein and Stein (2000) find that diversified firms engage in cross-subsidisation. Hoechle et al. (2012) argue that corporate governance variables can mostly explain diversification discount.

Previous literature shows the use of bank lines of credit mitigates agency problems between managers and shareholders. In the literature of financial intermediation, extensive papers include Diamond (1984), James (1987), Byers et al. (2008) and Ahn and Choi (2009) which show that borrowers benefit from the monitoring of banks, improving borrowers' corporate governance. Moreover, the literature on bank lines of credit including Sufi (2009) and Yun (2009) also shows that the covenants of bank lines of credit restrict the use of bank lines of credit, and weaker-governed firms are likely to hold more cash relative to bank

lines of credit. When firms use different sources of financing between corporate cash holdings and bank lines of credit in M&As, they may have different value consequences to the firm.

Since bank financing reduces the agency problems between shareholders and managers, it limits the reduction of value losses in M&As. Therefore, I have the following hypothesis:

Hypothesis 1: The value of firm diversification is higher for firms financed by bank lines of credit in M&As than those financed by corporate cash holdings in M&As.

5. 2. 2 Agency Problems between Shareholders and Debtholders

Conflict of interest exists between shareholders and debtholders. Managers may engage in shareholder value maximisation by investing in risky projects while debtholders may prefer lower firm risks through diversification.

The use of corporate cash holdings does not affect the capital structure. As mentioned by Opler et al. (1999), using internally generated funds avoids underinvestment problems when firms have good investment opportunities. In this case, corporate cash holdings enable firms to invest in M&As that maximise shareholder value.

However, bank lenders can control firms' investment decisions to benefit the lenders that may not benefit the shareholders of the firms. There are risk-reducing effects associated with firm diversification, Amihud and Lev (1981) show that diversified firms have lower firm risks than single segment firms because they generate imperfectly correlated cash flows with multiple lines of business. Mansi and Reeb (2002) and Glaser and Müller (2010) argue that such risk-reducing function of diversification enhances debtholder value and decreases shareholder value due to lower default risk. Mansi and Reeb (2002) find that the diversification discount is pronounced for firms with a higher debt level, while all equity firms do not exhibit significant diversification discount. In addition, the studies in financial intermediations also show that bank-dependent firms are facing potential hold-up problems. Rajan (1992) shows that banks are able to control firms' decisions on investment projects by informational monopoly. Houston and James (1996) argue the potential hold-up problems are particularly severe for firms with substantial growth opportunities. Therefore, I have the following hypothesis:

Hypothesis 2: The value of firm diversification is lower for firms financed by bank lines of credit in M&As than those financed by corporate cash holdings in M&As.

5. 3 Data and Variables

5. 3. 1 Data

The data on U.S. M&As with cash payment is collected from Thomson One database. Firm-level data is collected from Compustat Annual database and

segment-level is collected from Compustat Segment database. Data of bank lines of credit is collected from 10-K annual reports. Institutional ownership data is collected from Thomson Financial/Institutional database and insider ownership data is from the proxy statements. Both acquirers and targets are U.S. firms.

The sample period is from 1985 to 2013. The following screening procedures are conducted. First, the U.S. M&As with their source of financing are described as, "Line of Credit", "Corporate Funds", and, "Line of Credit, Corporate Funds", are identified in the database. Financial services firms and firms with financial services segments (SIC codes between 6000 and 6999) are excluded. Diversified firms are defined as firms with at least two segments having different SIC codes. Firms with same segment SIC codes are treated as single-segment firms. The M&As whose deal values are less than one million dollars are excluded. And observations with incomplete data are also excluded. After the screening procedures, a final sample of 623 M&A events is obtained. Among them, 233 M&As are entirely financed by corporate cash holdings, 265 M&As are entirely financed by bank lines of credit and 125 M&As are financed by a mixed source of bank lines of credit and corporate cash holdings.

5. 3. 2 Variables

5. 3. 2. 1 Sources of Financing

The sources of financing for M&As are identified in Thomson One database. For example, the database records an M&A made by, "Playtex Products Inc", with the

announcement date on 19 April 2007. The source of financing is recorded as, "Line of Credit", with the description that, "The transaction was financed by Playtex Products Inc th(r)ough the use of its revolving credit agreement". For another example, the database records an M&A made by, "Five Star Quality Care Inc", with the announcement date on 2 July 2008. The source of financing is recorded as "Corporate Funds", with the description that, "The transaction was financed through the use of Five Star Quality Care Inc's available cash on hand".

Two dummy variables are constructed to measure the sources of financing for M&As. *Bank Lines of Credit Dummy* equals one if an M&A is entirely financed by bank lines of credit, and equals zero otherwise. *Mixed Lines & Cash Dummy* equals one if an M&A is financed by mixed sources of bank lines of credit and corporate cash holdings, and equals zero otherwise.

5. 3. 2. 2 Diversification

Diversified firms are defined as firms have segments with at least two different SIC codes. The dummy variable *Firm Diversification* is used to distinguish between diversified firms and single-segment firms. *Firm Diversification* equals one for diversified firms and equals zero for single-segment firms.

5. 3. 2. 3 Changes in Excess Value

The difference of an acquirer's excess value one year after the M&As and one year before the M&As is used as the measure of change in the value of firm

diversification. The measure is originally developed by Berger and Ofek (1995), defined as the logarithm of the ratio of a firm's total value and the sum of imputed values for its segments as a stand-alone business. The imputed value is calculated based on the industry median sales ratio based on two-digit SIC code. *Excess Value* is defined as,

$$Excess\ Value = Ln(V/I(V)) \tag{1}$$

$$IV = \sum_{i=1}^{n} AI_i * \left(Ind_i(V/AI)_{mf}\right) \tag{2}$$

Where V is firm's total capital (market value of common equity plus book value of debt),
n is total number of segment i's firm,
$I(V)$ is imputed value of the sum of a firm's segments as stand-alone firms,
AI_i is segment i's value of accounting item used in the valuation multiple,
$Ind_i(V/AI)_{mf}$ is multiple of total capital to an accounting item for the median single-segment firm in the in segment i's industry.

A positive excess value implies the firm trades at a premium, and negative excess value implies a discount.

5. 3. 2. 4 Changes in Internal Resources Transfers

The difference of an acquirer's adjusted investment ratio one year after the M&As and one year before the M&As is used as the measure of the change in value transfer from/to a division. *Adjusted Investment Ratio,* developed by Rajan et al. (2000), is the industry-adjusted investment in a segment less the weighted average industry-adjusted investment across all the segments of a firm. This is defined as,

$$\frac{I_j}{BA_j} - \frac{I_j^{ss}}{BA_j^{ss}} - \sum_{j=1}^{n} w_j \left(\frac{I_j}{BA_j} - \frac{I_j^{ss}}{BA_j^{ss}} \right) \qquad (3)$$

Where ss refers to single segment firms,
I_j is capital expenditure of segment j,
BA_j is the book value of assets of segment j,
(I_j^{ss}/BA_j^{ss}) is the asset-weighted average capital expenditure to assets ratio for the single segment firms in the corresponding industry,
w_j is the ratio of segment assets to firm assets.

Following Rajan et al. (2000), the adjusted investments are divided into four groups depending on the segments' investment opportunities and resource-weighted opportunities.

5. 3. 2. 5 Changes in Value Added by Allocation

The difference of an acquirer's *Relative Value Added* one year after the M&As and one year before the M&As is used to capture of overall efficiency of transfers. *Relative Value Added* is developed by Rajan et al. (2000), is the sum of the weighted transfers across all segments. This is defined as,

$$\frac{\sum_{j=1}^{n} BA_j (q_j - \bar{q}) \left(\frac{I_j}{BA_j} - \frac{I_j^{ss}}{BA_j^{ss}} - \sum_{j=1}^{n} w_j \left(\frac{I_j}{BA_j} - \frac{I_j^{ss}}{BA_j^{ss}} \right) \right)}{BA} \qquad (4)$$

Where ss refers to single segment firms,
$\bar{q}$ is the asset-weighted average of segment q's for the firm.
I_j is capital expenditure of segment j.
BA_j is the book value of assets of segment j.
(I_j^{ss}/BA_j^{ss}) is the asset-weighted average capital expenditure to assets ratio for the single segment firms in the corresponding industry.
 w_j is the ratio of segment assets to firm assets.

5. 3. 2. 6 Control Variables

Following Berger and Ofek (1995) and Campa and Kedia (2002), the following control variables are used when estimating the changes in excess value: *Size* is the logarithm of total assets. *Profit* is the ratio of earnings before interest and tax to sales, *Growth* is the ratio of capital expenditure to sales, *LEV* is the ratio of long-term debts to total assets, *Size2* is the square of the logarithm of total assets. These variables are used to control firm size, profitability, growth opportunities and leverage. *Relative Value*, which is the ratio of deal value to the sum of the acquirer's market value of equity and deal value is also included as a control variable.

Following Rajan et al. (2000), the following control variables are used when estimating the changes of internal resources transfers and changes in relative value added by allocation: *Inverse of Average q* equals $1/qe$, where qe is the equally weighted average q across segment in the firm, *Diversity* is the standard deviation of a firm's asset-weighted q divided by equally weighted q, *Firm Size* is logarithm of total sales, *Herfindahl Index of Segment Size* is based on segment's share of total assets of the firm, *Coefficient of Variation of Segment qs* is the standard deviation of segment qs divided by the mean of segment qs, *Coefficient of Variation of Segment Size* is the standard deviation of segment's share of total firm assets divided by the average segment share. *Relative Value* is also included as a control variable.

5. 3. 2. 7 Institutional Ownership

Institutional Ownership is the ratio of shares owned by institutional investors to the total shares outstanding at the end of a quarter before the announcement date. *Block* is a dummy variable that equals one if there exists a block institutional ownership which exceeds 5% of the total shares outstanding and equals zero otherwise.

5. 3. 2. 8 Bankruptcy Risk

Altman (1968) Z-score is used as the measure a firm's bankruptcy risk. Following Altman (1968), if a firm has a Z-score less than 1.81, then the firm is considered to have high bankruptcy risk. If a firm has a Z-score greater than 1.81, then the firm is considered to have low bankruptcy risk.

5. 4 Results

The results are reported in this section. I first show the summary statistics. And then I report the univariate analysis of changes in excess value. Next, I examine the relationship between sources of financing and the acquiring firm's change in excess value. I further investigate the changes in internal resources transfers and the overall efficiency of transfers. I also analyse the likelihood of an acquirer's choice between bank lines of credit and corporate cash holdings in M&As. I then report the Heckman two-stage estimation for controlling self-selection problems.

Further, I report sub-group analysis based on block institutional ownership and bankruptcy risk. Finally, I conduct robustness testing.

5. 4. 1 Summary Statistics

Table 5.1 reports the summary statistics. Among the sample, the mean of changes in excess value for all firms is -0.0916, and the median is -0.1214. This implies that the value of firm diversification decreases after the M&As.

5. 4. 2 Univariate Analysis of Excess Value

Table 5.2 reports the univariate analysis on the changes in excess value between year $t+1$ and year $t-1$ for acquirers. The first row compares the change of excess value between M&As financed by bank lines of credit and corporate cash holdings. The mean of changes in excess value for firms entirely financed by bank lines of credit (corporate cash holdings) is -0.086 (-0.0172) and the median of that for firms entirely financed by bank lines of credit (corporate cash holdings) is -0.075 (-0.135). I conduct the mean test and the Wilcoxon Signed Rank median test and find that the differences are significant. The second row shows that the difference of changes in excess value is not significant between firms financed by mixed sources and firms entirely financed by corporate cash holdings. The third row suggests that the changes in excess value is not significantly different for firms entirely financed by bank lines of credit and firms financed by a mixed source of bank lines of credit and corporate cash holdings. The results are consistent with the interpretation that there is larger reduction in excess value for

the firms entirely financed by corporate cash holdings in M&As than those entirely financed by bank lines of credit. This is consistent with the hypothesis based on agency problems, suggesting that using corporate cash holdings in M&As decreases the value of firm diversification through agency problems between shareholders and managers.

5. 4. 3 Regression on Changes in Excess Value

The regression on the relation between sources of financing and changes in excess value is based on the following equation:

$$
\begin{aligned}
\Delta Excess\ Value \\
&= \alpha + \beta_1 Bank\ Lines\ of\ Credit\ Dummy \\
&+ \beta_2\ Mixed\ Lines\ \&\ Cash\ Dummy + \beta_3 Firm\ Diversification_{t-1} \\
&+ \beta_4 Relative\ Value + \beta_5 Size_{t-1} + \beta_6 Profit_{t-1} + \beta_7 Growth_{t-1} \\
&+ \beta_8 Size_{t-2} + \beta_9 Profit_{t-2} + \beta_{10} Growth_{t-2} + \beta_{11} Size_{t-3} \\
&+ \beta_{12} Profit_{t-3} + \beta_{13} Growth_{t-3} + \beta_{14} LEV_{t-1} + \beta_{15} Size2_{t-1} \\
&+\ Year\ Dummy\ Variables + Industry\ Dummy\ Variables \\
&+ \varepsilon_{i,t} \quad\quad\quad\quad\quad\quad\quad\quad\quad\quad\quad\quad\quad\quad\quad\quad (5.1)
\end{aligned}
$$

The dependent variable is the *Change in Excess Value* measures by sales multiples between year $t + 1$ and year $t - 1$. Table 5.3 displays the results.[11] The coefficient of *Bank Lines of Credit Dummy* is 0.090 (p-value= 0.06), implying that the use of bank lines of credit in M&As is positively associated with the changes in excess value. The coefficient of *Mixed Lines & Cash Dummy* is 0.053 (p-value = 0.32). The result shows that there is a smaller reduction of excess value for acquiring firms entirely financed by bank lines of credit than the acquiring firms entirely financed corporate cash holdings. This implies that agency problems are associated with corporate cash holdings, leading to value losses in diversified firms. While bank lines of credit mitigate agency problems between shareholders and managers when conducting M&As. The results are consistent with the hypothesis based on agency problems between shareholders.

5. 4. 4 Changes in Internal Resources Transfers

The regression on the changes in internal resources transfers and sources of financing is based on the following equation:

---

[11] Since the independent variables require the data from year t-1 to t-3, the sample size is reduced to 592 M&As in this regression.

$$\Delta \ Adjusted \ Investment$$

$$= \alpha + \beta_1 Bank \ Lines \ of \ Credit \ Dummy$$

$$+ \beta_2 \ Mixed \ Lines \ \& \ Cash \ Dummy + \beta_3 Relative \ Value$$

$$+ \beta_4 Invese \ of \ Average \ q_{t-1} + \beta_5 Diversity_{t-1} + \beta_6 Firm \ Size_{t-1}$$

$$+ \ Year \ Dummy \ Variables + Industry \ Dummy \ Variables$$

$$+ \ \varepsilon_{i,t} \hspace{4cm} (5.2)$$

The dependent variable is *Change in Adjusted Investment* from year $t-1$ to year $t+1$. The results are shown Table 5.4. Table 5.4A shows the basic specification developed by Rajan et al. (2000). Column 1 shows internal resources transfer to segments with high investment opportunities ($q > \bar{q}$) and high resource-weighted investment opportunities ($\lambda q > \overline{\lambda q}$), indicating resources transfer to segments with good investment opportunities. The coefficient of *Bank Lines of Credit Dummy* is 0.005 (p-value = 0.01) which shows that firms entirely financed by bank lines of credit in M&As have more internal resources transfer to well-performing segments than firms entirely financed by corporate cash holdings. Column 2 shows that the coefficient of *Bank Lines of Credit Dummy* is 0.001 (p-value = 0. 85) for segments with high investment opportunities and low resource-weighted investment opportunities. Column 3 shows that the coefficient of *Bank Lines of Credit Dummy* is -0.001 (p-value = 0. 21) for segments with low investment opportunities and high resource-weighted investment opportunities. Column 4 shows low investment opportunities ($q < \bar{q}$) and low resource-weighted investment opportunities ($\lambda q < \overline{\lambda q}$), indicating resources transfer to segments with poorly-performing investment opportunities. The coefficient of *Bank Lines of Credit Dummy* is -0.009 (p-value = 0.01), suggesting a decrease of inefficient

internal resources transfers. The results imply that firms entirely financed by bank lines of credit in M&As are associated with more efficient internal resources transfers among segments than firms entirely financed by corporate cash holdings. This is consistent with the hypothesis based on agency problems between shareholders and managers.

Following Rajan et al. (2000), the effect of focus, the effect of coefficient of variation of Segment q and the effect of coefficient of variation of segment size are examined and reported in Table 5.4B, Table 5.4C and Table 5.4D respectively. The results show a similar pattern after including these additional control variables. This is consistent with the hypothesis based on agency problems between shareholders and managers.

5. 4. 5 Changes in Overall Efficiency of Transfers

The effect of sources of financing on the changes in overall efficiency of transfers are based on the estimate in Equation (5.2). Table 5.5 reports the changes in overall efficiency of transfers. The dependent variable is the *Change in Relative Value Added by Allocation* from year $t-1$ to $t+1$. Following Rajan et al. (2000), *Relative Value Added by Allocation* is defined as the sum of the weighted transfers across all segments, which measures the overall value consequences. The coefficient of *Bank Lines of Credit Dummy* is 0.001 (p-value = 0.03), suggesting that using bank lines of credit in M&As increases the *Relative Value Added by Allocation.* This implies that when firms are entirely financed by bank lines of credit in M&As, there are more resources transfer to the segments with

good investment opportunities than the firms financed by corporate cash holdings. This is consistent with the hypothesis based on agency problems between shareholders and managers.

5. 4. 6 The Choice of Sources of Financing

In this section, multinomial logistic regression is used to investigate the likelihood of an acquirer's choice between bank lines of credit and corporate cash holdings as sources of financing. The following model is used in this analysis:

$$
\begin{aligned}
Y_{i,t} = \alpha &+ \beta_1 Relative\ Value + \beta_2 Firm\ Diversification_{t-1} + \beta_3 Cash_{t-1} \\
&+ \beta_4 Unused\ Lines\ of\ Credit_{t-1} + \beta_5 Institutional\ Ownership_{t-1} \\
&+ \beta_6 Size_{t-1} + \beta_7 Cash\ Flow_{t-1} + \beta_8 M/B_{t-1} + \beta_9 Leverage_{t-1} \\
&+ \beta_{10} Tangibility_{t-1} + \beta_{11} Capital\ Expenditure_{t-1} + \beta_{12} R\&D_{t-1} \\
&+ \beta_{13} Dividends_{t-1} + \beta_{14} Cash\ Flow\ Volatility_{t-1} \\
&+ Year\ Dummy\ Variables + Industry\ Dummy\ Variables \\
&+ \varepsilon_{i,t} \quad\quad\quad\quad\quad\quad\quad\quad\quad\quad\quad\quad\quad\quad\quad\quad (5.3)
\end{aligned}
$$

The dependent variable is the sources of financing. It equals zero if an M&A is entirely financed corporate cash holdings, equals one if an M&A is entirely financed by bank lines of credit, and equals two if an M&A is by financed a mixed source of bank lines of credit and corporate cash holdings. The independent variables are 1-year lagged variables. The dummy variable *Firm Diversification* is used to capture the difference between diversified firms and single-segment firms. *Cash* and *Unused Lines of Credit* are used to measure the level of different

forms of corporate liquidity available to the firm. *Institutional Ownership* is the measure of corporate governance. Higher *Institutional Ownership* indicates a better level of corporate governance. Other control variables such as *Size, Cash Flow* and so on are also included.

As displayed in Table 5.6[12], Column 1 shows the likelihood of an acquirer's choice of source of financing between bank lines of credit and corporate cash holdings. I find that the coefficient of the dummy variable. The coefficient of *Cash* is -13.010 (p-value = 0.01), showing that firms with a higher level of corporate cash holdings are less likely to use bank lines of credit as sources of financing. The coefficient of *Unused Lines of Credit* is 7.559 (p-value= 0.01), showing that firms with higher level of bank lines of credit are more likely to use bank lines of credit as sources of financing.[13] Moreover, the coefficient of *Institutional Ownership* is 1.511 (p-value= 0.03), suggesting that firms with higher level of corporate governance are more likely to choose bank lines of credit than corporate cash holdings as the sources of financing in M&As. In Column 2, the coefficient of *Institutional Ownership* is 2.380 (p-value = 0.01), suggesting that acquirers with a higher level of institutional ownership are more likely to use a mixed source of bank lines of credit and corporate cash holdings than use corporate cash holdings as the only source of financing. The results support the interpretation that firms with higher level of corporate governance are more likely to choose bank lines of credit than

---

[12] Since the data of *Unused Lines of Credit* starts from 1995 when 10-K fillings are available online, the sample size reduced to 431 M&As. Among them, 167 M&As are entirely financed by corporate cash holdings, 81 M&As are entirely financed by bank lines of credit and 183 are financed by a mixed source of corporate cash holdings and bank lines of credit.
[13] Similar results are found when *Total Lines of Credit* is used in the regression.

corporate cash holdings as sources of financing in M&As, which is consistent with
the hypothesis based on agency problems between shareholders and managers.

5. 4. 7 Heckman Two-Stage Estimation

An extended Heckman (1979) two-stage estimation is adopted to control for self-
selection problem. The first stage is based on the estimates from the multinomial
logistic regression reported in Table 5.6. A number of papers use the multinomial
logistic model as the first stage regression, such as Wu and Shen (2013) and
Grace and Phillips (2008). In the second stage, *Inverse Mills Ratio* calculated
based on the estimates in the multinomial logistic regression is included as an
additional control variable.

The second stage regression for the changes in excess value is based on the
following model:

$$\Delta EV\ Sales\ Multiple$$
$$= \alpha + \beta_1 Bank\ Lines\ of\ Credit\ Dummy(or\ \beta_1\ Mixed\ Lines\ \&\ Cash\ Dummy)$$
$$+ \beta_2 Firm\ Diversification_{t-1} + \beta_3 Relative\ Value + \beta_4 Size_{t-1} + \beta_5 Profit_{t-1}$$
$$+ \beta_6 Growth_{t-1} + \beta_7 Size_{t-2} + \beta_8 Profit_{t-2} + \beta_9 Growth_{t-2} + \beta_{10} Size_{t-3}$$
$$+ \beta_{11} Profit_{t-3} + \beta_{12} Growth_{t-3} + \beta_{13} LEV_{t-1} + \beta_{14} Size2_{t-1}$$
$$+ \beta_{15} Inverse\ Mills\ Ratio + Year\ Dummy\ Variables$$
$$+ Industry\ Dummy\ Variables + \varepsilon_{i,t} \qquad (5.4)$$

Table 5.7A shows the results of the changes in excess value. As shown in Column 1, the coefficient of *Bank Lines of Credit Dummy* is 0.181 (p-value = 0.02). After controlling self-selection problems, this is still consistent with the findings in Table 5.3, showing that there is a smaller reduction in excess value for the firms financed by bank lines of credit than those financed by corporate cash holdings.

The second stage regression for the changes in internal resources transfers is based on the following model:

$$
\begin{aligned}
\Delta \, & Adjusted \; Investment \\
= \; & \alpha + \beta_1 Bank \; Lines \; of \; Credit \; Dummy (or \; \beta_1 \; Mixed \; Lines \; \& \; Cash \; Dummy) \\
& + \beta_2 Relative \; Value + \beta_3 Invese \; of \; Average \; q_{t-1} + \beta_4 Diversity_{t-1} \\
& + \beta_5 Firm \; Size_{t-1} + \beta_6 Inverse \; Mills \; Ratio + \; Year \; Dummy \; Variables \\
& + Industry \; Dummy \; Variables + \varepsilon_{i,t} \hspace{3cm} (5.5)
\end{aligned}
$$

Table 5.7B shows the results of the changes in internal resources transfers. In Column 1, the coefficient of *Bank Lines of Credit Dummy* is 0.004 (p-value = 0.08), and in Column 4, the coefficient of *Bank Lines of Credit Dummy* is -0.012 (p-value= 0.01). This is consistent with the findings in Table 5.4, suggesting firms entirely financed by bank lines of credit in M&As have an increase in resources transfer to segments with good investment opportunities and a decrease in resources transfer to segments with poor investment opportunities.

The second stage regression for the changes in overall efficiency of transfers is based on the same specification in Equation (5.5). Table 5.7C shows the results

of the changes in overall efficiency of transfers. As displayed in Column 1, the coefficient for *Bank Lines of Credit Dummy* is 0.002 (p-value = 0.08). This is consistent with the findings in Table 5.5, showing that firms entirely financed by bank lines of credit in M&As are associated with a higher value added by allocation. Overall, after controlling self-selection problems, the evidence from Table 5.7A, Table 5.7B and Table 5.7C support the hypothesis based on agency problems between shareholders and managers.

5. 4. 8 Sub-Group Analysis on Corporate Governance

The sample is divided into sub-groups to examine the effect of different sources of financing in M&As on the value of firm diversification when firms have a different level of corporate governance. Block institutional ownership is used as the measure of corporate governance. Acquirers with a blockholder indicate a higher level of corporate governance, while acquirers do not have a blockholder indicate a lower level of corporate governance. The hypothesis based on agency problems between shareholders and managers predicts that in the sub-group of firms with a lower level of corporate governance, firms entirely financed by bank lines of credit in M&As will have a smaller reduction in excess value than the firms financed by corporate cash holdings.

Table 5.8A reports the results of the changes in excess value. The model is based on Equation (5.1). Column 1 shows the sub-group of acquirers without block institutional ownership. The coefficient of *Bank Lines of Credit Dummy* is 0.134 (p-value = 0.008). Column 2 shows the sub-group of acquirers with block

institutional ownership. The coefficient of *Bank Lines of Credit* Dummy is insignificant. The result implies that only for firms with lower corporate governance, using bank lines of credit as the only source of financing in M&As, acquirers have a smaller reduction of excess value than the acquirers financed by corporate cash holdings.

Table 5.8B reports the results of the changes in internal resources transfers. The model is based on Equation (5.2). Column 1 and Column 2 show the results of the changes in adjusted investment in segments with high investment opportunities and high resource-weighted investment opportunities. For acquirers without block institutional ownership, the coefficient of *Bank Lines of Credit Dummy* is 0.005 (p-value = 0.04) and the coefficient of *Mixed Lines & Cash Dummy* is 0.005 (p-value = 0.08). For acquirers with block institutional ownership, the coefficient of *Bank Lines of Credit Dummy* is insignificant. Column 3 and Column 4 show the results of the changes in adjusted investment in segments with low investment opportunities and low resource-weighted opportunities. For acquirers without block institutional ownership, the coefficient of *Bank Lines of Credit Dummy* is -0.015 (p-value = 0.03). Moreover, for acquirers with block institutional ownership, the coefficient of *Bank Lines of Credit Dummy* is insignificant. The result implies that only for firms with a lower level of corporate governance, using bank lines of credit in M&As is positively related to the increase in efficient internal resources transfers.

Table 5.8C reports the results of the changes in overall efficiency of transfers. The model uses the same control variables as Equation (5.2). Column 1 shows

the results for acquirers without block institutional ownership. The coefficient of *Bank Lines of Credit Dummy* is 0.001 (p-value = 0.06). Column 2 shows the results for acquirers with block institutional ownership. The coefficient of *Bank Lines of Credit Dummy* is insignificant. The result implies that only for firms with a lower level of corporate governance, financed by bank lines of credit associated with a higher overall efficiency of transfers.

The evidence from Table 5.8A, Table 5.8B and Table 5.8C supports the interpretation that poorly governed firms benefit from the monitoring of banks when they use bank lines of credit as the source of financing. This leads to a smaller reduction in excess value, more efficient internal resources transfers among segments and a higher overall efficiency of transfers than those financed by corporate cash holdings. The effect of sources of financing between bank lines of credit and corporate cash holdings are not significant in firms with higher level of corporate governance because these firms already have good corporate governance and thus have less potential to improve. This is consistent with the hypothesis based on agency problems between shareholders and managers.

5. 4. 9 Sub-Group Analysis on Bankruptcy Risk

In order to further investigate the hypothesis based on agency problems between shareholders and debtholders, the sample is divided into two sub-groups based on the degree of bankruptcy risk. Following the literature (Altman, 1968), a firm is classified into the sub-group with higher (lower) bankruptcy risk if the firm's Altman Z-score is below (above) 1.81. A higher bankruptcy risk indicates that the

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conflict of interest between shareholders and debtholders is more severe. Since banks prefer low default risks, they can interfere in firms' decisions on M&As. If firms have high bankruptcy risk, acquiring firms financed by bank lines of credit in M&As may not generate higher value consequence than those financed by corporate cash holdings.

Table 5.9A displays the results of the changes in excess value. The model is based on Equation (5.1). As shown in Column 1, among the firms with lower bankruptcy risk, the coefficient for *Bank Lines of Credit Dummy* is 0.094 (p-value = 0.06). In Column 2, among the firms with high bankruptcy risk, the coefficient of *Bank Lines of Credit* is insignificant. This implies that when the acquiring firms have lower bankruptcy risk, there is a smaller reduction in excess value for the M&As financed by bank lines of credit than those financed by corporate cash holdings, and when the acquiring firms have higher bankruptcy risk, the effect of sources of financing between bank lines of credit and corporate cash holdings are not significantly different.

Table 5.9B displays the results of the changes in internal resources transfers. The model is based on Equation (5.2). Column 1 and Column 2 show the result of internal resources transfer to segments with high investment opportunities and high resource-weighted investment opportunities. For the sub-group with lower bankruptcy risk, the coefficient of *Bank Lines of Credit Dummy* is 0.004 (p-value = 0.07) and for the sub-group with higher bankruptcy risk the coefficient of *Bank Lines of Credit Dummy* is insignificant. Column 3 and Column 4 show the result of internal resources transfer to segments with low investment opportunities and

low resource-weighted investment opportunities. For the sub-group with lower bankruptcy risk, the coefficient of *Bank Lines of Credit Dummy* is -0.008 (p-value = 0.02), and for the sub-group with higher bankruptcy risk the coefficient of *Bank Lines of Credit Dummy* is insignificant. The results show the interpretation that when the acquiring firms have lower bankruptcy risk, there is more efficient internal resources transfers among segments for the firms financed by bank lines of credit. While when the acquiring firms have higher bankruptcy risk, the effect of sources of financing between bank lines of credit and corporate cash holdings are not significantly different.

Table 5.9C displays the results of the changes in overall efficiency of transfers. The model uses the same control variables as Equation (5.2). For the sub-group of firms with lower bankruptcy risk, the coefficient of *Bank Line of Credit Dummy* is 0.001 (p-value = 0.06). For the sub-group of firms with higher bankruptcy risk, the coefficient of *Bank Lines of Credit Dummy* is -0.004 (p-value = 0.01). This shows that when acquiring firms have lower bankruptcy risk, the use of bank lines of credit is positively associated with the value added by allocation. While when acquiring firms have higher bankruptcy risk, the use of bank lines of credit is negatively associated with the value added by allocation. This supports the interpretation that bank lenders adversely affect the overall efficiency of internal resources transfer for firms with higher bankruptcy risk.

Overall, the evidence from Table 5.9A, Table 5.9B and Table 5.9C supports both the hypothesis based on agency problems between shareholders and managers and the hypothesis based on agency problems between shareholders and

debtholders. The results reveal that banks play an important role in corporate governance and thereby positively affect the value of firm diversification when the degree of conflict of interest between shareholders and debtholders is low. When there are substantial agency problems between shareholders and debtholders, the positive effect of monitoring is diminished.

5. 4. 10 Robustness Testing

This section reports the results of robustness checks.

5. 4. 10. 1 Acquiring Firms with Multiple M&As

Since some acquirers may conduct several M&As in one fiscal year, the value of firm diversification may be affected by each event differently when different sources of financing are used in the M&As. Robustness testing is conducted by only keeping the first M&A in the sample to tackle this issue.

Table 5.10A reports the results of the changes in excess value. The model is the same as Equation (5.1). The coefficient of *Bank Lines of Credit Dummy* is positive and significant. This is similar to the results in Table 5.3. Table 5.10B reports the results as to the changes in internal resources transfers. The model is the same as Equation (5.2). The coefficient of *Bank Lines of Credit Dummy* is positive and significant for efficient internal resources transfers and is negative and significant for inefficient internal resources transfers. This is similar to the results in Table 5.4. Table 5.10C reports the results of the changes in overall efficiency of

transfers. The independent variables are the same as Equation (5.2). The coefficient of *Bank Lines of Credit Dummy* is positive and significant. This is consistent with the result in Table 5.5. Therefore, the results in Table 5.10A, Table 5.10B and Table 5.10C are consistent with the hypothesis based on agency problems between shareholders and managers.

5. 4. 10. 2 Completion Year

The announcement year is used as year t in the previous analysis. Since some M&As may take a longer time to complete, to avoid possible inaccuracy, the completion year is used as year t regarding this issue for robustness testing.

Table 5.11A reports the results of the changes in excess value. The model is the same as Equation (5.1). The coefficient of *Bank Lines of Credit Dummy* is positive and significant. Table 5.11B reports the results of the changes in internal resources transfers. The model is the same as Equation (5.2). *Bank Lines of Credit Dummy* shows a positive relationship with the increase in efficient internal resources transfers and a negative relationship with the decrease in inefficient internal resources transfers. Table 5.11C reports the results of the changes in overall efficiency of transfers. The independent variables are the same as Equation (5.2). *Bank Lines of Credit Dummy* is positively associated with the relative value added by allocation. Therefore, the results in Table 5.11A, Table 5.11B and Table 5.11C are consistent with the results in Table 5.3, Table 5.4 and Table 5.5. The results support the hypothesis based on agency problems between shareholders and managers.

5. 4. 10. 3 Alternative Measure of Excess Value

In Table 5.3 the excess value is calculated based on sales multiple. Robustness check by using the calculation based on assets multiple as an alternative measure of the value of firm diversification is reported in this section. The regression uses the same specification as Equation (5.1).

Table 5.12 reports the results. The coefficient of *Bank Lines of Credit Dummy* is positive and significant. This is consistent with the result in Table 5.3, supporting the hypothesis based on agency problems between shareholders and managers.

5. 4. 10. 4 Alternative Measure of Corporate Governance

In the previous analysis, block institutional ownership is adopted as a measure of corporate governance. Robustness check by sub-sample analysis based on the median of institutional ownership of the firms is reported in this section. A firm with above (below) median institutional ownership indicates a higher (lower) level of corporate governance.

Table 5.13A shows the results of the changes in excess value. The model is based on Equation (5.1). The coefficient of *Bank Lines of Credit Dummy* is positive and significant for the sub-group of firms with below-median institutional ownership and insignificant for the sub-group of firms with above-median institutional ownership. Table 5.13B shows the results of the changes in internal resources transfers. The model is based on Equation (5.2). *Bank Lines of Credit*

Dummy shows a positive relationship with efficient internal resources transfers and negative relationship with inefficient internal resources transfers among the sub-group of firms with below-median institutional ownership. The model used the same specification in Equation (5.2). Table 5.13C shows the results of the changes in overall efficiency of transfers. The coefficient of *Bank Lines of Credit Dummy* is positive and significant for the sub-group of firms with below-median institutional ownership and insignificant for the sub-group of firms with above-median institutional ownership.

Therefore, the results are consistent with the result in Table 5.8A, Table 5.8B and Table 5.8C that banks improve the corporate governance in poorly governed firms. This is consistent with the hypothesis based on agency problems between shareholders and managers.

5. 4. 11 Discussion

The empirical results above show that acquiring firms financed by bank lines of credit have higher a value of firm diversification than acquiring firms financed by corporate cash holdings. The results support the agency problems associated with corporate cash holdings, which have been addressed in a vast number of papers such as Jensen (1986), Lang et al. (1991), Myers and Rajan (1998) and etc.. The results are also consistent with Shleifer and Vishny (1989) who demonstrate that managers entrench themselves via diversifying acquisitions, and Aggarwal and Samwick (2003) who argue that managers choose to diversify to benefit themselves. The results are also related to the literature such as Shin and Stulz (1998), Rajan et al. (2000), and Scharfstein and Stein (2000) which

reveal that firm diversification is associated with cross-subsidisation. My results show that compared with those financed by corporate cash holdings, the cross-subsidisation problem is less severe for acquiring firms financed by bank lines credit, indicating banks mitigate agency problems.

The sub-group analysis based on block institutional ownership implies that when banks are involved, the firms with severe agency problems suffer from less value loss in M&As. This is consistent with Bharadwaj and Shivdasani (2003) who find that acquirers with poor performance prior the acquisitions benefit from bank financing. Nevertheless, the results from the sub-group analysis on bankruptcy risk show that when conflicts of interest between shareholders and debtholders are intense, acquiring firms financed by bank lines of credit do not generate a higher value of firm diversification than those financed by corporate cash holdings. The results are consistent with the argument of Amihud and Lev (1981), Mansi and Reeb (2002), and Glaser and Müller (2010) that diversification reduces firm risk, and thereby increases debtholder value at the expense of shareholder value.

5. 5 Conclusion

I examine the relation between sources of financing in different forms of corporate liquidity and value of firm diversification in the setting of M&As. I find that the M&As entirely financed by bank lines of credit have a smaller reduction in excess value than M&As entirely financed by corporate cash holdings. The firms financed by bank lines of credit have more efficient internal resources transfers than the firms financed by corporate cash holdings. Moreover, the overall efficiency of

transfers is higher for M&As entirely financed by bank lines of credit. The results from multinomial logistic regression show that firms with higher institutional ownership are more likely to use bank lines of credit as the source of financing in M&As. The evidence from the sub-group analysis based on corporate governance shows that acquirers with a lower level of corporate governance have a smaller reduction in the value of firm diversification if they are financed by bank lines of credit. In addition, some evidence from the sub-group analysis based on bankruptcy risk shows the positive effects of bank financing are eliminated when there are substantial agency problems between shareholders and debtholders.

Overall, my findings show that banks play an important role in corporate governance, mitigating agency problems, thereby reduce the discount associated with firm diversification. The results support the hypothesis based on agency problems between shareholders and managers.

Chapter 6. Conclusion

6. 1 Conclusion of Findings

This thesis examines how sources of financing affect the performance of the M&As and the changes in the value of firm diversification. I show that agency problems associated with corporate cash holdings lead to poor performance in M&As, while other sources of financing, including bank lines of credit, other bank loans and debt issues, mitigate agency problems between shareholders and managers. Moreover, the M&As financed by bank lines of credit have a smaller reduction in value of firm diversification and more efficient internal resources allocation than those financed by corporate cash holdings, highlighting that banks play an important role in corporate governance.

In Chapter Three, I analyse how the performance of M&As is affected by the sources of financing between corporate cash holdings and bank lines of credit. I examine the performance with the measures of stock return performance, changes in operating performance. I find that the M&As financed by bank lines of credit outperform the M&As financed by corporate cash holdings. I also find that firms with higher institutional ownership are more likely to use bank lines of credit in M&As. The M&As financed by bank lines of credit is associated with lower acquisition premiums. Moreover, the outperformance of M&As financed by bank lines of credit is only significant for acquirers with weaker-corporate governance. Also, the fraction of bank lines of credit is used is positively related to the performance of M&As when the M&As is financed by a mixed source of corporate

cash holdings and bank lines of credit, and the costs associated with bank lines of credit are negatively related to the performance of M&As. I provide additional evidence on the agency perspective of bank lines of credit and find that the performance of M&As financed by bank lines of credit is higher than the M&As financed by corporate cash holdings only when firms have a lower degree of bankruptcy risk. I conclude that the findings support the hypothesis based on agency problems between shareholders and managers.

In Chapter Four, I analyse how the performance of M&As is affected by the sources of financing between corporate cash holdings, other bank loans, debt issues and equity issues. I find that the M&As financed by other bank loans and debt issues have higher announcement returns and operating performance than the M&As financed by corporate cash holdings. I also find that the M&As financed by other bank loans and debt issues have lower acquisition premiums. The results also show that the performance of M&As financed by equity issue is not significant. I find that the performance of M&As financed by other bank loans and debt issues are higher than the M&As financed by corporate cash holdings only among firms with a lower level of corporate governance. Moreover, the positive effect of other bank loans and debt issues are only significant among firms with a lower degree of bankruptcy risk. The finding supports the agency hypothesis related to the shareholder-manager conflict.

In Chapter Five, I analyse how the value of firm diversification is affected by the sources of financing between bank lines of credit and corporate cash holdings in M&As. I use changes in excess value, changes in internal resources transfers

and changes in relative value added by allocation as the measure of the changes in the value of firm diversification. I find that the M&As financed by bank lines of credit are associated with a lower reduction in excess value and more efficient internal resources allocation among segments than those financed by corporate cash holdings. Moreover, the sub-group analysis on corporate governance shows the positive effect of bank lines of credit on the value of firm diversification is only significant for firms with a lower level of corporate governance. The positive effect of bank lines of credit is eliminated when firms have a higher level of bankruptcy risk. The results support the agency hypothesis based on shareholder-manager conflict.

Overall, the findings in this thesis shed light on the corporate governance role of banks and other debtholders in M&As. The results reveal that banks and other debtholders impose discipline on acquiring firms thereby improve the corporate governance of these firms.

6. 2 Limitations

There are several limitations to this research:

First, due to the availability of the data, I only collect the data about bank lines of credit from the year 1995 onwards. Therefore, for the period before 1995, the likelihood of use bank lines of credit and alternative source of financing are not measured by our regression. Moreover, there are various restrictions in the financial covenants of bank lines of credit, which may affect the choice

of using bank lines of credit, are not analysed in this thesis. For example, a bank line of credit may have covenants which may do not allow funds to be used in M&As. The details of such restrictions are not studied in this thesis.

Second, there is a large proportion of M&As financed by a mixed source of more than two sources of financing, which are not analysed in this thesis. I only consider the M&As financed by 100% of bank lines of credit, other bank loans, debt issues, equity issues and corporate cash holdings. Moreover, these M&As may not represent the vast majority of the M&As.

Third, there are various measures of the performance of M&As. In terms of the shareholders' wealth effects, I only consider short event windows around the announcement period. Regarding the operating performance measure, Martynova and Renneboog (2008) argue that the post-merger operating performance studies suffer from measurement errors, statistical problems as well as the change in accounting standards. In this thesis, I use *Change in ROA* and *Net Change in ROA* based on comparable firms with similar firm characteristics as the measure of operating performance. One may argue for alternative performance measures and alternative event windows which may come to different conclusions.

Fourth, some studies (e.g., Mansi and Reeb, 2002; Glaser and Müller, 2010; Custodio, 2014) argue that there is bias with the valuation methodology developed by Berger and Ofek (1995) and develop alternative measures for

the value of firm diversification. In this thesis, I do not consider the alternative measures based on the studies mentioned above.

6. 3 Future Research

There are several directions for the future research:

First, in this thesis, I use a sample of U.S. M&As to examine the effect of different sources of financing on the performance and value of firm diversification. Since there are possible differences in the legislation and lending standards of bank lines of credit, the effect of using bank financing in different countries may vary. For instance, Campello, Giambona, Graham and Harvey (2011a) show that the commitment fees and interest rates increased dramatically in market-based economies during the financial crisis, while this is not significant in bank-based economies. According to Campello, Graham and Harvey (2010), the inability to access to bank lines leads to significant cut of investments for financially constraint firms. Since the country-level differences affect the availability of bank lines of credit, such differences may also affect the performance and the value of firm diversifications of the acquiring firms. One possible extension is the analysis of international and cross-border M&As.

Second, I examine the performance of M&As based on the performance of the merged firm and the value creation to acquiring firm's shareholders. The effect of bank lines of credit on target firms is not examined in this thesis.

Existing literature shows that there is a takeover-deterrence effect of corporate liquidity. Harford (1999) and Faleye (2004) show that firms with excess cash are less likely to become a target in acquisitions. Regarding bank lines of credit, Yun (2009) finds that firms decrease the level of bank lines of credit relative to corporate cash holdings after an antitakeover legislation. Therefore, bank liquidity may have a defensive function for potential target firms. Future research can be made to explore the effect of bank liquidity from the perspective of potential target firms.

Third, I compare the performance of M&As financed by corporate cash holdings and bank lines of credit in Chapter Three and the performance of M&As financed by corporate cash holdings, other bank loans, debt issues and equity issues in Chapter Four. However, there is no direct comparison between different types of debt. Another possible extension is to directly compare different types of debt and the performance of M&As. Further research can be made on the analysis of the costs associated with different types of debt and covenants of different loan agreements.

Table 3.1A Summary Statistics: Firm Characteristics

The table reports summary statistics. I use a sample of 723 U.S. M&As with cash payment from 1985 to 2013. CAR (-3, +3) is the cumulative abnormal return over days (-3, +3) around the announcement date (see text for details). Relative Value is the ratio of deal value to the sum of the acquirer's market value of equity and deal value. Total Lines of Credit is the ratio of bank lines of credit to assets. Unused Lines of Credit is the ratio of unused lines of credit to assets. Cash is the ratio of cash and marketable securities to non-cash assets. ROA is the ratio of EBIT to non-cash assets. ΔROA is the change in ROA from year t-1 to t+1. Net ΔROA is the difference between an acquirer's change in ROA and its matched comparable firm's change in ROA from year t-1 to t+1. The comparable firms are matched by propensity score matching based on size, cash flow, market-to-book ratio, leverage, tangibility, capital expenditure, R&D, dividends and cash flow volatility (see text for details). Premiums 1 is the offer price to the target share price premiums one day prior to the acquisition announcement. Premiums 2 is the offer price to the target share price premiums one week prior to the acquisition announcement. Premiums 3 is the offer price to the target share price premiums four weeks prior to the acquisition announcement. Institutional Ownership is the ratio of shares owned by institutional investors to the total shares outstanding. Size is the logarithm of non-cash assets. Cash Flow is income before extraordinary items divided by non-cash assets. M/B is market value of equity plus non-cash assets minus book value of equity, divided by non-cash assets. Leverage is the ratio of long-term debt to non-cash assets. Tangibility is the ratio of plant, property and equipment to non-cash assets. Capital Expenditure is the ratio of capital expenditure to non-cash assets. R&D is the ratio of R&D to non-cash assets. Dividends is the ratio of dividends to non-cash assets. Cash Flow Volatility is the standard deviation of cash flow to non-cash assets in the prior five years.

Variable	Mean	25th Percentile	Median	75th Percentile	Std Dev
CAR (-3,+3)	0.0161	-0.0271	0.0091	0.0571	0.0827
Relative Value	0.1398	0.0371	0.0911	0.1915	0.1450
Total Lines of Credit	0.2095	0.0774	0.1693	0.3229	0.1619
Unused Lines of Credit	0.1475	0.0622	0.1246	0.2192	0.1119
Cash	0.1859	0.0213	0.0692	0.2422	0.2554
ROA	0.1237	0.0679	0.1121	0.1672	0.0833
ΔROA	-0.0279	-0.0612	-0.0135	0.0166	0.0785
Net ΔROA	0.0111	-0.0593	0.0120	0.0724	0.1285
Premiums 1	0.3645	0.1600	0.3200	0.5800	0.3249
Premiums 2	0.4442	0.2400	0.4100	0.6700	0.3524
Premiums 3	0.5171	0.2700	0.4600	0.7100	0.4126
Institutional Ownership	0.4722	0.1353	0.5184	0.7736	0.3342
Size	19.9808	18.7648	19.9660	21.1084	1.8806
Cash Flow	0.0679	0.0331	0.0618	0.1042	0.0753
M/B	2.1360	1.2670	1.6582	2.3138	1.3702
Leverage	0.2318	0.0607	0.2069	0.3474	0.1957
Tangibility	0.3607	0.1377	0.2823	0.5460	0.2682
Capital Expenditure	0.0834	0.0263	0.0484	0.0979	0.0916
R&D	0.0256	0.0000	0.0000	0.0264	0.0544
Dividends	0.0125	0.0000	0.0000	0.0174	0.0195
Cash Flow Volatility	0.1090	0.0206	0.0426	0.0988	0.1808

Table 3.1B Univariate Statistics

	Number of Deals
Corporate Cash Holdings	271
Bank Lines of Credit	308
Mixed Lines & Cash	144
Total	723

Table 3.2 Univariate Analysis of Announcement Returns

The table reports the univariate analysis on announcement returns. CAR (-3, +3) is the cumulative abnormal return over days (-3, +3) around the announcement date (see text for details). Corporate Cash Holdings indicates the M&As entirely financed by corporate cash holdings. Bank Lines of Credit indicates the M&As entirely financed by bank lines of credit. Mixed Lines & Cash indicates the M&As financed by a mixed source of bank lines of credit and corporate cash holdings. I report the mean test and the Wilcoxon Signed Rank median test in the table. *, **, and *** represent significance levels of 10%, 5%, and 1%, respectively.

| | Bank Lines of Credit | | Corporate Cash Holdings | | Difference | | | |
	Mean	Median	Mean	Median	Mean	p-value	Median	p-value
CAR (-3, +3)	0.031	0.022	0.002	0.002	0.029***	(0.01)	0.020***	(0.01)
	Mixed Lines & Cash		Corporate Cash Holdings		Difference			
	Mean	Median	Mean	Median	Mean	p-value	Median	p-value
CAR (-3, +3)	0.011	0.008	0.002	0.002	0.009	(0.28)	0.006	(0.45)
	Bank Lines of Credit		Mixed Lines & Cash		Difference			
	Mean	Median	Mean	Median	Mean	p-value	Median	p-value
CAR (-3, +3)	0.031	0.022	0.011	0.008	0.020**	(0.02)	0.014**	(0.02)

Table 3.3 Sources of Financing and Announcement Returns

The table shows the relation between sources of financing and announcement returns. CAR (-3, +3) is the cumulative abnormal return over days (-3, +3) around the announcement date (see text for details). Bank Lines of Credit Dummy equals one if an M&A is entirely financed by bank lines of credit, and equals zero otherwise. Mixed Lines & Cash Dummy equals one if an M&A is financed by a mix of bank lines of credit and corporate cash holdings, and equals zero otherwise. Relative Value is the ratio of deal value to the sum of the acquirer's market value of equity and deal value. Hostile equals one if an M&A is hostile, and zero otherwise. Size is the logarithm of non-cash assets. Cash Flow is income before extraordinary items divided by non-cash assets. M/B is market value of equity plus non-cash assets minus book value of equity, divided by non-cash assets. Leverage is the ratio of long-term debt to non-cash assets. Tangibility is the ratio of plant, property and equipment to non-cash assets. Capital Expenditure is the ratio of capital expenditure to non-cash assets. R&D is the ratio of R&D to non-cash assets. Dividends is the ratio of dividends to non-cash assets. Cash Flow Volatility is the standard deviation of cash flow to non-cash assets in the prior five years. Year Dummy Variables are the dummy variables for the years in the sample and not reported in the table. Industry Dummy Variables are the dummy variables for the industries defined by two-digit SIC codes and not reported in the table. The p-value is calculated based on the Heteroscedasticity-Consistent standard errors, and is noted in the parentheses. *, **, and *** represent significance levels of 10%, 5%, and 1%, respectively.

	CAR (-3, +3)
Intercept	0.153*
	(0.06)
Bank Lines of Credit Dummy	0.020***
	(0.01)
Mixed Lines & Cash Dummy	0.004
	(0.60)
Relative Value	0.049
	(0.10)
Hostile	-0.051**
	(0.04)
Size $_{t-1}$	-0.004**
	(0.04)
Cash Flow $_{t-1}$	0.067
	(0.21)
M/B $_{t-1}$	-0.004
	(0.20)
Leverage $_{t-1}$	0.002
	(0.91)
Tangibility $_{t-1}$	-0.009
	(0.68)
Capital Expenditure $_{t-1}$	-0.042
	(0.48)
R&D $_{t-1}$	-0.076
	(0.24)
Dividends $_{t-1}$	-0.337**
	(0.02)
Cash Flow Volatility $_{t-1}$	-0.019
	(0.27)
Year Dummy Variables	Yes
Industry Dummy Variables	Yes
Number of Observations	723
Adjusted R-Square	0.09

Table 3.4A Propensity Score Matching

The table shows the results for the propensity score matching based on the estimates from a logistic regression. There are 723 observations of acquirers and 14322 observations of non-acquirers from the Compustat database. I match each acquirer firm with a non-acquirer firm by propensity score matching. I define non-acquirers as the firms that do not have any M&As in the same fiscal year as the acquirers. Matched firms are selected based on nearest propensity score and the same industry defined by the 2-digit SIC code.

The dependent variable is a dummy variable that equals one if a firm is an acquirer, and equals zero otherwise. Size is the logarithm of non-cash assets. M/B is non-cash assets minus value of equity plus market value of equity, divided by non-cash assets. Cash Flow is income before extraordinary items divided by non-cash assets. Leverage is the ratio of long-term debt to non-cash assets. Tangibility is the ratio of plant, property and equipment to non-cash assets. Capital Expenditure is the ratio of capital expenditure to non-cash assets. R&D is the ratio of R&D to non-cash assets. Dividends is the ratio of dividends to non-cash assets. Cash Flow Volatility is the standard deviation of cash flow to non-cash assets in the prior five years. The p-value is noted in the parentheses. *, **, and *** represent significance levels of 10%, 5%, and 1%, respectively.

	Acquirer=1, Non-acquirer=0
Intercept	10.676***
	(0.01)
Size $_{t-1}$	-0.457***
	(0.01)
M/B $_{t-1}$	0.076***
	(0.01)
Cash Flow $_{t-1}$	-4.334***
	(0.01)
Leverage $_{t-1}$	-0.505**
	(0.03)
Tangibility $_{t-1}$	0.611***
	(0.01)
Capital Expenditure $_{t-1}$	1.371***
	(0.01)
R&D $_{t-1}$	0.165
	(0.79)
Dividends $_{t-1}$	7.292***
	(0.01)
Cash Flow Volatility $_{t-1}$	1.707***
	(0.01)
Number of Observations	15045
Pseudo R-Square	0.09

Table 3.4B Differences in Propensity Score Matching

The table shows the univariate statistics about the difference in propensity score between acquiring firms and their matched non-acquiring firm.

	Difference in the propensity score between acquirer firms and their matched non-acquiring firms				
	Mean	25th Percentile	Median	75th Percentile	Std Dev
Propensity Score	0.056	0.005	0.022	0.071	0.080

Table 3.4C Sources of Financing and Changes in Operating Performance

The table shows the relation between sources of financing and the changes in operating performance. ROA is the ratio of EBIT to non-cash assets. ΔROA is the change in ROA from year t-1 to t+1. Net ΔROA is the difference between an acquirer's change in ROA and its matched comparable firm's change in ROA from year t-1 to t+1. The comparable firms are matched by propensity score matching based on size, cash flow, market-to-book ratio, leverage, tangibility, capital expenditure, R&D, dividends and cash flow volatility (see text for details). Bank Lines of Credit Dummy equals one if an M&A is entirely financed by bank lines of credit, and equals zero otherwise. Mixed Lines & Cash Dummy equals one if an M&A is financed by a mix of bank lines of credit and corporate cash holdings, and equals zero otherwise. Relative Value is the ratio of deal value to the sum of the acquirer's market value of equity and deal value. Hostile equals one if an M&A is hostile, and zero otherwise. Size is the logarithm of non-cash assets. M/B is market value of equity plus non-cash assets minus book value of equity, divided by non-cash assets. Leverage is the ratio of long-term debt to non-cash assets. Tangibility is the ratio of plant, property and equipment to non-cash assets. Capital Expenditure is the ratio of capital expenditure to non-cash assets. R&D is the ratio of R&D to non-cash assets. Dividends is the ratio of dividends to non-cash assets. Cash Flow Volatility is the standard deviation of cash flow to non-cash assets in the prior five years. Year Dummy Variables are the dummy variables for the years in the sample and not reported in the table. Industry Dummy Variables are the dummy variables for the industries defined by two-digit SIC codes and not reported in the table. The p-value is calculated based on the Heteroscedasticity-Consistent standard errors, and is noted in the parentheses. *, **, and *** represent significance levels of 10%, 5%, and 1%, respectively.

	ΔROA	Net ΔROA
Intercept	-0.261**	0.167
	(0.02)	(0.33)
Bank Lines of Credit Dummy	0.022*	0.048**
	(0.06)	(0.02)
Mixed Lines & Cash Dummy	0.012	0.010
	(0.25)	(0.62)
Relative Value	0.001	-0.056
	(0.99)	(0.33)
Hostile	-0.013	-0.002
	(0.59)	(0.96)
Size $_{t-1}$	0.012***	0.005
	(0.01)	(0.43)
ROA $_{t-1}$	-0.536***	-0.529***
	(0.01)	(0.01)
M/B $_{t-1}$	0.008	0.003
	(0.20)	(0.76)
Leverage $_{t-1}$	0.050***	0.048
	(0.01)	(0.23)
Tangibility $_{t-1}$	-0.003	-0.077
	(0.92)	(0.14)
Capital Expenditure $_{t-1}$	-0.092	-0.039
	(0.12)	(0.72)
R&D $_{t-1}$	0.065	0.184
	(0.64)	(0.48)
Dividends $_{t-1}$	0.359	0.330
	(0.15)	(0.46)
Cash Flow Volatility $_{t-1}$	-0.040	-0.080
	(0.11)	(0.12)
Year Dummy Variables	Yes	Yes
Industry Dummy Variables	Yes	Yes
Number of Observations	676	676
Adjusted R-Square	0.35	0.29

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Table 3.5 The Choice of Sources of Financing

The table reports the multinomial logistic regression. The dependent variable is categorical. It equals zero if an M&A is entirely financed by corporate cash holdings, equals one if an M&A is entirely financed by bank lines of credit, and equals two if an M&A is financed by a mixed source of bank lines of credit and corporate cash holdings. Relative Value is the ratio of deal value to the sum of the acquirer's market value of equity and deal value. Hostile equals one if an M&A is hostile, and zero otherwise. Cash is the ratio of cash and marketable securities to non-cash assets. Unused Lines of Credit is the ratio of unused lines of credit to non-cash assets. Institutional Ownership is the ratio of shares owned by institutional investors to the total shares outstanding. Size is the logarithm of non-cash assets. Cash Flow is income before extraordinary items divided by non-cash assets. M/B is market value of equity plus non-cash assets minus book value of equity, divided by non-cash assets. Leverage is the ratio of long-term debt to non-cash assets. Tangibility is the ratio of plant, property and equipment to non-cash assets. Capital Expenditure is the ratio of capital expenditure to non-cash assets. R&D is the ratio of R&D to non-cash assets. Dividends is the ratio of dividends to non-cash assets. Cash Flow Volatility is the standard deviation of cash flow to non-cash assets in the prior five years. Year Dummy Variables are the dummy variables for the years in the sample and not reported in the table. Industry Dummy Variables are the dummy variables for the industries defined by two-digit SIC codes and not reported in the table. The p-value is noted in the parentheses. *, **, and *** represent significance levels of 10%, 5%, and 1%, respectively.

	Cash=0, Line=1, Mixed Line & Cash= 2	
	1	2
Intercept	13.136***	0.884
	(0.01)	(0.79)
Relative Value	9.874***	11.128***
	(0.01)	(0.01)
Hostile	-13.702	-13.739
	(0.99)	(1.00)
Cash $_{t-1}$	-11.221***	-4.826***
	(0.01)	(0.01)
Unused Lines of Credit $_{t-1}$	5.845***	3.880**
	(0.01)	(0.05)
Institutional Ownership $_{t-1}$	1.017*	1.880***
	(0.08)	(0.01)
Size $_{t-1}$	-0.614***	-0.104
	(0.01)	(0.45)
Cash Flow $_{t-1}$	-0.310	2.160
	(0.92)	(0.45)
M/B $_{t-1}$	0.432**	0.274
	(0.04)	(0.17)
Leverage $_{t-1}$	0.843	-0.301
	(0.43)	(0.78)
Tangibility $_{t-1}$	-2.189	-1.262
	(0.11)	(0.36)
Capital Expenditure $_{t-1}$	4.203	0.068
	(0.23)	(0.98)
R&D $_{t-1}$	-2.220	-3.350
	(0.72)	(0.49)
Dividends $_{t-1}$	8.449	7.365
	(0.40)	(0.45)
Cash Flow Volatility $_{t-1}$	-0.915	0.177
	(0.45)	(0.89)
Year Dummy Variables	Yes	Yes
Industry Dummy Variables	Yes	Yes
Number of Observations	411	286
Pseudo R-Square	0.59	0.59

Table 3.6 Acquisition Premiums

The table reports the impact of source of financing on acquisition premiums. Premiums 1 is the offer price to the target share price premiums one day prior to the acquisition announcement. Premiums 2 is the offer price to the target share price premiums one week prior to the acquisition announcement. Premiums 3 is the offer price to the target share price premiums four weeks prior to the acquisition announcement. Bank Lines of Credit Dummy equals one if an M&A is entirely financed by bank lines of credit, and equals zero otherwise. Mixed Lines & Cash Dummy equals one if an M&A is financed by a mix of bank lines of credit and corporate cash holdings, and equals zero otherwise. Relative Value is the ratio of deal value to the sum of the acquirer's market value of equity and deal value. Hostile equals one if an M&A is hostile, and zero otherwise. Size is the logarithm of non-cash assets. Cash Flow is income before extraordinary items divided by non-cash assets. M/B is market value of equity plus non-cash assets minus book value of equity, divided by non-cash assets. Leverage is the ratio of long-term debt to non-cash assets. Tangibility is the ratio of plant, property and equipment to non-cash assets. Capital Expenditure is the ratio of capital expenditure to non-cash assets. R&D is the ratio of R&D to non-cash assets. Dividends is the ratio of dividends to non-cash assets. Cash Flow Volatility is the standard deviation of cash flow to non-cash assets in the prior five years. Year Dummy Variables are the dummy variables for the years in the sample and not reported in the table. Industry Dummy Variables are the dummy variables for the industries defined by two-digit SIC codes and not reported in the table. The p-value is calculated based on Heteroscedasticity-Consistent standard errors, and is noted in the parentheses. *, **, and *** represent significance levels of 10%, 5%, and 1%, respectively.

	Premiums 1	Premiums 2	Premiums 3
Intercept	0.971	0.915	1.442*
	(0.16)	(0.13)	(0.06)
Bank Lines of Credit Dummy	-0.154**	-0.186**	-0.210**
	(0.05)	(0.05)	(0.03)
Mixed Lines & Cash Dummy	0.094	0.040	-0.022
	(0.25)	(0.60)	(0.79)
Relative Value	-0.391	-0.460	-0.776**
	(0.24)	(0.11)	(0.02)
Hostile	0.115	0.194	0.056
	(0.51)	(0.13)	(0.72)
Size $_{t-1}$	-0.023	-0.002	-0.035
	(0.38)	(0.92)	(0.24)
Cash Flow $_{t-1}$	-0.548	-0.344	0.267
	(0.24)	(0.44)	(0.68)
M/B $_{t-1}$	0.045***	0.032**	0.023
	(0.01)	(0.04)	(0.27)
Leverage $_{t-1}$	-0.269	-0.173	-0.155
	(0.27)	(0.39)	(0.59)
Tangibility $_{t-1}$	0.504**	0.713**	0.462
	(0.03)	(0.02)	(0.23)
Capital Expenditure $_{t-1}$	-1.467***	-2.092***	-1.381
	(0.01)	(0.01)	(0.10)
R&D $_{t-1}$	-0.751	-0.589	0.313
	(0.27)	(0.37)	(0.68)
Dividends $_{t-1}$	-1.677	-0.539	-1.887
	(0.41)	(0.79)	(0.48)
Cash Flow Volatility $_{t-1}$	-0.883*	-0.779	-0.326
	(0.07)	(0.10)	(0.59)
Year Dummy Variables	Yes	Yes	Yes
Industry Dummy Variables	Yes	Yes	Yes
Number of Observations	157	157	157
Adjusted R-Square	0.05	0.07	0.08

Table 3.7A Sub-Group Analysis Based on Block Institutional Ownership — Announcement Returns

The table shows the sub-group analysis on the relation between sources of financing and announcement returns. CAR (-3, +3) is the cumulative abnormal return over days (-3, +3) around the announcement date (see text for details). Block equals one if there exists a block institutional ownership which exceeds 5% of the total shares outstanding, and equals zero otherwise. Bank Lines of Credit Dummy equals one if an M&A is entirely financed by bank lines of credit, and equals zero otherwise. Mixed Lines & Cash Dummy equals one if an M&A is financed by a mix of bank lines of credit and corporate cash holdings, and equals zero otherwise. Relative Value is the ratio of deal value to the sum of the acquirer's market value of equity and deal value. Hostile equals one if an M&A is hostile, and zero otherwise. Size is the logarithm of non-cash assets. Cash Flow is income before extraordinary items divided by non-cash assets. M/B is market value of equity plus non-cash assets minus book value of equity, divided by non-cash assets. Leverage is the ratio of long-term debt to non-cash assets. Tangibility is the ratio of plant, property and equipment to non-cash assets. Capital Expenditure is the ratio of capital expenditure to non-cash assets. R&D is the ratio of R&D to non-cash assets. Dividends is the ratio of dividends to non-cash assets. Cash Flow Volatility is the standard deviation of cash flow to non-cash assets in the prior five years. Year Dummy Variables are the dummy variables for the years in the sample and not reported in the table. Industry Dummy Variables are the dummy variables for the industries defined by two-digit SIC codes and not reported in the table. The p-value is calculated based on Heteroscedasticity-Consistent standard errors, and is noted in the parentheses. *, **, and *** represent significance levels of 10%, 5%, and 1%, respectively.

	CAR (-3,+3)	
	Block=0	Block=1
Intercept	0.043	0.064
	(0.60)	(0.31)
Bank Lines of Credit Dummy	0.025*	0.012
	(0.06)	(0.20)
Mixed Lines & Cash Dummy	0.006	0.007
	(0.72)	(0.52)
Relative Value	0.052	0.049
	(0.27)	(0.22)
Hostile	0.031	-0.082***
	(0.15)	(0.01)
Size $_{t-1}$	-0.006**	-0.003
	(0.05)	(0.36)
Cash Flow $_{t-1}$	0.003	0.019
	(0.85)	(0.58)
M/B $_{t-1}$	0.001	-0.002
	(0.24)	(0.37)
Leverage $_{t-1}$	0.018	-0.010
	(0.49)	(0.63)
Tangibility $_{t-1}$	-0.013	-0.012
	(0.70)	(0.60)
Capital Expenditure $_{t-1}$	0.060	-0.027
	(0.32)	(0.67)
R&D $_{t-1}$	-0.110	-0.013
	(0.21)	(0.83)
Dividends $_{t-1}$	-0.140***	0.009
	(0.01)	(0.88)
Cash Flow Volatility $_{t-1}$	-0.050*	-0.013
	(0.06)	(0.60)
Year Dummy Variables	Yes	Yes
Industry Dummy Variables	Yes	Yes
Number of Observations	258	465
Adjusted R-Square	0.12	0.08

Table 3.7B Sub-Group Analysis Based on Block Institutional Ownership — Net Changes in Operating Performance

The table shows the sub-group analysis on the relation between sources of financing and the net changes in operating performance. Net ΔROA is the difference between an acquirer's change in ROA and its matched comparable firm's change in ROA from year t-1 to t+1, where ROA is the ratio of EBIT to non-cash assets. The comparable firms are matched by propensity score matching based on size, cash flow, market-to-book ratio, leverage, tangibility, capital expenditure, R&D, dividends and cash flow volatility (see text for details). Block equals one if there exists a block institutional ownership which exceeds 5% of the total shares outstanding, and equals zero otherwise. Bank Lines of Credit Dummy equals one if an M&A is entirely financed by bank lines of credit, and equals zero otherwise. Mixed Lines & Cash Dummy equals one if an M&A is financed by a mix of bank lines of credit and corporate cash holdings, and equals zero otherwise. Relative Value is the ratio of deal value to the sum of the acquirer's market value of equity and deal value. Hostile equals one if an M&A is hostile, and zero otherwise. Size is the logarithm of non-cash assets. M/B is market value of equity plus non-cash assets minus book value of equity, divided by non-cash assets. Leverage is the ratio of long-term debt to non-cash assets. Tangibility is the ratio of plant, property and equipment to non-cash assets. Capital Expenditure is the ratio of capital expenditure to non-cash assets. R&D is the ratio of R&D to non-cash assets. Dividends is the ratio of dividends to non-cash assets. Cash Flow Volatility is the standard deviation of cash flow to non-cash assets in the prior five years. Year Dummy Variables are the dummy variables for the years in the sample and not reported in the table. Industry Dummy Variables are the dummy variables for the industries defined by two-digit SIC codes and not reported in the table. The p-value is calculated based on Heteroscedasticity-Consistent standard errors, and is noted in the parentheses. *, **, and *** represent significance levels of 10%, 5%, and 1%, respectively.

	Net ΔROA	
	Block=0	Block=1
Intercept	-0.458**	0.096
	(0.03)	(0.45)
Bank Lines of Credit Dummy	0.076***	0.007
	(0.01)	(0.66)
Mixed Lines & Cash Dummy	0.015	0.015
	(0.62)	(0.42)
Relative Value	-0.016	-0.030
	(0.86)	(0.55)
Hostile	-0.136**	0.050
	(0.02)	(0.21)
Size $_{t-1}$	0.021***	0.002
	(0.01)	(0.76)
ROA $_{t-1}$	-0.254***	-0.369***
	(0.01)	(0.01)
M/B $_{t-1}$	0.005	-0.003
	(0.68)	(0.74)
Leverage $_{t-1}$	0.069	0.020
	(0.24)	(0.56)
Tangibility $_{t-1}$	-0.111	-0.069*
	(0.18)	(0.08)
Capital Expenditure $_{t-1}$	0.026	-0.019
	(0.88)	(0.85)
R&D $_{t-1}$	-0.184	-0.024
	(0.55)	(0.88)
Dividends $_{t-1}$	-0.566	0.554
	(0.30)	(0.14)
Cash Flow Volatility $_{t-1}$	-0.154**	-0.032
	(0.05)	(0.46)
Year Dummy Variables	Yes	Yes
Industry Dummy Variables	Yes	Yes
Number of Observations	246	430
Adjusted R-Square	0.17	0.22

Table 3.7C Sub-Group Analysis Based on Block Institutional Ownership — Acquisition Premiums

The table shows the sub-group analysis on the sources of financing and acquisition premiums. Premiums 1 is the offer price to the target share price premiums one day prior to the acquisition announcement. Premiums 2 is the offer price to the target share price premiums one week prior to the acquisition announcement. Premiums 3 is the offer price to the target share price premiums four weeks prior to the acquisition announcement. Block equals one if there exists a block institutional ownership which exceeds 5% of the total shares outstanding, and equals zero otherwise. Bank Lines of Credit Dummy equals one if an M&A is entirely financed by bank lines of credit, and equals zero otherwise. Mixed Lines & Cash Dummy equals one if an M&A is financed by a mix of bank lines of credit and corporate cash holdings, and equals zero otherwise. Relative Value is the ratio of deal value to the sum of the acquirer's market value of equity and deal value. Hostile equals one if an M&A is hostile, and zero otherwise. Size is the logarithm of non-cash assets. Cash Flow is income before extraordinary items divided by non-cash assets. M/B is market value of equity plus non-cash assets minus book value of equity, divided by non-cash assets. Leverage is the ratio of long-term debt to non-cash assets. Tangibility is the ratio of plant, property and equipment to non-cash assets. Capital Expenditure is the ratio of capital expenditure to non-cash assets. R&D is the ratio of R&D to non-cash assets. Dividends is the ratio of dividends to non-cash assets. Cash Flow Volatility is the standard deviation of cash flow to non-cash assets in the prior five years. Year Dummy Variables are the dummy variables for the years in the sample and not reported in the table. Industry Dummy Variables are the dummy variables for the industries defined by two-digit SIC codes and not reported in the table. The p-value is calculated based on the Heteroscedasticity-Consistent standard errors, and is noted in the parentheses. *, **, and *** represent significance levels of 10%, 5%, and 1%, respectively.

	Premiums 1		Premiums 2		Premiums 3	
	Block=0	Block=1	Block=0	Block=1	Block=0	Block=1
Intercept	0.300	0.504	0.341	-0.290	1.112	0.547
	(0.60)	(0.42)	(0.57)	(0.69)	(0.11)	(0.50)
Bank Lines of Credit Dummy	-0.191**	-0.050	-0.162*	-0.057	-0.132**	-0.151
	(0.03)	(0.66)	(0.08)	(0.63)	(0.05)	(0.29)
Mixed Lines & Cash Dummy	0.097	0.162	0.084	0.115	0.013	-0.062
	(0.26)	(0.20)	(0.39)	(0.20)	(0.92)	(0.55)
Relative Value	-0.443	-0.575	-0.701*	-0.469	-1.267**	-0.646
	(0.15)	(0.13)	(0.07)	(0.20)	(0.02)	(0.10)
Hostile	0.205	0.152	0.332*	0.132	0.340*	-0.038
	(0.12)	(0.23)	(0.06)	(0.40)	(0.07)	(0.79)
Size $_{t-1}$	0.002	0.017	0.009	0.053*	-0.033	0.001
	(0.95)	(0.57)	(0.76)	(0.06)	(0.30)	(0.96)
Cash Flow $_{t-1}$	-0.609	0.375	-0.616	1.132*	-0.180	1.105*
	(0.48)	(0.46)	(0.46)	(0.06)	(0.86)	(0.06)
M/B $_{t-1}$	0.062	0.007	0.066**	-0.030	0.070	-0.068
	(0.17)	(0.76)	(0.03)	(0.54)	(0.17)	(0.16)
Leverage $_{t-1}$	0.062	0.366	0.195	0.106	0.359**	0.409
	(0.78)	(0.17)	(0.51)	(0.70)	(0.05)	(0.17)
Tangibility $_{t-1}$	0.295	0.608	0.258	0.459	0.503	1.060**
	(0.21)	(0.23)	(0.30)	(0.36)	(0.19)	(0.04)
Capital Expenditure $_{t-1}$	-0.982	-0.976	-1.689*	-2.705***	-2.058*	-4.809***
	(0.29)	(0.25)	(0.06)	(0.01)	(0.09)	(0.01)
R&D $_{t-1}$	-0.853	0.881	-0.763	1.246	0.165	3.169***
	(0.35)	(0.15)	(0.39)	(0.17)	(0.87)	(0.01)
Dividends $_{t-1}$	-0.326	0.042	1.514	-1.179	-1.901	-0.763
	(0.85)	(0.99)	(0.39)	(0.73)	(0.54)	(0.82)
Cash Flow Volatility $_{t-1}$	-0.257	-0.190	-0.926	0.062	0.311	-0.305
	(0.67)	(0.77)	(0.17)	(0.88)	(0.70)	(0.38)
Year Dummy Variables	Yes	Yes	Yes	Yes	Yes	Yes
Industry Dummy Variables	Yes	Yes	Yes	Yes	Yes	Yes
Number of Observations	73	84	73	84	73	84
Adjusted R-Square	0.06	0.14	0.05	0.09	0.07	0.24

Table 3.8A Heckman Two-Stage Estimation — Second Stage: Announcement Returns

The table shows the second stage of Heckman two-stage estimation. CAR (-3, +3) is the cumulative abnormal return over days (-3, +3) around the announcement date (see text for details). Bank Lines of Credit Dummy equals one if an M&A is entirely financed by bank lines of credit, and equals zero otherwise. Mixed Lines & Cash Dummy equals one if an M&A is financed by a mix of bank lines of credit and corporate cash holdings, and equals zero otherwise. Relative Value is the ratio of deal value to the sum of the acquirer's market value of equity and deal value. Hostile equals one if an M&A is hostile, and zero otherwise. Size is the logarithm of non-cash assets. Cash Flow is income before extraordinary items divided by non-cash assets. M/B is market value of equity plus non-cash assets minus book value of equity, divided by non-cash assets. Leverage is the ratio of long-term debt to non-cash assets. Tangibility is the ratio of plant, property and equipment to non-cash assets. Capital Expenditure is the ratio of capital expenditure to non-cash assets. R&D is the ratio of R&D to non-cash assets. Dividends is the ratio of dividends to non-cash assets. Cash Flow Volatility is the standard deviation of cash flow to non-cash assets in the prior five years. Inverse Mills Ratio1 is calculated based on the estimates in the logistic regression as reported in Table 3.4A. Inverse Mills Ratio 2 is calculated based on the estimates in the multinomial logistic regression as reported in Table 3.5. Year Dummy Variables are the dummy variables for the years in the sample and not reported in the table. Industry Dummy Variables are the dummy variables for the industries defined by two-digit SIC codes and not reported in the table. The p-value is calculated based on Heteroscedasticity-Consistent standard errors, and is noted in the parentheses. *, **, and *** represent significance levels of 10%, 5%, and 1%, respectively.

	CAR (-3, +3)	
Intercept	0.031	-0.147
	(0.77)	(0.15)
Bank Lines of Credit Dummy	0.041***	
	(0.01)	
Mixed Lines & Cash Dummy		-0.003
		(0.89)
Relative Value	0.021	0.062
	(0.64)	(0.37)
Hostile	0.061**	0.016
	(0.04)	(0.53)
Size $_{t-1}$	-0.004	0.007
	(0.45)	(0.19)
Cash Flow $_{t-1}$	0.084	0.170***
	(0.12)	(0.01)
M/B $_{t-1}$	-0.001	-0.002
	(0.49)	(0.64)
Leverage $_{t-1}$	0.010	0.030
	(0.67)	(0.28)
Tangibility $_{t-1}$	0.001	-0.063*
	(0.99)	(0.06)
Capital Expenditure $_{t-1}$	-0.105	-0.056
	(0.18)	(0.54)
R&D $_{t-1}$	-0.065	0.010
	(0.43)	(0.88)
Dividends $_{t-1}$	-0.230	-0.690***
	(0.19)	(0.01)
Cash Flow Volatility $_{t-1}$	0.008	-0.104***
	(0.70)	(0.01)
Inverse Mills Ratio 1	0.035	-0.071*
	(0.40)	(0.07)
Inverse Mills Ratio 2	-0.019***	-0.008
	(0.01)	(0.58)
Year Dummy Variables	Yes	Yes
Industry Dummy Variables	Yes	Yes
Number of Observations	411	286
Adjusted R-Square	0.06	0.09

Table 3.8B Heckman Two-Stage Estimation — Second Stage: Net Changes in Operating Performance

The table shows the second stage of Heckman two-stage estimation. Net ΔROA is the difference between an acquirer's change in ROA and its matched comparable firm's change in ROA from year t-1 to t+1, where ROA is the ratio of EBIT to non-cash assets. The comparable firms are matched by propensity score matching based on size, cash flow, market-to-book ratio, leverage, tangibility, capital expenditure, R&D, dividends and cash flow volatility (see text for details). Bank Lines of Credit Dummy equals one if an M&A is entirely financed by bank lines of credit, and equals zero otherwise. Mixed Lines & Cash Dummy equals one if an M&A is financed by a mix of bank lines of credit and corporate cash holdings, and equals zero otherwise. Relative Value is the ratio of deal value to the sum of the acquirer's market value of equity and deal value. Hostile equals one if an M&A is hostile, and zero otherwise. Size is the logarithm of non-cash assets. M/B is market value of equity plus non-cash assets minus book value of equity, divided by non-cash assets. Leverage is the ratio of long-term debt to non-cash assets. Tangibility is the ratio of plant, property and equipment to non-cash assets. Capital Expenditure is the ratio of capital expenditure to non-cash assets. R&D is the ratio of R&D to non-cash assets. Dividends is the ratio of dividends to non-cash assets. Cash Flow Volatility is the standard deviation of cash flow to non-cash assets in the prior five years. Inverse Mills Ratio1 is calculated based on the estimates in the logistic regression as reported in Table 3.4A. Inverse Mills Ratio 2 is calculated based on the estimates in the multinomial logistic regression as reported in Table 3.5. Year Dummy Variables are the dummy variables for the years in the sample and not reported in the table. Industry Dummy Variables are the dummy variables for the industries defined by two-digit SIC codes and not reported in the table. The p-value is calculated based on Heteroscedasticity-Consistent standard errors, and is noted in the parentheses. *, **, and *** represent significance levels of 10%, 5%, and 1%, respectively.

	Net ΔROA	
Intercept	0.247	0.983
	(0.39)	(0.30)
Bank Lines of Credit Dummy	0.051*	
	(0.06)	
Mixed Lines & Cash Dummy		-0.065
		(0.43)
Relative Value	-0.090	-0.194
	(0.32)	(0.43)
Hostile	-0.069	0.145
	(0.18)	(0.37)
Size $_{t-1}$	0.001	-0.019
	(0.97)	(0.69)
ROA $_{t-1}$	-0.759***	-0.905***
	(0.01)	(0.01)
M/B $_{t-1}$	0.016	0.003
	(0.18)	(0.87)
Leverage $_{t-1}$	0.028	-0.010
	(0.47)	(0.92)
Tangibility $_{t-1}$	-0.083*	-0.031
	(0.08)	(0.75)
Capital Expenditure $_{t-1}$	0.067	-0.376
	(0.41)	(0.22)
R&D $_{t-1}$	0.264	0.685
	(0.19)	(0.27)
Dividends $_{t-1}$	0.654	1.854
	(0.28)	(0.16)
Cash Flow Volatility $_{t-1}$	-0.070	0.084
	(0.22)	(0.55)
Inverse Mills Ratio 1	0.027	0.177
	(0.75)	(0.51)
Inverse Mills Ratio 2	0.002	0.024
	(0.93)	(0.50)
Year Dummy Variables	Yes	Yes
Industry Dummy Variables	Yes	Yes
Number of Observations	379	268
Adjusted R-Square	0.32	0.25

Table 3.9A Fractions of Bank Lines of Credit — Announcement Returns

The table reports the fraction of bank lines of credit used in M&As and announcement returns. CAR (-3, +3) is the cumulative abnormal return over days (-3, +3) around the announcement date (see text for details). Fraction of Lines of Credit is the fraction of bank lines of credit used for the transaction when an M&A is financed by a mix of bank lines of credit and corporate cash holdings. Relative Value is the ratio of deal value to the sum of the acquirer's market value of equity and deal value. Hostile equals one if an M&A is hostile, and zero otherwise. Size is the logarithm of non-cash assets. Cash Flow is income before extraordinary items divided by non-cash assets. M/B is market value of equity plus non-cash assets minus book value of equity, divided by non-cash assets. Leverage is the ratio of long-term debt to non-cash assets. Tangibility is the ratio of plant, property and equipment to non-cash assets. Capital Expenditure is the ratio of capital expenditure to non-cash assets. R&D is the ratio of R&D to non-cash assets. Dividends is the ratio of dividends to non-cash assets. Cash Flow Volatility is the standard deviation of cash flow to non-cash assets in the prior five years. Year Dummy Variables are the dummy variables for the years in the sample and not reported in the table. Industry Dummy Variables are the dummy variables for the industries defined by one-digit SIC codes and not reported in the table. The p-value is calculated based on Heteroscedasticity-Consistent standard errors, and is noted in the parentheses. *, **, and *** represent significance levels of 10%, 5%, and 1%, respectively.

	CAR (-3, +3)
Intercept	-1.594***
	(0.01)
Fraction of Lines of Credit	0.301**
	(0.04)
Relative Value	0.356***
	(0.01)
Hostile	0.033
	(0.37)
Size $_{t-1}$	0.056***
	(0.01)
Cash Flow $_{t-1}$	-0.274**
	(0.05)
M/B $_{t-1}$	-0.027*
	(0.08)
Leverage $_{t-1}$	-1.254**
	(0.02)
Tangibility $_{t-1}$	0.761**
	(0.02)
Capital Expenditure $_{t-1}$	-1.393***
	(0.01)
R&D $_{t-1}$	2.796***
	(0.01)
Dividends $_{t-1}$	-12.173***
	(0.01)
Cash Flow Volatility $_{t-1}$	2.728***
	(0.01)
Year Dummy Variables	Yes
Industry Dummy Variables	Yes
Number of Observations	42
Adjusted R-Square	0.89

Table 3.9B Fractions of Bank Lines of Credit — Net Changes in Operating Performance

The table reports the fraction of bank lines of credit used in M&As and the changes in operating performance. Net ΔROA is the difference between an acquirer's change in ROA and its matched comparable firm's change in ROA from year t-1 to t+1, where ROA is ROA is the ratio of EBIT to non-cash assets. The comparable firms are matched by propensity score matching based on size, cash flow, market-to-book ratio, leverage, tangibility, capital expenditure, R&D, dividends and cash flow volatility (see text for details). Fraction of Lines of Credit is the fraction of bank lines of credit used for the transaction when an M&A is financed by a mix of bank lines of credit and corporate cash holdings. Relative Value is the ratio of deal value to the sum of the acquirer's market value of equity and deal value. Hostile equals one if an M&A is hostile, and zero otherwise. Size is the logarithm of non-cash assets. Cash Flow is income before extraordinary items divided by non-cash assets. M/B is market value of equity plus non-cash assets minus book value of equity, divided by non-cash assets. Leverage is the ratio of long-term debt to non-cash assets. Tangibility is the ratio of plant, property and equipment to non-cash assets. Capital Expenditure is the ratio of capital expenditure to non-cash assets. R&D is the ratio of R&D to non-cash assets. Dividends is the ratio of dividends to non-cash assets. Cash Flow Volatility is the standard deviation of cash flow to non-cash assets in the prior five years. Year Dummy Variables are the dummy variables for the years in the sample and not reported in the table. Industry Dummy Variables are the dummy variables for the industries defined by one-digit SIC codes and not reported in the table. The p-value is calculated based on Heteroscedasticity-Consistent standard errors, and is noted in the parentheses. *, **, and *** represent significance levels of 10%, 5%, and 1%, respectively.

	Net ΔROA
Intercept	-0.618*
	(0.08)
Fraction of Lines of Credit	0.350**
	(0.02)
Relative Value	1.513***
	(0.01)
Hostile	-0.426***
	(0.01)
Size $_{t-1}$	0.033*
	(0.08)
ROA $_{t-1}$	-2.730***
	(0.01)
M/B $_{t-1}$	0.058**
	(0.02)
Leverage $_{t-1}$	0.119
	(0.28)
Tangibility $_{t-1}$	-1.097***
	(0.01)
Capital Expenditure $_{t-1}$	5.317***
	(0.01)
R&D $_{t-1}$	3.428***
	(0.01)
Dividends $_{t-1}$	-5.954***
	(0.01)
Cash Flow Volatility $_{t-1}$	0.300
	(0.24)
Year Dummy Variables	Yes
Industry Dummy Variables	Yes
Number of Observations	41
Adjusted R-Square	0.49

Table 3.10A Commitment Fee and Predetermined Interest Rate — Univariate Statistics

The table reports the univariate statistics of Commitment Fee and Predetermined Interest Rate of bank lines of credit. Commitment Fee is the weighted average commitment fee of each bank line of credit a firm has. Predetermined Interest Rate is the weighted average interest rate of each bank line of credit that a firm has.

	Mean	25th Percentile	Median	75th Percentile	Std Dev
Commitment Fee	0.0036	0.0023	0.0038	0.0044	0.0026
Predetermined Interest Rate	0.0518	0.0337	0.0572	0.0659	0.0199

Table 3.10B Commitment Fee and Predetermined Interest Rate — Announcement Returns

The table reports the regression on commitment fee and interest rates of bank lines of credit, and the performance of M&As. CAR (-3, +3) is the cumulative abnormal return over days (-3, +3) around the announcement date (see text for details). Relative Value is the ratio of deal value to the sum of the acquirer's market value of equity and deal value. Hostile equals one if an M&A is hostile, and zero otherwise. Size is the logarithm of non-cash assets. Cash Flow is income before extraordinary items divided by non-cash assets. M/B is market value of equity plus non-cash assets minus book value of equity, divided by non-cash assets. Leverage is the ratio of long-term debt to non-cash assets. Tangibility is the ratio of plant, property and equipment to non-cash assets. Capital Expenditure is the ratio of capital expenditure to non-cash assets. R&D is the ratio of R&D to non-cash assets. Dividends is the ratio of dividends to non-cash assets. Cash Flow Volatility is the standard deviation of cash flow to non-cash assets in the prior five years. Year Dummy Variables are the dummy variables for the years in the sample and not reported in the table. Industry Dummy Variables are the dummy variables for the industries defined by two-digit SIC codes and not reported in the table. The p-value is calculated based on Heteroscedasticity-Consistent standard errors, and is noted in the parentheses. *, **, and *** represent significance levels of 10%, 5%, and 1%, respectively.

	CAR (-3, +3)	
Intercept	0.317**	0.229
	(0.05)	(0.16)
Commitment Fee $_{t-1}$	-18.991**	
	(0.03)	
Predetermined Interest Rate $_{t-1}$		-0.775*
		(0.08)
Relative Value	0.162**	-0.019
	(0.05)	(0.74)
Hostile	0.206***	0.241***
	(0.01)	(0.01)
Size $_{t-1}$	-0.011	-0.008
	(0.12)	(0.28)
Cash Flow $_{t-1}$	-0.060	0.047
	(0.69)	(0.70)
M/B $_{t-1}$	-0.006	-0.006
	(0.63)	(0.36)
Leverage $_{t-1}$	-0.105**	0.022
	(0.05)	(0.56)
Tangibility $_{t-1}$	-0.055	-0.036
	(0.33)	(0.35)
Capital Expenditure $_{t-1}$	-0.177	-0.190
	(0.20)	(0.12)
R&D $_{t-1}$	-1.456***	-1.194**
	(0.01)	(0.03)
Dividends $_{t-1}$	0.287	-0.030
	(0.50)	(0.93)
Cash Flow Volatility $_{t-1}$	0.063*	0.020
	(0.08)	(0.44)
Year Dummy Variables	Yes	Yes
Industry Dummy Variables	Yes	Yes
Number of Observations	101	171
Adjusted R-Square	0.26	0.11

Table 3.10C Commitment Fee and Predetermined Interest Rate — Net Changes in Operating Performance

The table reports the regression on commitment fee and interest rates of bank lines of credit, and the performance of M&As. Net ΔROA is the difference between an acquirer's change in ROA and its matched comparable firm's change in ROA from year t-1 to t+1, where ROA is the ratio of EBIT to non-cash assets. The comparable firms are matched by propensity score matching based on size, cash flow, market-to-book ratio, leverage, tangibility, capital expenditure, R&D, dividends and cash flow volatility (see text for details). Commitment Fee is the weighted average commitment fee of each bank line of credit a firm has. Predetermined Interest Rate is the weighted average interest rate of each bank line of credit that a firm has. Relative Value is the ratio of deal value to the sum of the acquirer's market value of equity and deal value. Hostile equals one if an M&A is hostile, and zero otherwise. ROA is the ratio of EBIT to non-cash assets. Size is the logarithm of non-cash assets. Cash Flow is income before extraordinary items divided by non-cash assets. M/B is market value of equity plus non-cash assets minus book value of equity, divided by non-cash assets. Leverage is the ratio of long-term debt to non-cash assets. Tangibility is the ratio of plant, property and equipment to non-cash assets. Capital Expenditure is the ratio of capital expenditure to non-cash assets. R&D is the ratio of R&D to non-cash assets. Dividends is the ratio of dividends to non-cash assets. Cash Flow Volatility is the standard deviation of cash flow to non-cash assets in the prior five years. Year Dummy Variables are the dummy variables for the years in the sample and not reported in the table. Industry Dummy Variables are the dummy variables for the industries defined by two-digit SIC codes and not reported in the table. The p-value is calculated based on Heteroscedasticity-Consistent standard errors, and is noted in the parentheses. *, **, and *** represent significance levels of 10%, 5%, and 1%, respectively.

	Net ΔROA	
Intercept	0.335	0.213
	(0.10)	(0.32)
Commitment Fees $_{t-1}$	-12.238**	
	(0.05)	
Predetermined Interest Rate $_{t-1}$		-1.049*
		(0.08)
Relative Value	-0.091	-0.033
	(0.30)	(0.69)
Hostile	0.024	0.113***
	(0.73)	(0.01)
Size $_{t-1}$	-0.008	-0.003
	(0.34)	(0.78)
ROA $_{t-1}$	-0.630**	-0.852***
	(0.02)	(0.01)
M/B $_{t-1}$	-0.012	0.003
	(0.62)	(0.87)
Leverage $_{t-1}$	0.103*	0.127**
	(0.07)	(0.05)
Tangibility $_{t-1}$	-0.036	-0.112*
	(0.65)	(0.08)
Capital Expenditure $_{t-1}$	0.196	0.202*
	(0.29)	(0.08)
R&D $_{t-1}$	0.964***	1.417*
	(0.01)	(0.09)
Dividends $_{t-1}$	0.097	-0.324
	(0.13)	(0.57)
Cash Flow Volatility $_{t-1}$	-0.073	-0.151**
	(0.18)	(0.03)
Year Dummy Variables	Yes	Yes
Industry Dummy Variables	Yes	Yes
Number of Observations	90	158
Adjusted R-Square	0.44	0.21

Table 3.11A Sub-Group Analysis Based on Bankruptcy Risk — Announcement Returns

The table shows the sub-group analysis on the relation between sources of financing and announcement returns. CAR (-3, +3) is the cumulative abnormal return over days (-3, +3) around the announcement date (see text for details). Low (High) Bankruptcy risk indicates a firm's Altman Z-Score is equal or greater (less) than 1.81. Bank Lines of Credit Dummy equals one if an M&A is entirely financed by bank lines of credit, and equals zero otherwise. Mixed Lines & Cash Dummy equals one if an M&A is financed by a mix of bank lines of credit and corporate cash holdings, and equals zero otherwise. Relative Value is the ratio of deal value to the sum of the acquirer's market value of equity and deal value. Hostile equals one if an M&A is hostile, and zero otherwise. Size is the logarithm of non-cash assets. Cash Flow is income before extraordinary items divided by non-cash assets. M/B is market value of equity plus non-cash assets minus book value of equity, divided by non-cash assets. Leverage is the ratio of long-term debt to non-cash assets. Tangibility is the ratio of plant, property and equipment to non-cash assets. Capital Expenditure is the ratio of capital expenditure to non-cash assets. R&D is the ratio of R&D to non-cash assets. Dividends is the ratio of dividends to non-cash assets. Cash Flow Volatility is the standard deviation of cash flow to non-cash assets in the prior five years. Year Dummy Variables are the dummy variables for the years in the sample and not reported in the table. Industry Dummy Variables are the dummy variables for the industries defined by two-digit SIC codes and not reported in the table. The p-value is calculated based on Heteroscedasticity-Consistent standard errors, and is noted in the parentheses. *, **, and *** represent significance levels of 10%, 5%, and 1%, respectively.

	CAR (-3,+3)	
	Low Bankruptcy Risk	High Bankruptcy Risk
Intercept	0.134*	0.001
	(0.06)	(1.00)
Bank Lines of Credit Dummy	0.021***	-0.011
	(0.01)	(0.57)
Mixed Lines & Cash Dummy	0.006	0.002
	(0.55)	(0.92)
Relative Value	0.052	0.044
	(0.16)	(0.45)
Hostile	-0.055**	0.029
	(0.02)	(0.48)
Size $_{t-1}$	-0.004	0.001
	(0.13)	(0.84)
Cash Flow $_{t-1}$	0.027	0.171
	(0.64)	(0.26)
M/B $_{t-1}$	-0.004	-0.027*
	(0.26)	(0.09)
Leverage $_{t-1}$	0.002	0.004
	(0.94)	(0.92)
Tangibility $_{t-1}$	0.018	-0.134***
	(0.54)	(0.01)
Capital Expenditure $_{t-1}$	-0.077	0.043
	(0.37)	(0.63)
R&D $_{t-1}$	-0.099	0.048
	(0.14)	(0.82)
Dividends $_{t-1}$	-0.289*	-1.256***
	(0.07)	(0.01)
Cash Flow Volatility $_{t-1}$	-0.012	0.040
	(0.57)	(0.32)
Year Dummy Variables	Yes	Yes
Industry Dummy Variables	Yes	Yes
Number of Observations	605	118
Adjusted R-Square	0.06	0.15

Table 3.11B Sub-Group Analysis Based on Bankruptcy Risk — Net Changes in Operating Performance

The table shows the sub-group analysis on the relation between sources of financing and the net changes in operating performance. Net ΔROA is as the difference between an acquirer's change in ROA and its matched comparable firm's change in ROA from year t-1 to t+1, where ROA is the ratio of EBIT to non-cash assets. The comparable firms are matched by propensity score matching based on size, cash flow, market-to-book ratio, leverage, tangibility, capital expenditure, R&D, dividends and cash flow volatility (see text for details). Low (High) Bankruptcy risk indicates a firm's Altman Z-Score is equal or greater (less) than 1.81. Bank Lines of Credit Dummy equals one if an M&A is entirely financed by bank lines of credit, and equals zero otherwise. Mixed Lines & Cash Dummy equals one if an M&A is financed by a mix of bank lines of credit and corporate cash holdings, and equals zero otherwise. Relative Value is the ratio of deal value to the sum of the acquirer's market value of equity and deal value. Hostile equals one if an M&A is hostile, and zero otherwise. Size is the logarithm of non-cash assets. M/B is market value of equity plus non-cash assets minus book value of equity, divided by non-cash assets. Leverage is the ratio of long-term debt to non-cash assets. Tangibility is the ratio of plant, property and equipment to non-cash assets. Capital Expenditure is the ratio of capital expenditure to non-cash assets. R&D is the ratio of R&D to non-cash assets. Dividends is the ratio of dividends to non-cash assets. Cash Flow Volatility is the standard deviation of cash flow to non-cash assets in the prior five years. Year Dummy Variables are the dummy variables for the years in the sample and not reported in the table. Industry Dummy Variables are the dummy variables for the industries defined by two-digit SIC codes and not reported in the table. The p-value is calculated based on the Heteroscedasticity-Consistent standard errors, and is noted in the parentheses. *, **, and *** represent significance levels of 10%, 5%, and 1%, respectively.

	Net ΔROA	
	Low Bankruptcy Risk	High Bankruptcy Risk
Intercept	0.345*	0.079
	(0.07)	(0.64)
Bank Lines of Credit Dummy	0.047*	0.023
	(0.06)	(0.36)
Mixed Lines & Cash Dummy	0.013	0.014
	(0.55)	(0.56)
Relative Value	-0.110*	-0.154
	(0.09)	(0.12)
Hostile	0.058	-0.237**
	(0.20)	(0.02)
Size $_{t-1}$	-0.002	0.003
	(0.75)	(0.67)
ROA $_{t-1}$	-0.666***	-0.508***
	(0.01)	(0.01)
M/B $_{t-1}$	0.003	-0.008
	(0.84)	(0.75)
Leverage $_{t-1}$	0.037	-0.087
	(0.52)	(0.13)
Tangibility $_{t-1}$	-0.123**	0.133*
	(0.05)	(0.09)
Capital Expenditure $_{t-1}$	-0.069	-0.118
	(0.62)	(0.47)
R&D $_{t-1}$	0.535**	-0.270
	(0.02)	(0.20)
Dividends $_{t-1}$	0.751	-0.831***
	(0.12)	(0.01)
Cash Flow Volatility $_{t-1}$	-0.153**	0.037
	(0.03)	(0.66)
Year Dummy Variables	Yes	Yes
Industry Dummy Variables	Yes	Yes
Number of Observations	568	108
Adjusted R-Square	0.24	0.44

Table 3.12A Acquirers with Multiple M&As — Announcement Returns

The table shows the relation between sources of financing and announcement returns. CAR (-3, +3) is the cumulative abnormal return over days (-3, +3) around the announcement date (see text for details). Bank Lines of Credit Dummy equals one if an M&A is entirely financed by bank lines of credit, and equals zero otherwise. Mixed Lines & Cash Dummy equals one if an M&A is financed by a mix of bank lines of credit and corporate cash holdings, and equals zero otherwise. Relative Value is the ratio of deal value to the sum of the acquirer's market value of equity and deal value. Hostile equals one if an M&A is hostile, and zero otherwise. Size is the logarithm of non-cash assets. Cash Flow is income before extraordinary items divided by non-cash assets. M/B is market value of equity plus non-cash assets minus book value of equity, divided by non-cash assets. Leverage is the ratio of long-term debt to non-cash assets. Tangibility is the ratio of plant, property and equipment to non-cash assets. Capital Expenditure is the ratio of capital expenditure to non-cash assets. R&D is the ratio of R&D to non-cash assets. Dividends is the ratio of dividends to non-cash assets. Cash Flow Volatility is the standard deviation of cash flow to non-cash assets in the prior five years. Year Dummy Variables are the dummy variables for the years in the sample and not reported in the table. Industry Dummy Variables are the dummy variables for the industries defined by two-digit SIC codes and not reported in the table. The p-value is calculated based on the Heteroscedasticity-Consistent standard errors, and is noted in the parentheses. *, **, and *** represent significance levels of 10%, 5%, and 1%, respectively.

	CAR (-3, +3)
Intercept	0.158**
	(0.05)
Bank Lines of Credit Dummy	0.020***
	(0.01)
Mixed Lines & Cash Dummy	0.005
	(0.54)
Relative Value	0.052*
	(0.09)
Hostile	-0.048*
	(0.06)
Size $_{t-1}$	-0.004**
	(0.05)
Cash Flow $_{t-1}$	0.043
	(0.44)
M/B $_{t-1}$	-0.003
	(0.38)
Leverage $_{t-1}$	-0.008
	(0.65)
Tangibility $_{t-1}$	-0.008
	(0.74)
Capital Expenditure $_{t-1}$	-0.021
	(0.73)
R&D $_{t-1}$	-0.091
	(0.16)
Dividends $_{t-1}$	-0.355**
	(0.02)
Cash Flow Volatility $_{t-1}$	-0.021
	(0.23)
Year Dummy Variables	Yes
Industry Dummy Variables	Yes
Number of Observations	680
Adjusted R-Square	0.09

Table 3.12B Acquirers with Multiple M&As — Net Changes in Operating Performance

The table shows the relation between sources of financing and the changes in operating performance. ROA is the ratio of EBIT to non-cash assets. ΔROA is the change in ROA from year t-1 to t+1. Net ΔROA is the difference between an acquirer's change in ROA and its matched comparable firm's change in ROA from year t-1 to t+1. The comparable firms are matched by propensity score matching based on size, cash flow, market-to-book ratio, leverage, tangibility, capital expenditure, R&D, dividends and cash flow volatility (see text for details). Bank Lines of Credit Dummy equals one if an M&A is entirely financed by bank lines of credit, and equals zero otherwise. Mixed Lines & Cash Dummy equals one if an M&A is financed by a mix of bank lines of credit and corporate cash holdings, and equals zero otherwise. Relative Value is the ratio of deal value to the sum of the acquirer's market value of equity and deal value. Hostile equals one if an M&A is hostile, and zero otherwise. Size is the logarithm of non-cash assets. M/B is market value of equity plus non-cash assets minus book value of equity, divided by non-cash assets. Leverage is the ratio of long-term debt to non-cash assets. Tangibility is the ratio of plant, property and equipment to non-cash assets. Capital Expenditure is the ratio of capital expenditure to non-cash assets. R&D is the ratio of R&D to non-cash assets. Dividends is the ratio of dividends to non-cash assets. Cash Flow Volatility is the standard deviation of cash flow to non-cash assets in the prior five years. Year Dummy Variables are the dummy variables for the years in the sample and not reported in the table. Industry Dummy Variables are the dummy variables for the industries defined by two-digit SIC codes and not reported in the table. The p-value is calculated based on the Heteroscedasticity-Consistent standard errors, and is noted in the parentheses. *, **, and *** represent significance levels of 10%, 5%, and 1%, respectively.

	ΔROA	Net ΔROA
Intercept	-0.350***	0.173
	(0.01)	(0.33)
Bank Lines of Credit Dummy	0.023*	0.045**
	(0.06)	(0.04)
Mixed Lines & Cash Dummy	0.014	0.009
	(0.20)	(0.65)
Relative Value	-0.012	-0.065
	(0.72)	(0.28)
Hostile	-0.011	-0.001
	(0.65)	(0.99)
Size $_{t-1}$	0.012***	0.005
	(0.01)	(0.45)
ROA $_{t-1}$	-0.520***	-0.521***
	(0.01)	(0.01)
M/B $_{t-1}$	0.006	0.002
	(0.22)	(0.81)
Leverage $_{t-1}$	0.045***	0.056
	(0.01)	(0.19)
Tangibility $_{t-1}$	-0.015	-0.094
	(0.61)	(0.10)
Capital Expenditure $_{t-1}$	-0.086	-0.057
	(0.14)	(0.62)
R&D $_{t-1}$	0.086	0.169
	(0.36)	(0.53)
Dividends $_{t-1}$	0.393	0.383
	(0.13)	(0.41)
Cash Flow Volatility $_{t-1}$	-0.041	-0.067
	(0.13)	(0.23)
Year Dummy Variables	Yes	Yes
Industry Dummy Variables	Yes	Yes
Number of Observations	634	634
Adjusted R-Square	0.33	0.28

Table 3.13 Completion Year

The table shows the relation between sources of financing and the changes in operating performance. ΔROA is the change in ROA from year t-1 to t+1, where ROA is the ratio of EBIT to non-cash assets. Net ΔROA is the difference between an acquirer's change in ROA and its matched comparable firm's change in ROA from year t-1 to t+1 (t defines as the year of completion of an M&A), where ROA is the ratio of EBIT to non-cash assets. The comparable firms are matched by propensity score matching based on size, cash flow, market-to-book ratio, leverage, tangibility, capital expenditure, R&D, dividends and cash flow volatility (see text for details). ROA is the ratio of EBIT to non-cash assets. Bank Lines of Credit Dummy equals one if an M&A is entirely financed by bank lines of credit, and equals zero otherwise. Mixed Lines & Cash Dummy equals one if an M&A is financed by a mix of bank lines of credit and corporate cash holdings, and equals zero otherwise. Relative Value is the ratio of deal value to the sum of the acquirer's market value of equity and deal value. Hostile equals one if an M&A is hostile, and zero otherwise. Size is the logarithm of non-cash assets. M/B is market value of equity plus non-cash assets minus book value of equity, divided by non-cash assets. Leverage is the ratio of long-term debt to non-cash assets. Tangibility is the ratio of plant, property and equipment to non-cash assets. Capital Expenditure is the ratio of capital expenditure to non-cash assets. R&D is the ratio of R&D to non-cash assets. Dividends is the ratio of dividends to non-cash assets. Cash Flow Volatility is the standard deviation of cash flow to non-cash assets in the prior five years. Year Dummy Variables are the dummy variables for the years in the sample and not reported in the table. Industry Dummy Variables are the dummy variables for the industries defined by two-digit SIC codes and not reported in the table. The p-value is calculated based on Heteroscedasticity-Consistent standard errors, and is noted in the parentheses. *, **, and *** represent significance levels of 10%, 5%, and 1%, respectively.

	ΔROA	Net ΔROA
Intercept	-0.255***	-0.091
	(0.01)	(0.35)
Bank Lines of Credit Dummy	0.021**	0.022*
	(0.04)	(0.08)
Mixed Lines & Cash Dummy	0.011	0.005
	(0.27)	(0.70)
Relative Value	-0.018	0.010
	(0.55)	(0.80)
Hostile	-0.023	0.007
	(0.37)	(0.84)
Size $_{t-1}$	0.010***	0.006
	(0.01)	(0.20)
ROA $_{t-1}$	-0.537***	-0.402***
	(0.01)	(0.01)
M/B $_{t-1}$	0.007	-0.003
	(0.29)	(0.17)
Leverage $_{t-1}$	0.083***	0.101***
	(0.01)	(0.01)
Tangibility $_{t-1}$	-0.002	-0.007
	(0.93)	(0.82)
Capital Expenditure $_{t-1}$	-0.104*	-0.200***
	(0.07)	(0.01)
R&D $_{t-1}$	0.124	0.082
	(0.34)	(0.55)
Dividends $_{t-1}$	0.255	0.329*
	(0.11)	(0.09)
Cash Flow Volatility $_{t-1}$	0.001	-0.010
	(0.99)	(0.79)
Year Dummy Variables	Yes	Yes
Industry Dummy Variables	Yes	Yes
Number of Observations	670	670
Adjusted R-Square	0.37	0.18

Table 3.14 Alternative Event Windows

The table shows the relation between sources of financing and announcement returns. de are the cumulative abnormal returns over days (0, 0) and (-1, +1) around the announcement date. Bank Lines of Credit Dummy equals one if an M&A is entirely financed by bank lines of credit, and equals zero otherwise. Mixed Lines & Cash Dummy equals one if an M&A is financed by a mix of bank lines of credit and corporate cash holdings, and equals zero otherwise. Relative Value is the ratio of deal value to the sum of the acquirer's market value of equity and deal value. Hostile equals one if an M&A is hostile, and zero otherwise. Size is the logarithm of non-cash assets. Cash Flow is income before extraordinary items divided by non-cash assets. M/B is market value of equity plus non-cash assets minus book value of equity, divided by non-cash assets. Leverage is the ratio of long-term debt to non-cash assets. Tangibility is the ratio of plant, property and equipment to non-cash assets. Capital Expenditure is the ratio of capital expenditure to non-cash assets. R&D is the ratio of R&D to non-cash assets. Dividends is the ratio of dividends to non-cash assets. Cash Flow Volatility is the standard deviation of cash flow to non-cash assets in the prior five years. Year Dummy Variables are the dummy variables for the years in the sample and not reported in the table. Industry Dummy Variables are the dummy variables for the industries defined by two-digit SIC codes and not reported in the table. The p-value is calculated based on Heteroscedasticity-Consistent standard errors, and is noted in the parentheses. *, **, and *** represent significance levels of 10%, 5%, and 1%, respectively.

	CAR (0, 0)	CAR (-1, +1)
Intercept	0.094**	0.145***
	(0.03)	(0.01)
Bank Lines of Credit Dummy	0.011***	0.010*
	(0.01)	(0.06)
Mixed Lines & Cash Dummy	0.006	-0.001
	(0.23)	(0.96)
Relative Value	0.043***	0.073***
	(0.01)	(0.01)
Hostile	-0.017***	-0.037***
	(0.01)	(0.01)
Size $_{t-1}$	-0.002*	-0.004***
	(0.09)	(0.01)
Cash Flow $_{t-1}$	0.004	-0.029**
	(0.87)	(0.05)
M/B $_{t-1}$	0.001	0.001
	(0.74)	(0.56)
Leverage $_{t-1}$	-0.001	0.008
	(1.00)	(0.49)
Tangibility $_{t-1}$	-0.001	-0.009
	(0.94)	(0.59)
Capital Expenditure $_{t-1}$	0.014	0.007
	(0.60)	(0.85)
R&D $_{t-1}$	0.028	0.030
	(0.43)	(0.30)
Dividends $_{t-1}$	-0.150**	-0.063***
	(0.04)	(0.01)
Cash Flow Volatility $_{t-1}$	-0.012	-0.027**
	(0.16)	(0.04)
Year Dummy Variables	Yes	Yes
Industry Dummy Variables	Yes	Yes
Number of Observations	723	723
Adjusted R-Square	0.06	0.08

Table 3.15A Alternative Measure of Corporate Governance — Announcement Returns

The table shows the sub-group analysis on the relation between sources of financing and announcement returns. CAR (-3, +3) is the cumulative abnormal return over days (-3, +3) around the announcement date (see text for details). Low (High) Corporate Governance indicates a firm's institutional ownership is below (above) the median institutional ownership. Bank Lines of Credit Dummy equals one if an M&A is entirely financed by bank lines of credit, and equals zero otherwise. Mixed Lines & Cash Dummy equals one if an M&A is financed by a mix of bank lines of credit and corporate cash holdings, and equals zero otherwise. Relative Value is the ratio of deal value to the sum of the acquirer's market value of equity and deal value. Hostile equals one if an M&A is hostile, and zero otherwise. Size is the logarithm of non-cash assets. Cash Flow is income before extraordinary items divided by non-cash assets. M/B is market value of equity plus non-cash assets minus book value of equity, divided by non-cash assets. Leverage is the ratio of long-term debt to non-cash assets. Tangibility is the ratio of plant, property and equipment to non-cash assets. Capital Expenditure is the ratio of capital expenditure to non-cash assets. R&D is the ratio of R&D to non-cash assets. Dividends is the ratio of dividends to non-cash assets. Cash Flow Volatility is the standard deviation of cash flow to non-cash assets in the prior five years. Year Dummy Variables are the dummy variables for the years in the sample and not reported in the table. Industry Dummy Variables are the dummy variables for the industries defined by two-digit SIC codes and not reported in the table. The p-value is calculated based on Heteroscedasticity-Consistent standard errors, and is noted in the parentheses. *, **, and *** represent significance levels of 10%, 5%, and 1%, respectively.

	CAR (-3,+3)	
	Low Governance	High Governance
Intercept	-0.046	0.141**
	(0.53)	(0.02)
Bank Lines of Credit Dummy	0.018*	0.013
	(0.08)	(0.20)
Mixed Lines & Cash Dummy	-0.001	0.009
	(0.91)	(0.41)
Relative Value	0.121***	-0.028
	(0.01)	(0.62)
Hostile	-0.054	-0.047**
	(0.10)	(0.05)
Size $_{t-1}$	-0.003	-0.005*
	(0.36)	(0.07)
Cash Flow $_{t-1}$	0.022	0.089
	(0.75)	(0.19)
M/B $_{t-1}$	0.002	-0.009**
	(0.25)	(0.02)
Leverage $_{t-1}$	0.038*	-0.024
	(0.06)	(0.28)
Tangibility $_{t-1}$	-0.007	-0.016
	(0.78)	(0.58)
Capital Expenditure $_{t-1}$	0.014	-0.005
	(0.80)	(0.95)
R&D $_{t-1}$	-0.060**	-0.050
	(0.03)	(0.49)
Dividends $_{t-1}$	-0.113***	0.065
	(0.01)	(0.74)
Cash Flow Volatility $_{t-1}$	0.002	-0.024
	(0.94)	(0.38)
Year Dummy Variables	Yes	Yes
Industry Dummy Variables	Yes	Yes
Number of Observations	362	361
Adjusted R-Square	0.08	0.05

Table 3.15B Alternative Measure of Corporate Governance — Net Changes in Operating Performance

The table shows the sub-group analysis on the relation between sources of financing and the net changes in operating performance. Net ΔROA is the difference between an acquirer's change in ROA and its matched comparable firm's change in ROA from year t-1 to t+1, where ROA is the ratio of EBIT to non-cash assets. The comparable firms are matched by propensity score matching based on size, cash flow, market-to-book ratio, leverage, tangibility, capital expenditure, R&D, dividends and cash flow volatility (see text for details). Low (High) Corporate Governance indicates a firm's institutional ownership is below (above) the median institutional ownership. Bank Lines of Credit Dummy equals one if an M&A is entirely financed by bank lines of credit, and equals zero otherwise. Mixed Lines & Cash Dummy equals one if an M&A is financed by a mix of bank lines of credit and corporate cash holdings, and equals zero otherwise. Relative Value is the ratio of deal value to the sum of the acquirer's market value of equity and deal value. Hostile equals one if an M&A is hostile, and zero otherwise. Size is the logarithm of non-cash assets. M/B is market value of equity plus non-cash assets minus book value of equity, divided by non-cash assets. Leverage is the ratio of long-term debt to non-cash assets. Tangibility is the ratio of plant, property and equipment to non-cash assets. Capital Expenditure is the ratio of capital expenditure to non-cash assets. R&D is the ratio of R&D to non-cash assets. Dividends is the ratio of dividends to non-cash assets. Cash Flow Volatility is the standard deviation of cash flow to non-cash assets in the prior five years. Year Dummy Variables are the dummy variables for the years in the sample and not reported in the table. Industry Dummy Variables are the dummy variables for the industries defined by two-digit SIC codes and not reported in the table. The p-value is calculated based on Heteroscedasticity-Consistent standard errors, and is noted in the parentheses. *, **, and *** represent significance levels of 10%, 5%, and 1%, respectively.

	Net ΔROA	
	Low Governance	High Governance
Intercept	-0.167	0.108
	(0.30)	(0.47)
Bank Lines of Credit Dummy	0.073***	0.001
	(0.01)	(0.96)
Mixed Lines & Cash Dummy	-0.011	0.012
	(0.64)	(0.58)
Relative Value	-0.003	-0.098
	(0.96)	(0.17)
Hostile	-0.063**	0.027
	(0.03)	(0.66)
Size $_{t-1}$	0.012*	-0.001
	(0.06)	(0.90)
ROA $_{t-1}$	-0.276***	-0.319***
	(0.01)	(0.01)
M/B $_{t-1}$	0.001	-0.005
	(0.96)	(0.66)
Leverage $_{t-1}$	0.060	-0.001
	(0.17)	(0.98)
Tangibility $_{t-1}$	-0.100*	0.013
	(0.07)	(0.81)
Capital Expenditure $_{t-1}$	0.112	-0.146
	(0.30)	(0.33)
R&D $_{t-1}$	-0.192	0.021
	(0.42)	(0.91)
Dividends $_{t-1}$	-0.215	0.674
	(0.66)	(0.13)
Cash Flow Volatility $_{t-1}$	-0.169***	-0.013
	(0.01)	(0.81)
Year Dummy Variables	Yes	Yes
Industry Dummy Variables	Yes	Yes
Number of Observations	344	332
Adjusted R-Square	0.17	0.24

Table 3.16A The Public Status of Target Firms — Announcement Returns

The table reports the impact of the public status of target firms on announcement returns. CAR (-3, +3) is the cumulative abnormal return over days (-3, +3) around the announcement date (see text for details). Bank Lines of Credit Dummy equals one if an M&A is entirely financed by bank lines of credit, and equals zero otherwise. Mixed Lines & Cash Dummy equals one if an M&A is financed by a mix of bank lines of credit and corporate cash holdings, and equals zero otherwise. Public equals one if the target firm of an M&A is public firm. Relative Value is the ratio of deal value to the sum of the acquirer's market value of equity and deal value. Hostile equals one if an M&A is hostile, and zero otherwise. Size is the logarithm of non-cash assets. Cash Flow is income before extraordinary items divided by non-cash assets. M/B is market value of equity plus non-cash assets minus book value of equity, divided by non-cash assets. Leverage is the ratio of long-term debt to non-cash assets. Tangibility is the ratio of plant, property and equipment to non-cash assets. Capital Expenditure is the ratio of capital expenditure to non-cash assets. R&D is the ratio of R&D to non-cash assets. Dividends is the ratio of dividends to non-cash assets. Cash Flow Volatility is the standard deviation of cash flow to non-cash assets in the prior five years. Year Dummy Variables are the dummy variables for the years in the sample and not reported in the table. Industry Dummy Variables are the dummy variables for the industries defined by two-digit SIC codes and not reported in the table. The p-value is calculated based on the Heteroscedasticity-Consistent standard errors, and is noted in the parentheses. *, **, and *** represent significance levels of 10%, 5%, and 1%, respectively.

	CAR (-3, +3)
Intercept	0.149*
	(0.06)
Bank Lines of Credit Dummy	0.019***
	(0.01)
Mixed Lines & Cash Dummy	0.004
	(0.60)
Public	-0.003
	(0.74)
Relative Value	0.049
	(0.10)
Hostile	-0.049*
	(0.06)
Size $_{t-1}$	-0.004*
	(0.06)
Cash Flow $_{t-1}$	0.067
	(0.21)
M/B $_{t-1}$	-0.004
	(0.20)
Leverage $_{t-1}$	0.002
	(0.91)
Tangibility $_{t-1}$	-0.009
	(0.67)
Capital Expenditure $_{t-1}$	-0.041
	(0.49)
R&D $_{t-1}$	-0.072
	(0.27)
Dividends $_{t-1}$	-0.333**
	(0.02)
Cash Flow Volatility $_{t-1}$	-0.020
	(0.26)
Year Dummy Variables	Yes
Industry Dummy Variables	Yes
Number of Observations	723
Adjusted R-Square	0.09

Table 3.16B The Public Status of Target Firms — Net Changes in Operating Performance

The table reports the impact of the public status of target firms on the changes in operating performance. Net ΔROA is the difference between an acquirer's change in ROA and its matched comparable firm's change in ROA from year t-1 to t+1, where ROA is the ratio of EBIT to non-cash assets. The comparable firms are matched by propensity score matching based on size, cash flow, market-to-book ratio, leverage, tangibility, capital expenditure, R&D, dividends and cash flow volatility (see text for details). Bank Lines of Credit Dummy equals one if an M&A is entirely financed by bank lines of credit, and equals zero otherwise. Mixed Lines & Cash Dummy equals one if an M&A is financed by a mix of bank lines of credit and corporate cash holdings, and equals zero otherwise. Public equals one if the target firm of an M&A is public firm. Relative Value is the ratio of deal value to the sum of the acquirer's market value of equity and deal value. Hostile equals one if an M&A is hostile, and zero otherwise. Size is the logarithm of non-cash assets. M/B is market value of equity plus non-cash assets minus book value of equity, divided by non-cash assets. Leverage is the ratio of long-term debt to non-cash assets. Tangibility is the ratio of plant, property and equipment to non-cash assets. Capital Expenditure is the ratio of capital expenditure to non-cash assets. R&D is the ratio of R&D to non-cash assets. Dividends is the ratio of dividends to non-cash assets. Cash Flow Volatility is the standard deviation of cash flow to non-cash assets in the prior five years. Year Dummy Variables are the dummy variables for the years in the sample and not reported in the table. Industry Dummy Variables are the dummy variables for the industries defined by two-digit SIC codes and not reported in the table. The p-value is calculated based on Heteroscedasticity-Consistent standard errors, and is noted in the parentheses. *, **, and *** represent significance levels of 10%, 5%, and 1%, respectively.

	ΔROA	Net ΔROA
Intercept	-0.248**	0.170
	(0.02)	(0.29)
Bank Lines of Credit Dummy	0.023**	0.045**
	(0.05)	(0.03)
Mixed Lines & Cash Dummy	0.012	0.013
	(0.25)	(0.52)
Public	0.009	-0.027
	(0.41)	(0.22)
Relative Value	-0.001	-0.057
	(0.99)	(0.32)
Hostile	-0.018	0.011
	(0.47)	(0.77)
Size $_{t-1}$	0.011***	0.006
	(0.01)	(0.27)
ROA $_{t-1}$	-0.535***	-0.529***
	(0.01)	(0.01)
M/B $_{t-1}$	0.008	0.002
	(0.20)	(0.81)
Leverage $_{t-1}$	0.050***	0.036
	(0.01)	(0.37)
Tangibility $_{t-1}$	-0.002	-0.082
	(0.95)	(0.12)
Capital Expenditure $_{t-1}$	-0.097	-0.035
	(0.11)	(0.74)
R&D $_{t-1}$	0.055	0.227
	(0.69)	(0.39)
Dividends $_{t-1}$	0.348	0.379
	(0.16)	(0.39)
Cash Flow Volatility $_{t-1}$	-0.039	-0.085
	(0.12)	(0.10)
Year Dummy Variables	Yes	Yes
Industry Dummy Variables	Yes	Yes
Number of Observations	676	676
Adjusted R-Square	0.35	0.29

Table 3.17 Alternative Comparable Firms

The table shows the relation between sources of financing and the changes in operating performance. Net ΔROA is the difference between an acquirer's change in ROA and its matched comparable firm's change in ROA from year t-1 to t+1, where ROA is the ratio of EBIT to non-cash assets. The comparable firms are matched by propensity score matching using the "without replacement" method based on size, cash flow, market-to-book ratio, leverage, tangibility, capital expenditure, R&D, dividends and cash flow volatility (see text for details). ROA is the ratio of EBIT to non-cash assets. Bank Lines of Credit Dummy equals one if an M&A is entirely financed by bank lines of credit, and equals zero otherwise. Mixed Lines & Cash Dummy equals one if an M&A is financed by a mix of bank lines of credit and corporate cash holdings, and equals zero otherwise. Relative Value is the ratio of deal value to the sum of the acquirer's market value of equity and deal value. Hostile equals one if an M&A is hostile, and zero otherwise. Size is the logarithm of non-cash assets. M/B is market value of equity plus non-cash assets minus book value of equity, divided by non-cash assets. Leverage is the ratio of long-term debt to non-cash assets. Tangibility is the ratio of plant, property and equipment to non-cash assets. Capital Expenditure is the ratio of capital expenditure to non-cash assets. R&D is the ratio of R&D to non-cash assets. Dividends is the ratio of dividends to non-cash assets. Cash Flow Volatility is the standard deviation of cash flow to non-cash assets in the prior five years. Year Dummy Variables are the dummy variables for the years in the sample and not reported in the table. Industry Dummy Variables are the dummy variables for the industries defined by two-digit SIC codes and not reported in the table. The p-value is calculated based on Heteroscedasticity-Consistent standard errors, and is noted in the parentheses. *, **, and *** represent significance levels of 10%, 5%, and 1%, respectively.

	Net ΔROA
Intercept	0.143
	(0.59)
Bank Lines of Credit Dummy	0.047**
	(0.05)
Mixed Lines & Cash Dummy	0.006
	(0.83)
Relative Value	-0.062
	(0.37)
Hostile	-0.017
	(0.64)
Size $_{t-1}$	0.002
	(0.84)
ROA $_{t-1}$	-0.765***
	(0.01)
M/B $_{t-1}$	-0.001
	(0.98)
Leverage $_{t-1}$	-0.002
	(0.97)
Tangibility $_{t-1}$	-0.078
	(0.23)
Capital Expenditure $_{t-1}$	-0.197*
	(0.09)
R&D $_{t-1}$	0.783
	(0.12)
Dividends $_{t-1}$	0.186
	(0.74)
Cash Flow Volatility $_{t-1}$	-0.026
	(0.66)
Year Dummy Variables	Yes
Industry Dummy Variables	Yes
Number of Observations	676
Adjusted R-Square	0.35

Table 3.18 Institutional Ownership

The table represents the coefficient estimates from regressions relates bank liquidity and firm characteristics. Total Line/ (Total Line + Cash) is the ratio of total lines of credit to the sum of total lines of credit and cash and marketable securities. Unused Line/ (Unused Line + Cash) is the ratio of unused lines of credit to the sum of unused lines of credit and cash and marketable securities. Institutional Ownership is the ratio of shares owned by institutional investors to the total shares outstanding. EBITDA is the ratio of EBITDA to non-cash assets. Tangibility is the ratio of plant, property and equipment to non-cash assets. Size is the logarithm of non-cash assets. Net Worth is non-cash total assets less total liabilities, divided by non-cash assets. M/B is total assets less the book value of equity plus the market value of equity less cash, all divided by non-cash total assets. Industry Sales Volatility is the industry median standard deviation of sales based on 3-digit SIC code. Cash Flow Volatility is the standard deviation of annual changes of EBITDA in the prior four years, scaled by average non-cash assets in the lagged period. Not in an S&P Index equals one if a firm is not in one of the S&P 500, the S&P Midcap 400 and the S&P Smallcap 600, and equals zero otherwise. Trade Over the Counter equals one if a firm is trade over the counter, and equals zero otherwise. Firm age is the logarithm of firm age. Regressions include year and two-digit industry indicator variables. *, **, and *** represent significance levels of 10%, 5%, and 1%, respectively.

	Probit	Total Line/ (Total Line + Cash)	Unused Line/ (Unused Line + Cash)
Institutional Ownership $_{t-1}$	0.164	-0.054	-0.041
	(0.66)	(0.21)	(0.35)
EBITDA $_{t-1}$	1.213*	0.207*	0.207*
	(0.08)	(0.08)	(0.08)
Tangibility $_{t-1}$	0.973	0.070	0.059
	(0.11)	(0.34)	(0.45)
Size $_{t-1}$	0.121***	0.033***	0.034***
	(0.01)	(0.01)	(0.01)
Net Worth $_{t-1}$	0.108	0.100*	0.073
	(0.69)	(0.07)	(0.21)
M/B $_{t-1}$	-0.139***	-0.042***	-0.045***
	(0.01)	(0.01)	(0.01)
Industry Sales Volatility $_{t-1}$	41.529***	0.040	0.248
	(0.01)	(0.96)	(0.75)
Cash Flow Volatility $_{t-1}$	-4.726***	-1.008***	-0.976***
	(0.01)	(0.01)	(0.01)
Not in an S&P Index $_{t-1}$	0.172	0.138***	0.125***
	(0.52)	(0.01)	(0.01)
Trade Over the Counter $_{t-1}$	-0.581	0.043	0.051
	(0.21)	(0.40)	(0.33)
Firm age $_{t-1}$	-0.434***	-0.040***	-0.047***
	(0.01)	(0.01)	(0.01)
Number of Observations	492	492	492
R-Square	0.37	0.86	0.84

Table 4.1A Summary Statistics: Firm Characteristics

The table reports summary statistics. I use a sample of 449 U.S. M&As with cash payment from 1985 to 2013. CAR (-3, +3) is the cumulative abnormal return over days (-3, +3) around the announcement date (see text for details). Relative Value is the ratio of deal value to the sum of the acquirer's market value of equity and deal value. Cash is the ratio of cash and marketable securities to non-cash assets. ROA is the ratio of EBIT to non-cash assets. ΔROA is the change in ROA from year t-1 to t+1. Net ΔROA is the difference between an acquirer's change in ROA and its matched comparable firm's change in ROA from year t-1 to t+1. The comparable firms are matched by propensity score matching based on size, cash flow, market-to-book ratio, leverage, tangibility, capital expenditure, R&D, dividends and cash flow volatility (see text for details). Premium 1 is ratio of the offer price to the target share price one day prior to the acquisition announcement. Premium 2 is ratio of the offer price to the target share price one week prior to the acquisition announcement. Premium 3 is ratio of the offer price to the target share price four weeks prior to the acquisition announcement. Institutional Ownership is the ratio of shares owned by institutional investors to the total shares outstanding at the end of a quarter prior to the announcement. Size is the logarithm of non-cash assets. Cash Flow is income before extraordinary items divided by non-cash assets. M/B is market value of equity plus non-cash assets minus book value of equity, divided by non-cash assets. Leverage is the ratio of long-term debt to non-cash assets. Tangibility is the ratio of plant, property and equipment to non-cash assets. Capital Expenditure is the ratio of capital expenditure to non-cash assets. R&D is the ratio of R&D to non-cash assets. Dividends is the ratio of dividends to non-cash assets. Cash Flow Volatility is the standard deviation of cash flow to non-cash assets in the prior five years.

Variable	Mean	25th Percentile	Median	75th Percentile	Std Dev
CAR (-3,+3)	0.0138	-0.0321	0.0055	0.0561	0.0885
Relative Value	0.1469	0.0301	0.0911	0.1973	0.1619
Cash	0.2562	0.0277	0.1085	0.3785	0.3011
ROA	0.1206	0.0659	0.1134	0.1685	0.1060
ΔROA	-0.0181	-0.0564	-0.0116	0.0222	0.1053
Net ΔROA	0.0135	-0.0540	0.0149	0.0849	0.1395
Premium1	0.3256	0.1308	0.2911	0.4815	0.3082
Premium2	0.4116	0.1700	0.3850	0.6300	0.3549
Premium3	0.4864	0.1700	0.4600	0.7000	0.4225
Institutional Ownership	0.4139	0.0000	0.4361	0.7383	0.3452
Size	20.0905	18.7508	20.0986	21.4275	2.1685
Cash Flow	0.0670	0.0269	0.0587	0.1088	0.0830
M/B	2.3038	1.2325	1.6722	2.5789	1.5677
Leverage	0.2280	0.0335	0.1779	0.3599	0.2085
Tangibility	0.3512	0.1397	0.2752	0.5192	0.2586
Capital Expenditure	0.0819	0.0279	0.0523	0.0952	0.0885
R&D	0.0360	0.0000	0.0000	0.0451	0.0654
Dividends	0.0125	0.0000	0.0000	0.0189	0.0195
Cash Flow Volatility	0.1201	0.0230	0.0474	0.1143	0.1908

Table 4.1B Univariate Statistics

	Number of Deals
Corporate Cash Holdings	271
Other Bank Loans	82
Debt Issues	56
Equity Issues	40
Total	449

Table 4.2 Univariate Analysis of Announcement Returns

The table reports the univariate analysis on announcement returns. CAR (-3, +3) is the cumulative abnormal return over days (-3, +3) around the announcement date (see text for details). Corporate Cash Holdings indicates the M&As entirely financed by corporate cash holdings. Other Bank Loans indicates the M&As entirely financed by other bank loans. Debt Issues indicates the M&As entirely financed by debt issues. Equity Issues indicates the M&As entirely financed by equity issues. I report the mean test and the Wilcoxon Signed Rank median test in the table. *, **, and *** represent significance levels of 10%, 5%, and 1%, respectively.

	Other Bank Loans		Corporate Cash Holdings		Difference			
	Mean	Median	Mean	Median	Mean	p-value	Median	p-value
CAR (-3,+3)	0.031	0.017	0.002	0.002	0.029***	(0.01)	0.015**	(0.04)
	Debts Issues		Corporate Cash Holdings		Difference			
	Mean	Median	Mean	Median	Mean	p-value	Median	p-value
CAR (-3,+3)	0.049	0.030	0.002	0.002	0.047***	(0.01)	0.028***	(0.01)
	Equity Issues		Corporate Cash Holdings		Difference			
	Mean	Median	Mean	Median	Mean	p-value	Median	p-value
CAR (-3,+3)	0.011	-0.004	0.002	0.002	0.009	(0.50)	-0.006	(0.69)

Table 4.3 Sources of Financing and Announcement Returns

The table shows the relation between sources of financing and the performance of M&As. CAR (-3, +3) is the cumulative abnormal return over days (-3, +3) around the announcement date (see text for details). Other Bank Loans Dummy equals one if an M&A is entirely financed by bank loans other than bank lines of credit, and equals zero otherwise. Debt Issues Dummy equals one if an M&A is entirely financed by debt issues, and equals zero otherwise. Equity Issues Dummy equals one if an M&A is entirely financed by equity issues, and equals zero otherwise. Relative Value is the ratio of deal value to the sum of the acquirer's market value of equity and deal value. Hostile equals one if an M&A is hostile, and zero otherwise. Size is the logarithm of non-cash assets. Cash Flow is income before extraordinary items divided by non-cash assets. M/B is market value of equity plus non-cash assets minus book value of equity, divided by non-cash assets. Leverage is the ratio of long-term debt to non-cash assets. Tangibility is the ratio of plant, property and equipment to non-cash assets. Capital Expenditure is the ratio of capital expenditure to non-cash assets. R&D is the ratio of R&D to non-cash assets. Dividends is the ratio of dividends to non-cash assets. Cash Flow Volatility is the standard deviation of cash flow to non-cash assets in the prior five years. Year Dummy Variables are the dummy variables for the years in the sample and not reported in the table. Industry Dummy Variables are the dummy variables for the industries defined by two-digit SIC codes and not reported in the table. The p-value is calculated based on Heteroscedasticity-Consistent standard errors, and is noted in the parentheses. *, **, and *** represent significance levels of 10%, 5%, and 1%, respectively.

	CAR (-3, +3)
Intercept	0.070
	(0.26)
Other Bank Loans Dummy	0.021*
	(0.08)
Debt Issues Dummy	0.028**
	(0.05)
Equity Issues Dummy	0.009
	(0.62)
Relative Value	0.142***
	(0.01)
Hostile	-0.015
	(0.64)
Size $_{t-1}$	-0.004
	(0.17)
Cash Flow $_{t-1}$	0.006
	(0.92)
M/B $_{t-1}$	-0.001
	(0.91)
Leverage $_{t-1}$	0.017
	(0.57)
Tangibility $_{t-1}$	0.003
	(0.93)
Capital Expenditure $_{t-1}$	-0.114
	(0.33)
R&D $_{t-1}$	-0.006
	(0.76)
Dividends $_{t-1}$	-0.038
	(0.56)
Cash Flow Volatility $_{t-1}$	-0.086***
	(0.01)
Year Dummy Variables	Yes
Industry Dummy Variables	Yes
Number of Observations	449
Adjusted R-Square	0.13

Table 4.4A Propensity Score Matching

The table shows the results for the propensity score matching. I use a logistic regression. There are 449 observations of acquirers and 14322 observations of non-acquirers from the Compustat database. I match each acquirer firm with a non-acquirer firm by propensity score matching. I define non-acquirers as the firms that do not have any M&As in the same fiscal year as the acquirers. Matched firms are selected based on nearest propensity score and the same industry defined by the 2-digit SIC code.

The dependent variable is a dummy variable that equals one if a firm is an acquirer, and equals zero otherwise. Size is the logarithm of non-cash assets. M/B is non-cash assets minus value of equity plus market value of equity, divided by non-cash assets. Cash Flow is income before extraordinary items divided by non-cash assets. Leverage is the ratio of long-term debt to non-cash assets. Tangibility is the ratio of plant, property and equipment to non-cash assets. Capital Expenditure is the ratio of capital expenditure to non-cash assets. R&D is the ratio of R&D to non-cash assets. Dividends is the ratio of dividends to non-cash assets. Cash Flow Volatility is the standard deviation of cash flow to non-cash assets in the prior five years. The p-value is noted in the parentheses. *, **, and *** represent significance levels of 10%, 5%, and 1%, respectively.

	Acquirer=1, Non-acquirer=0
Intercept	11.555***
	(0.01)
Size $_{t-1}$	-0.474***
	(0.01)
M/B $_{t-1}$	0.053**
	(0.02)
Cash Flow $_{t-1}$	-3.802***
	(0.01)
Leverage $_{t-1}$	-0.469
	(0.10)
Tangibility $_{t-1}$	0.769***
	(0.01)
Capital Expenditure $_{t-1}$	1.315**
	(0.05)
R&D $_{t-1}$	-1.164**
	(0.03)
Dividends $_{t-1}$	7.011***
	(0.01)
Cash Flow Volatility $_{t-1}$	1.441***
	(0.01)
Number of Observations	14771
Pseudo R-Square	0.06

Table 4.4B Differences in Propensity Score Matching

The table shows the univariate statistics about the difference in propensity score between acquiring firms and their matched non-acquiring firm.

	Difference in the propensity score between acquirer firms and their matched non-acquiring firms				
	Mean	25th Percentile	Median	75th Percentile	Std Dev
Propensity Score	0.050	0.003	0.017	0.062	0.078

Table 4.4C Sources of Financing and Changes in Operating Performance

The table shows the relation between sources of financing and the changes in operating performance. ROA is the ratio of EBIT to non-cash assets. ΔROA is the change in ROA from year t-1 to t+1. Net ΔROA is the difference between an acquirer's change in ROA and its matched comparable firm's change in ROA from year t-1 to t+1. The comparable firms are matched by propensity score matching based on size, cash flow, market-to-book ratio, leverage, tangibility, capital expenditure, R&D, dividends and cash flow volatility (see text for details). Other Bank Loans Dummy equals one if an M&A is entirely financed by bank loans other than bank lines of credit, and equals zero otherwise. Debt Issues Dummy equals one if an M&A is entirely financed by debt issues, and equals zero otherwise. Equity Issues Dummy equals one if an M&A is entirely financed by equity issues, and equals zero otherwise. Relative Value is the ratio of deal value to the sum of the acquirer's market value of equity and deal value. Hostile equals one if an M&A is hostile, and zero otherwise. Size is the logarithm of non-cash assets. M/B is market value of equity plus non-cash assets minus book value of equity, divided by non-cash assets. Leverage is the ratio of long-term debt to non-cash assets. Tangibility is the ratio of plant, property and equipment to non-cash assets. Capital Expenditure is the ratio of capital expenditure to non-cash assets. R&D is the ratio of R&D to non-cash assets. Dividends is the ratio of dividends to non-cash assets. Cash Flow Volatility is the standard deviation of cash flow to non-cash assets in the prior five years. Year Dummy Variables are the dummy variables for the years in the sample and not reported in the table. Industry Dummy Variables are the dummy variables for the industries defined by two-digit SIC codes and not reported in the table. The p-value is calculated based on the Heteroscedasticity-Consistent standard errors, and is noted in the parentheses. *, **, and *** represent significance levels of 10%, 5%, and 1%, respectively.

	ΔROA	Net ΔROA
Intercept	-0.078	0.457***
	(0.57)	(0.01)
Other Bank Loans Dummy	0.043***	0.043*
	(0.01)	(0.06)
Debt Issues Dummy	0.027*	0.051*
	(0.06)	(0.08)
Equity Issues Dummy	-0.019	0.049
	(0.57)	(0.39)
Relative Value	-0.023	-0.195**
	(0.74)	(0.03)
Hostile	0.017	0.002
	(0.72)	(0.95)
Size $_{t-1}$	0.006	-0.011
	(0.23)	(0.11)
ROA $_{t-1}$	-0.697***	-0.679***
	(0.01)	(0.01)
M/B $_{t-1}$	0.011	-0.009***
	(0.16)	(0.01)
Leverage $_{t-1}$	0.038	-0.041
	(0.27)	(0.43)
Tangibility $_{t-1}$	-0.042	-0.012
	(0.35)	(0.84)
Capital Expenditure $_{t-1}$	-0.257*	-0.270
	(0.06)	(0.14)
R&D $_{t-1}$	0.242	0.215
	(0.11)	(0.32)
Dividends $_{t-1}$	0.180	0.801
	(0.10)	(0.24)
Cash Flow Volatility $_{t-1}$	-0.056	-0.005
	(0.11)	(0.96)
Year Dummy Variables	Yes	Yes
Industry Dummy Variables	Yes	Yes
Number of Observations	425	425
Adjusted R-Square	0.54	0.33

Table 4.5 The Choice of Sources of Financing

The table reports the multinomial logistic regression. The dependent variable is categorical. It equals zero if an M&A is entirely financed by corporate cash holdings, equals one if an M&A is financed entirely other bank loans, equals two if an M&A is entirely financed by debt issues, and equals three if an M&A is entirely financed by equity issues. Relative Value is the ratio of deal value to the sum of the acquirer's market value of equity and deal value. Hostile equals one if an M&A is hostile, and zero otherwise. Cash is the ratio of cash and marketable securities to non-cash assets. Institutional Ownership is the ratio of shares owned by institutional investors to the total shares outstanding. Size is the logarithm of non-cash assets. Cash Flow is income before extraordinary items divided by non-cash assets. M/B is market value of equity plus non-cash assets minus book value of equity, divided by non-cash assets. Leverage is the ratio of long-term debt to non-cash assets. Tangibility is the ratio of plant, property and equipment to non-cash assets. Capital Expenditure is the ratio of capital expenditure to non-cash assets. R&D is the ratio of R&D to non-cash assets. Dividends is the ratio of dividends to non-cash assets. Cash Flow Volatility is the standard deviation of cash flow to non-cash assets in the prior five years. Year Dummy Variables are the dummy variables for the years in the sample and not reported in the table. Industry Dummy Variables are the dummy variables for the industries defined by two-digit SIC codes and not reported in the table. The p-value is noted in the parentheses. *, **, and *** represent significance levels of 10%, 5%, and 1%, respectively.

	Cash=0, Other Bank Loans=1, Debt Issues=2, Equity Issues=3		
	1	2	3
Intercept	-2.446	-4.388	-7.580
	(0.43)	(0.22)	(0.71)
Relative Value	8.993***	9.108***	3.660*
	(0.01)	(0.01)	(0.07)
Hostile	-0.987	-9.275	-3.910
	(0.51)	(0.76)	(0.94)
Cash $_{t-1}$	-3.585***	-3.677***	-0.376
	(0.01)	(0.01)	(0.73)
Institutional Ownership $_{t-1}$	-0.431	-0.948	-0.884
	(0.52)	(0.21)	(0.25)
Size $_{t-1}$	-0.048	-0.033	-0.117
	(0.71)	(0.83)	(0.49)
Cash Flow $_{t-1}$	7.487**	1.853	-4.417
	(0.05)	(0.64)	(0.22)
M/B $_{t-1}$	-0.269	0.169	0.216
	(0.30)	(0.43)	(0.38)
Leverage $_{t-1}$	2.029*	-0.385	-0.322
	(0.08)	(0.76)	(0.81)
Tangibility $_{t-1}$	1.84	3.70**	5.12***
	(0.14)	(0.02)	(0.01)
Capital Expenditure $_{t-1}$	1.604	-0.443	-5.883*
	(0.62)	(0.91)	(0.09)
R&D $_{t-1}$	-2.057	-0.199	-1.605
	(0.68)	(0.90)	(0.37)
Dividends $_{t-1}$	-19.201	2.941	-16.009
	(0.18)	(0.83)	(0.33)
Cash Flow Volatility $_{t-1}$	0.435	0.897	2.271
	(0.78)	(0.57)	(0.13)
Year Dummy Variables	Yes	Yes	Yes
Industry Dummy Variables	Yes	Yes	Yes
Number of Observations	353	327	311
Pseudo R-Square	0.63	0.63	0.63

Table 4.6 Acquisition Premiums

The table reports the impact of source of financing on acquisition premiums. Premiums 1 is the offer price to the target share price premiums one day prior to the acquisition announcement. Premiums 2 is the offer price to the target share price premiums one week prior to the acquisition announcement. Premiums 3 is the offer price to the target share price premiums four weeks prior to the acquisition announcement. Other Bank Loans Dummy equals one if an M&A is entirely financed by bank loans other than bank lines of credit, and equals zero otherwise. Debt Issues Dummy equals one if an M&A is entirely financed by debt issues, and equals zero otherwise. Equity Issues Dummy equals one if an M&A is entirely financed by equity issues, and equals zero otherwise. Relative Value is the ratio of deal value to the sum of the acquirer's market value of equity and deal value. Hostile equals one if an M&A is hostile, and zero otherwise. Size is the logarithm of non-cash assets. Cash Flow is income before extraordinary items divided by non-cash assets. M/B is market value of equity plus non-cash assets minus book value of equity, divided by non-cash assets. Leverage is the ratio of long-term debt to non-cash assets. Tangibility is the ratio of plant, property and equipment to non-cash assets. Capital Expenditure is the ratio of capital expenditure to non-cash assets. R&D is the ratio of R&D to non-cash assets. Dividends is the ratio of dividends to non-cash assets. Cash Flow Volatility is the standard deviation of cash flow to non-cash assets in the prior five years. Year Dummy Variables are the dummy variables for the years in the sample and not reported in the table. Industry Dummy Variables are the dummy variables for the industries defined by two-digit SIC codes and not reported in the table. The p-value is calculated based on Heteroscedasticity-Consistent standard errors, and is noted in the parentheses. *, **, and *** represent significance levels of 10%, 5%, and 1%, respectively.

	Premiums 1	Premiums 2	Premiums 2
Intercept	-0.347	0.356	0.988
	(0.57)	(0.60)	(0.21)
Other Bank Loans Dummy	-0.206**	-0.309***	-0.318**
	(0.04)	(0.01)	(0.02)
Debt Issues Dummy	-0.196*	-0.234*	-0.303*
	(0.07)	(0.08)	(0.06)
Equity Issues Dummy	-0.214	-0.246	-0.216
	(0.35)	(0.20)	(0.20)
Relative Value	0.406	0.473	-0.118
	(0.20)	(0.20)	(0.76)
Hostile	0.099	0.271*	0.310*
	(0.57)	(0.06)	(0.07)
Size $_{t-1}$	0.036	0.026	0.014
	(0.14)	(0.28)	(0.61)
Cash Flow $_{t-1}$	-0.342	-0.379	0.814
	(0.52)	(0.50)	(0.25)
M/B $_{t-1}$	0.071**	0.088***	0.047
	(0.03)	(0.01)	(0.23)
Leverage $_{t-1}$	0.253	0.198	0.262
	(0.24)	(0.37)	(0.33)
Tangibility $_{t-1}$	0.289	0.525	-0.103
	(0.45)	(0.15)	(0.78)
Capital Expenditure $_{t-1}$	-2.087***	-2.256**	-2.351***
	(0.01)	(0.02)	(0.01)
R&D $_{t-1}$	-0.069	-0.340	1.186
	(0.82)	(0.62)	(0.14)
Dividends $_{t-1}$	5.204	1.699	3.486
	(0.11)	(0.37)	(0.21)
Cash Flow Volatility $_{t-1}$	-0.040	-0.254	0.028
	(0.86)	(0.32)	(0.93)
Year Dummy Variables	Yes	Yes	Yes
Industry Dummy Variables	Yes	Yes	Yes
Number of Observations	125	125	125
Adjusted R-Square	0.10	0.28	0.23

Table 4.7A Sub-Group Analysis based on Block Institutional Ownership — Announcement Returns

The table shows the sub-group analysis on the relation between sources of financing and announcement returns. CAR (-3, +3) is the cumulative abnormal return over days (-3, +3) around the announcement date (see text for details). Block equals one if there exists a block institutional ownership which exceeds 5% of the total shares outstanding, and equals zero otherwise. Other Bank Loans Dummy equals one if an M&A is entirely financed by bank loans other than bank lines of credit, and equals zero otherwise. Debt Issues Dummy equals one if an M&A is entirely financed by debt issues, and equals zero otherwise. Equity Issues Dummy equals one if an M&A is entirely financed by equity issues, and equals zero otherwise. Relative Value is the ratio of deal value to the sum of the acquirer's market value of equity and deal value. Hostile equals one if an M&A is hostile, and zero otherwise. Size is the logarithm of non-cash assets. Cash Flow is income before extraordinary items divided by non-cash assets. M/B is market value of equity plus non-cash assets minus book value of equity, divided by non-cash assets. Leverage is the ratio of long-term debt to non-cash assets. Tangibility is the ratio of plant, property and equipment to non-cash assets. Capital Expenditure is the ratio of capital expenditure to non-cash assets. R&D is the ratio of R&D to non-cash assets. Dividends is the ratio of dividends to non-cash assets. Cash Flow Volatility is the standard deviation of cash flow to non-cash assets in the prior five years. Year Dummy Variables are the dummy variables for the years in the sample and not reported in the table. Industry Dummy Variables are the dummy variables for the industries defined by two-digit SIC codes and not reported in the table. The p-value is calculated based on Heteroscedasticity-Consistent standard errors, and is noted in the parentheses. *, **, and *** represent significance levels of 10%, 5%, and 1%, respectively.

	CAR (-3, +3)	
	Block=0	Block=1
Intercept	0.048	-0.014
	(0.52)	(0.89)
Other Bank Loans Dummy	0.033*	0.010
	(0.07)	(0.60)
Debt Issues Dummy	0.038**	0.007
	(0.05)	(0.71)
Equity Issues Dummy	0.020	0.001
	(0.48)	(0.95)
Relative Value	0.151**	0.121**
	(0.02)	(0.03)
Hostile	0.038	-0.101***
	(0.20)	(0.01)
Size $_{t-1}$	-0.002	-0.003
	(0.62)	(0.43)
Cash Flow $_{t-1}$	-0.013	-0.017
	(0.22)	(0.68)
M/B $_{t-1}$	0.001	-0.002
	(0.39)	(0.66)
Leverage $_{t-1}$	0.047	0.005
	(0.15)	(0.84)
Tangibility $_{t-1}$	-0.063	0.023
	(0.11)	(0.48)
Capital Expenditure $_{t-1}$	-0.066	-0.052
	(0.44)	(0.54)
R&D $_{t-1}$	0.230*	-0.046
	(0.07)	(0.41)
Dividends $_{t-1}$	-0.018	-0.101
	(0.96)	(0.15)
Cash Flow Volatility $_{t-1}$	-0.108**	-0.051*
	(0.02)	(0.08)
Year Dummy Variables	Yes	Yes
Industry Dummy Variables	Yes	Yes
Number of Observations	202	247
Adjusted R-Square	0.14	0.11

Table 4.7B Sub-Group Analysis Based on Block Institutional Ownership — Net Changes in Operating Performance

The table shows the sub-group analysis on the relation between sources of financing and the net changes in operating performance. Net ΔROA is the difference between an acquirer's change in ROA and its matched comparable firm's change in ROA from year t-1 to t+1, where ROA is the ratio of EBIT to non-cash assets. The comparable firms are matched by propensity score matching based on size, cash flow, market-to-book ratio, leverage, tangibility, capital expenditure, R&D, dividends and cash flow volatility (see text for details). Block equals one if there exists a block institutional ownership which exceeds 5% of the total shares outstanding, and equals zero otherwise. Other Bank Loans Dummy equals one if an M&A is entirely financed by bank loans other than bank lines of credit, and equals zero otherwise. Debt Issues Dummy equals one if an M&A is entirely financed by debt issues, and equals zero otherwise. Equity Issues Dummy equals one if an M&A is entirely financed by equity issues, and equals zero otherwise. Relative Value is the ratio of deal value to the sum of the acquirer's market value of equity and deal value. Hostile equals one if an M&A is hostile, and zero otherwise. Size is the logarithm of non-cash assets. M/B is market value of equity plus non-cash assets minus book value of equity, divided by non-cash assets. Leverage is the ratio of long-term debt to non-cash assets. Tangibility is the ratio of plant, property and equipment to non-cash assets. Capital Expenditure is the ratio of capital expenditure to non-cash assets. R&D is the ratio of R&D to non-cash assets. Dividends is the ratio of dividends to non-cash assets. Cash Flow Volatility is the standard deviation of cash flow to non-cash assets in the prior five years. Year Dummy Variables are the dummy variables for the years in the sample and not reported in the table. Industry Dummy Variables are the dummy variables for the industries defined by two-digit SIC codes and not reported in the table. The p-value is calculated based on Heteroscedasticity-Consistent standard errors, and is noted in the parentheses. *, **, and *** represent significance levels of 10%, 5%, and 1%, respectively.

	Net ΔROA	
	Block=0	Block=1
Intercept	-0.264	1.072***
	(0.28)	(0.01)
Other Bank Loans Dummy	0.110**	0.043
	(0.02)	(0.26)
Debt Issues Dummy	0.179***	0.041
	(0.01)	(0.33)
Equity Issues Dummy	0.113	-0.065
	(0.22)	(0.23)
Relative Value	-0.133	-0.306
	(0.32)	(0.13)
Hostile	-0.013	0.049
	(0.86)	(0.54)
Size $_{t-1}$	0.017	-0.037**
	(0.14)	(0.02)
ROA $_{t-1}$	-0.594***	-1.476***
	(0.01)	(0.01)
M/B $_{t-1}$	0.006	-0.004
	(0.64)	(0.79)
Leverage $_{t-1}$	-0.106	-0.102
	(0.21)	(0.39)
Tangibility $_{t-1}$	-0.112	-0.037
	(0.32)	(0.71)
Capital Expenditure $_{t-1}$	-0.695**	-0.330
	(0.03)	(0.23)
R&D $_{t-1}$	-0.187	0.653
	(0.57)	(0.17)
Dividends $_{t-1}$	-0.732	1.470*
	(0.10)	(0.09)
Cash Flow Volatility $_{t-1}$	-0.051	-0.089
	(0.66)	(0.36)
Year Dummy Variables	Yes	Yes
Industry Dummy Variables	Yes	Yes
Number of Observations	199	226
Adjusted R-Square	0.26	0.25

**Table 4.7C Sub-Group Analysis Based on Block Institutional Ownership —
Acquisition Premiums**

The table shows the sub-group analysis on the sources of financing and acquisition premiums. Premiums 1 is the offer price to the target share price premiums one day prior to the acquisition announcement. Premiums 2 is the offer price to the target share price premiums one week prior to the acquisition announcement. Premiums 3 is the offer price to the target share price premiums four weeks prior to the acquisition announcement. Block equals one if there exists a block institutional ownership which exceeds 5% of the total shares outstanding, and equals zero otherwise. Other Bank Loans Dummy equals one if an M&A is entirely financed by bank loans other than bank lines of credit, and equals zero otherwise. Debt Issues Dummy equals one if an M&A is entirely financed by debt issues, and equals zero otherwise. Equity Issues Dummy equals one if an M&A is entirely financed by equity issues, and equals zero otherwise. Relative Value is the ratio of deal value to the sum of the acquirer's market value of equity and deal value. Hostile equals one if an M&A is hostile, and zero otherwise. Size is the logarithm of non-cash assets. Cash Flow is income before extraordinary items divided by non-cash assets. M/B is market value of equity plus non-cash assets minus book value of equity, divided by non-cash assets. Leverage is the ratio of long-term debt to non-cash assets. Tangibility is the ratio of plant, property and equipment to non-cash assets. Capital Expenditure is the ratio of capital expenditure to non-cash assets. R&D is the ratio of R&D to non-cash assets. Dividends is the ratio of dividends to non-cash assets. Cash Flow Volatility is the standard deviation of cash flow to non-cash assets in the prior five years. Year Dummy Variables are the dummy variables for the years in the sample and not reported in the table. Industry Dummy Variables are the dummy variables for the industries defined by two-digit SIC codes and not reported in the table. The p-value is calculated based on Heteroscedasticity-Consistent standard errors, and is noted in the parentheses. *, **, and *** represent significance levels of 10%, 5%, and 1%, respectively.

	Premiums 1		Premiums 2		Premiums 3	
	Block=0	Block=1	Block=0	Block=1	Block=0	Block=1
Intercept	1.280	-0.114	0.712	-0.657	2.668**	-0.390
	(0.15)	(0.90)	(0.52)	(0.44)	(0.05)	(0.75)
Other Bank Loans Dummy	-0.292*	-0.132	-0.341*	-0.220	-0.335*	-0.246
	(0.06)	(0.70)	(0.07)	(0.42)	(0.07)	(0.32)
Debt Issues Dummy	-0.480***	0.017	-0.459***	-0.315	-0.470**	-0.274
	(0.01)	(0.93)	(0.01)	(0.23)	(0.05)	(0.22)
Equity Issues Dummy	-0.217	0.210	-0.314	-0.066	-0.178	-0.219
	(0.50)	(0.43)	(0.37)	(0.80)	(0.67)	(0.42)
Relative Value	-0.756	0.689	-0.719	0.515	-2.009***	1.088
	(0.13)	(0.44)	(0.20)	(0.45)	(0.01)	(0.11)
Hostile	0.017	0.297	0.232**	0.118	0.448**	-0.091
	(0.83)	(0.41)	(0.03)	(0.75)	(0.04)	(0.78)
Size $_{t-1}$	-0.029	0.089*	0.020	0.124***	-0.046	0.130**
	(0.38)	(0.08)	(0.62)	(0.01)	(0.31)	(0.05)
Cash Flow $_{t-1}$	-0.561	-0.460	-1.972***	0.249	-0.536	0.340
	(0.33)	(0.41)	(0.01)	(0.74)	(0.54)	(0.72)
M/B $_{t-1}$	0.113***	0.066	0.157***	0.040	0.104	-0.007
	(0.01)	(0.11)	(0.01)	(0.55)	(0.10)	(0.92)
Leverage $_{t-1}$	0.817*	1.392***	0.561	0.518*	-0.016	0.390
	(0.06)	(0.01)	(0.22)	(0.09)	(0.97)	(0.21)
Tangibility $_{t-1}$	0.461	-1.822**	0.618	-0.330	0.251	-0.429
	(0.28)	(0.03)	(0.16)	(0.65)	(0.57)	(0.56)
Capital Expenditure $_{t-1}$	-3.068***	2.895**	-3.208***	-0.774	-3.256***	-0.214
	(0.01)	(0.04)	(0.01)	(0.62)	(0.01)	(0.89)
R&D $_{t-1}$	-0.589	0.905	-1.660*	1.258	-1.076	3.021**
	(0.45)	(0.23)	(0.06)	(0.18)	(0.28)	(0.02)
Dividends $_{t-1}$	2.927	10.083	0.790	8.689	2.994	4.388
	(0.15)	(0.14)	(0.69)	(0.22)	(0.24)	(0.40)
Cash Flow Volatility $_{t-1}$	0.288	-0.140	0.336	0.072	1.222**	-0.197
	(0.33)	(0.67)	(0.33)	(0.81)	(0.05)	(0.58)
Year Dummy Variables	Yes	Yes	Yes	Yes	Yes	Yes
Industry Dummy Variables	Yes	Yes	Yes	Yes	Yes	Yes
Number of Observations	59	66	59	66	59	66
Adjusted R-Square	0.27	0.24	0.25	0.16	0.38	0.18

Table 4.8A Heckman Two-Stage Estimation — Second Stage: Announcement Returns

The table shows the second stage of Heckman two-stage estimation. CAR (-3, +3) is the cumulative abnormal return over days (-3, +3) around the announcement date (see text for details). Other Bank Loans Dummy equals one if an M&A is entirely financed by bank loans other than bank lines of credit, and equals zero otherwise. Debt Issues Dummy equals one if an M&A is entirely financed by debt issues, and equals zero otherwise. Equity Issues Dummy equals one if an M&A is entirely financed by equity issues, and equals zero otherwise. Relative Value is the ratio of deal value to the sum of the acquirer's market value of equity and deal value. Hostile equals one if an M&A is hostile, and zero otherwise. Size is the logarithm of non-cash assets. Cash Flow is income before extraordinary items divided by non-cash assets. M/B is market value of equity plus non-cash assets minus book value of equity, divided by non-cash assets. Leverage is the ratio of long-term debt to non-cash assets. Tangibility is the ratio of plant, property and equipment to non-cash assets. Capital Expenditure is the ratio of capital expenditure to non-cash assets. R&D is the ratio of R&D to non-cash assets. Dividends is the ratio of dividends to non-cash assets. Cash Flow Volatility is the standard deviation of cash flow to non-cash assets in the prior five years. Inverse Mills Ratio1 is calculated based on the estimates in the logistic regression as reported Table 4.4A. Inverse Mills Ratio 2 is calculated based on the estimates in the multinomial logistic regression as reported in Table 4.5. Year Dummy Variables are the dummy variables for the years in the sample and not reported in the table. Industry Dummy Variables are the dummy variables for the industries defined by two-digit SIC codes and not reported in the table. The p-value is calculated based on Heteroscedasticity-Consistent standard errors, and is noted in the parentheses. *, **, and *** represent significance levels of 10%, 5%, and 1%, respectively.

	CAR (-3, +3)		
Intercept	0.123	0.051	0.154
	(0.12)	(0.57)	(0.21)
Other Bank Loans Dummy	0.029*		
	(0.08)		
Debt Issues Dummy		0.039*	
		(0.07)	
Equity Issues Dummy			-0.027
			(0.33)
Relative Value	0.109***	0.094	0.107*
	(0.01)	(0.12)	(0.08)
Hostile	-0.008	-0.005	-0.050
	(0.84)	(0.90)	(0.21)
Size $_{t-1}$	-0.007*	-0.004	-0.008
	(0.08)	(0.34)	(0.17)
Cash Flow $_{t-1}$	0.028	0.008	0.015
	(0.65)	(0.89)	(0.82)
M/B $_{t-1}$	0.001	0.004	-0.001
	(0.97)	(0.33)	(0.97)
Leverage $_{t-1}$	0.020	0.046	0.005
	(0.44)	(0.12)	(0.87)
Tangibility $_{t-1}$	0.020	0.002	0.001
	(0.47)	(0.95)	(0.99)
Capital Expenditure $_{t-1}$	-0.111	-0.030	-0.077
	(0.17)	(0.75)	(0.42)
R&D $_{t-1}$	-0.008	-0.090	-0.055
	(0.90)	(0.26)	(0.49)
Dividends $_{t-1}$	-0.147	-0.341*	-0.123
	(0.44)	(0.09)	(0.61)
Cash Flow Volatility $_{t-1}$	-0.040	-0.071**	-0.057**
	(0.13)	(0.02)	(0.05)
Inverse Mills Ratio 1	0.036	0.007	0.031
	(0.28)	(0.85)	(0.47)
Inverse Mills Ratio 2	-0.012	-0.001	0.022
	(0.20)	(0.89)	(0.10)
Year Dummy Variables	Yes	Yes	Yes
Industry Dummy Variables	Yes	Yes	Yes
Number of Observations	353	327	311
Adjusted R-Square	0.12	0.13	0.04

Table 4.8B Heckman Two-Stage Estimation — Second Stage: Net Changes in Operating Performance

The table shows the second stage of Heckman two-stage estimation. Net ΔROA is the difference between an acquirer's changes in ROA and its matched comparable firm's change in ROA from year t-1 to t+1, where ROA is the ratio of EBIT to non-cash assets. The comparable firms are matched by propensity score matching based on size, cash flow, market-to-book ratio, leverage, tangibility, capital expenditure, R&D, dividends and cash flow volatility (see text for details). Other Bank Loans Dummy equals one if an M&A is entirely financed by bank loans other than bank lines of credit, and equals zero otherwise. Debt Issues Dummy equals one if an M&A is entirely financed by debt issues, and equals zero otherwise. Equity Issues Dummy equals one if an M&A is entirely financed by equity issues, and equals zero otherwise. Relative Value is the ratio of deal value to the sum of the acquirer's market value of equity and deal value. Hostile equals one if an M&A is hostile, and zero otherwise. Size is the logarithm of non-cash assets. M/B is market value of equity plus non-cash assets minus book value of equity, divided by non-cash assets. Leverage is the ratio of long-term debt to non-cash assets. Tangibility is the ratio of plant, property and equipment to non-cash assets. Capital Expenditure is the ratio of capital expenditure to non-cash assets. R&D is the ratio of R&D to non-cash assets. Dividends is the ratio of dividends to non-cash assets. Cash Flow Volatility is the standard deviation of cash flow to non-cash assets in the prior five years. Inverse Mills Ratio1 is calculated based on the estimates in the logistic regression as reported in Table 4.4A. Inverse Mills Ratio 2 is calculated based on the estimates in the multinomial logistic regression as reported in Table 4.5. Year Dummy Variables are the dummy variables for the years in the sample and not reported in the table. Industry Dummy Variables are the dummy variables for the industries defined by two-digit SIC codes and not reported in the table. The p-value is calculated based on Heteroscedasticity-Consistent standard errors, and is noted in the parentheses. *, **, and *** represent significance levels of 10%, 5%, and 1%, respectively.

	Net ΔROA		
Intercept	0.199	0.056	0.050
	(0.44)	(0.80)	(0.87)
Other Bank Loans Dummy	0.078*		
	(0.06)		
Debt Issues Dummy		0.085*	
		(0.07)	
Equity Issues Dummy			0.035
			(0.78)
Relative Value	-0.147	-0.056	-0.332**
	(0.17)	(0.57)	(0.04)
Hostile	-0.003	0.045	0.098
	(0.94)	(0.33)	(0.11)
Size $_{t-1}$	-0.003	0.003	-0.003
	(0.78)	(0.77)	(0.83)
ROA $_{t-1}$	-0.690***	-0.582***	-0.587***
	(0.01)	(0.01)	(0.01)
M/B $_{t-1}$	-0.009**	0.012	0.010
	(0.02)	(0.28)	(0.42)
Leverage $_{t-1}$	-0.040	0.026	0.074
	(0.48)	(0.61)	(0.29)
Tangibility $_{t-1}$	-0.046	0.052	0.061
	(0.51)	(0.47)	(0.50)
Capital Expenditure $_{t-1}$	-0.142	-0.351**	-0.514*
	(0.37)	(0.05)	(0.08)
R&D $_{t-1}$	0.421**	0.148	0.099
	(0.05)	(0.52)	(0.66)
Dividends $_{t-1}$	0.886*	0.059	1.356*
	(0.07)	(0.75)	(0.06)
Cash Flow Volatility $_{t-1}$	-0.190***	-0.119	-0.049
	(0.01)	(0.21)	(0.69)
Inverse Mills Ratio 1	-0.011	-0.026	-0.058
	(0.89)	(0.73)	(0.52)
Inverse Mills Ratio 2	-0.019	-0.012	0.013
	(0.39)	(0.63)	(0.83)
Year Dummy Variables	Yes	Yes	Yes
Industry Dummy Variables	Yes	Yes	Yes
Number of Observations	332	309	294
Adjusted R-Square	0.48	0.46	0.39

Table 4.9A Sub-Group Analysis Based on Bankruptcy Risk — Announcement Returns

The table shows the sub-group analysis on the relation between sources of financing and announcement returns. CAR (-3, +3) is the cumulative abnormal return over days (-3, +3) around the announcement date (see text for details). Low (High) Bankruptcy risk indicates a firm's Altman Z-Score is equal or greater (less) than 1.81. Other Bank Loans Dummy equals one if an M&A is entirely financed by bank loans other than bank lines of credit, and equals zero otherwise. Debt Issues Dummy equals one if an M&A is entirely financed by debt issues, and equals zero otherwise. Equity Issues Dummy equals one if an M&A is entirely financed by equity issues, and equals zero otherwise. Relative Value is the ratio of deal value to the sum of the acquirer's market value of equity and deal value. Hostile equals one if an M&A is hostile, and zero otherwise. Size is the logarithm of non-cash assets. Cash Flow is income before extraordinary items divided by non-cash assets. M/B is market value of equity plus non-cash assets minus book value of equity, divided by non-cash assets. Leverage is the ratio of long-term debt to non-cash assets. Tangibility is the ratio of plant, property and equipment to non-cash assets. Capital Expenditure is the ratio of capital expenditure to non-cash assets. R&D is the ratio of R&D to non-cash assets. Dividends is the ratio of dividends to non-cash assets. Cash Flow Volatility is the standard deviation of cash flow to non-cash assets in the prior five years. Year Dummy Variables are the dummy variables for the years in the sample and not reported in the table. Industry Dummy Variables are the dummy variables for the industries defined by two-digit SIC codes and not reported in the table. The p-value is calculated based on Heteroscedasticity-Consistent standard errors, and is noted in the parentheses. *, **, and *** represent significance levels of 10%, 5%, and 1%, respectively.

	CAR (-3, +3)	
	Low Bankruptcy Risk	High Bankruptcy Risk
Intercept	0.092	0.066
	(0.18)	(0.60)
Other Bank Loans Dummy	0.031**	-0.027
	(0.04)	(0.29)
Debt Issues Dummy	0.027*	0.051
	(0.08)	(0.20)
Equity Issues Dummy	0.011	0.037
	(0.56)	(0.23)
Relative Value	0.085	0.217***
	(0.12)	(0.01)
Hostile	-0.082***	-0.158**
	(0.01)	(0.05)
Size $_{t-1}$	-0.004	-0.007
	(0.16)	(0.18)
Cash Flow $_{t-1}$	-0.047	0.613**
	(0.43)	(0.02)
M/B $_{t-1}$	-0.003	0.012
	(0.57)	(0.64)
Leverage $_{t-1}$	0.009	0.107
	(0.77)	(0.19)
Tangibility $_{t-1}$	0.029	-0.184***
	(0.40)	(0.01)
Capital Expenditure $_{t-1}$	-0.231*	0.289
	(0.07)	(0.22)
R&D $_{t-1}$	0.001	0.189
	(0.95)	(0.20)
Dividends $_{t-1}$	-0.013	-0.163
	(0.88)	(0.58)
Cash Flow Volatility $_{t-1}$	-0.072**	-0.039
	(0.03)	(0.68)
Year Dummy Variables	Yes	Yes
Industry Dummy Variables	Yes	Yes
Number of Observations	362	87
Adjusted R-Square	0.08	0.33

Table 4.9B Sub-Group Analysis Based on Bankruptcy Risk — Net Changes in Operating Performance

The table shows the sub-group analysis on the relation between sources of financing and the net changes in operating performance. Net ΔROA is the difference between an acquirer's change in ROA and its matched comparable firm's change in ROA from year t-1 to t+1, where ROA is the ratio of EBIT to non-cash assets. The comparable firms are matched by propensity score matching based on size, cash flow, market-to-book ratio, leverage, tangibility, capital expenditure, R&D, dividends and cash flow volatility (see text for details). Low (High) Bankruptcy risk indicates a firm's Altman Z-Score is equal or greater (less) than 1.81. Other Bank Loans Dummy equals one if an M&A is entirely financed by bank loans other than bank lines of credit, and equals zero otherwise. Debt Issues Dummy equals one if an M&A is entirely financed by debt issues, and equals zero otherwise. Equity Issues Dummy equals one if an M&A is entirely financed by equity issues, and equals zero otherwise. Relative Value is the ratio of deal value to the sum of the acquirer's market value of equity and deal value. Hostile equals one if an M&A is hostile, and zero otherwise. Size is the logarithm of non-cash assets. M/B is market value of equity plus non-cash assets minus book value of equity, divided by non-cash assets. Leverage is the ratio of long-term debt to non-cash assets. Tangibility is the ratio of plant, property and equipment to non-cash assets. Capital Expenditure is the ratio of capital expenditure to non-cash assets. R&D is the ratio of R&D to non-cash assets. Dividends is the ratio of dividends to non-cash assets. Cash Flow Volatility is the standard deviation of cash flow to non-cash assets in the prior five years. Year Dummy Variables are the dummy variables for the years in the sample and not reported in the table. Industry Dummy Variables are the dummy variables for the industries defined by two-digit SIC codes and not reported in the table. The p-value is calculated based on the Heteroscedasticity-Consistent standard errors, and is noted in the parentheses. *, **, and *** represent significance levels of 10%, 5%, and 1%, respectively.

	Net ΔROA	
	Low Bankruptcy Risk	High Bankruptcy Risk
Intercept	0.419**	-0.470**
	(0.02)	(0.02)
Other Bank Loans Dummy	0.055*	0.013
	(0.06)	(0.74)
Debt Issues Dummy	0.066**	-0.033
	(0.05)	(0.61)
Equity Issues Dummy	0.073	-0.130**
	(0.16)	(0.04)
Relative Value	-0.129	0.050
	(0.19)	(0.57)
Hostile	0.004	0.222
	(0.90)	(0.12)
Size $_{t-1}$	-0.010	0.024**
	(0.20)	(0.04)
ROA $_{t-1}$	-0.662***	-0.968***
	(0.01)	(0.01)
M/B $_{t-1}$	-0.009**	0.177***
	(0.02)	(0.01)
Leverage $_{t-1}$	0.027	-0.063
	(0.73)	(0.66)
Tangibility $_{t-1}$	0.008	-0.016
	(0.93)	(0.89)
Capital Expenditure $_{t-1}$	-0.280	-0.163
	(0.24)	(0.43)
R&D $_{t-1}$	0.301	-1.921***
	(0.15)	(0.01)
Dividends $_{t-1}$	0.646	2.119
	(0.33)	(0.26)
Cash Flow Volatility $_{t-1}$	-0.032	0.373***
	(0.80)	(0.01)
Year Dummy Variables	Yes	Yes
Industry Dummy Variables	Yes	Yes
Number of Observations	340	85
Adjusted R-Square	0.37	0.49

Table 4.10A Acquirers with Multiple M&As — Announcement Returns

The table shows the relation between sources of financing and announcement returns. CAR (-3, +3) is the cumulative abnormal return over days (-3, +3) around the announcement date (see text for details). Other Bank Loans Dummy equals one if an M&A is entirely financed by bank loans other than bank lines of credit, and equals zero otherwise. Debt Issues Dummy equals one if an M&A is entirely financed by debt issues, and equals zero otherwise. Equity Issues Dummy equals one if an M&A is entirely financed by equity issues, and equals zero otherwise. Relative Value is the ratio of deal value to the sum of the acquirer's market value of equity and deal value. Hostile equals one if an M&A is hostile, and zero otherwise. Size is the logarithm of non-cash assets. Cash Flow is income before extraordinary items divided by non-cash assets. M/B is market value of equity plus non-cash assets minus book value of equity, divided by non-cash assets. Leverage is the ratio of long-term debt to non-cash assets. Tangibility is the ratio of plant, property and equipment to non-cash assets. Capital Expenditure is the ratio of capital expenditure to non-cash assets. R&D is the ratio of R&D to non-cash assets. Dividends is the ratio of dividends to non-cash assets. Cash Flow Volatility is the standard deviation of cash flow to non-cash assets in the prior five years. Year Dummy Variables are the dummy variables for the years in the sample and not reported in the table. Industry Dummy Variables are the dummy variables for the industries defined by two-digit SIC codes and not reported in the table. The p-value is calculated based on the Heteroscedasticity-Consistent standard errors, and is noted in the parentheses. *, **, and *** represent significance levels of 10%, 5%, and 1%, respectively.

	CAR (-3, +3)
Intercept	0.070
	(0.28)
Other Bank Loans Dummy	0.022*
	(0.07)
Debt Issue Dummy	0.027*
	(0.07)
Equity Issues Dummy	0.007
	(0.69)
Relative Value	0.141***
	(0.01)
Hostile	-0.013
	(0.70)
Size $_{t-1}$	-0.004
	(0.17)
Cash Flow $_{t-1}$	-0.018
	(0.76)
M/B $_{t-1}$	0.002
	(0.74)
Leverage $_{t-1}$	0.018
	(0.55)
Tangibility $_{t-1}$	0.001
	(0.97)
Capital Expenditure $_{t-1}$	-0.102
	(0.40)
R&D $_{t-1}$	-0.010
	(0.60)
Dividends $_{t-1}$	-0.033
	(0.66)
Cash Flow Volatility $_{t-1}$	-0.088***
	(0.01)
Year Dummy Variables	Yes
Industry Dummy Variables	Yes
Number of Observations	431
Adjusted R-Square	0.11

Table 4.10B Acquirers with Multiple M&As — Net Changes in Operating Performance

The table shows the relation between sources of financing and the changes in operating performance. ROA is the ratio of EBIT to non-cash assets. ΔROA is the change in ROA from year t-1 to t+1. Net ΔROA is the difference between an acquirer's change in ROA and its matched comparable firm's change in ROA from year t-1 to t+1. The comparable firms are matched by propensity score matching based on size, cash flow, market-to-book ratio, leverage, tangibility, capital expenditure, R&D, dividends and cash flow volatility (see text for details). Other Bank Loans Dummy equals one if an M&A is entirely financed by bank loans other than bank lines of credit, and equals zero otherwise. Debt Issues Dummy equals one if an M&A is entirely financed by debt issues, and equals zero otherwise. Equity Issues Dummy equals one if an M&A is entirely financed by equity issues, and equals zero otherwise. Relative Value is the ratio of deal value to the sum of the acquirer's market value of equity and deal value. Hostile equals one if an M&A is hostile, and zero otherwise. Size is the logarithm of non-cash assets. M/B is market value of equity plus non-cash assets minus book value of equity, divided by non-cash assets. Leverage is the ratio of long-term debt to non-cash assets. Tangibility is the ratio of plant, property and equipment to non-cash assets. Capital Expenditure is the ratio of capital expenditure to non-cash assets. R&D is the ratio of R&D to non-cash assets. Dividends is the ratio of dividends to non-cash assets. Cash Flow Volatility is the standard deviation of cash flow to non-cash assets in the prior five years. Year Dummy Variables are the dummy variables for the years in the sample and not reported in the table. Industry Dummy Variables are the dummy variables for the industries defined by two-digit SIC codes and not reported in the table. The p-value is calculated based on the Heteroscedasticity-Consistent standard errors, and is noted in the parentheses. *, **, and *** represent significance levels of 10%, 5%, and 1%, respectively.

	ΔROA	Net ΔROA
Intercept	-0.058	0.501***
	(0.69)	(0.01)
Other Bank Loans Dummy	0.046***	0.046*
	(0.01)	(0.06)
Debt Issues Dummy	0.026*	0.056*
	(0.08)	(0.07)
Equity Issues Dummy	-0.021	0.052
	(0.55)	(0.39)
Relative Value	-0.025	-0.215**
	(0.73)	(0.02)
Hostile	0.017	0.006
	(0.72)	(0.88)
Size $_{t-1}$	0.006	-0.013*
	(0.32)	(0.06)
ROA $_{t-1}$	-0.694***	-0.677***
	(0.01)	(0.01)
M/B $_{t-1}$	0.011	-0.009***
	(0.17)	(0.01)
Leverage $_{t-1}$	0.042	-0.036
	(0.24)	(0.49)
Tangibility $_{t-1}$	-0.036	-0.028
	(0.46)	(0.66)
Capital Expenditure $_{t-1}$	-0.277*	-0.275
	(0.07)	(0.14)
R&D $_{t-1}$	0.241	0.249
	(0.13)	(0.23)
Dividends $_{t-1}$	0.210*	0.834
	(0.09)	(0.25)
Cash Flow Volatility $_{t-1}$	-0.056	-0.018
	(0.14)	(0.88)
Year Dummy Variables	Yes	Yes
Industry Dummy Variables	Yes	Yes
Number of Observations	408	408
Adjusted R-Square	0.54	0.31

Table 4.11 Completion Year

The table shows the relation between sources of financing and the changes in operating performance. ROA is the ratio of EBIT to non-cash assets. ΔROA is the change in ROA from year t-1 to t+1, where ROA is the ratio of EBIT to non-cash assets. Net ΔROA is the difference between an acquirer's change in ROA and its matched comparable firm's change in ROA from year t-1 to t+1 (t defines as the year of completion of an M&A).The comparable firms are matched by propensity score matching based on size, cash flow, market-to-book ratio, leverage, tangibility, capital expenditure, R&D, dividends and cash flow volatility (see text for details). Other Bank Loans Dummy equals one if an M&A is entirely financed by bank loans other than bank lines of credit, and equals zero otherwise. Debt Issues Dummy equals one if an M&A is entirely financed by debt issues, and equals zero otherwise. Equity Issues Dummy equals one if an M&A is entirely financed by equity issues, and equals zero otherwise. Relative Value is the ratio of deal value to the sum of the acquirer's market value of equity and deal value. Hostile equals one if an M&A is hostile, and zero otherwise. Size is the logarithm of non-cash assets. M/B is market value of equity plus non-cash assets minus book value of equity, divided by non-cash assets. Leverage is the ratio of long-term debt to non-cash assets. Tangibility is the ratio of plant, property and equipment to non-cash assets. Capital Expenditure is the ratio of capital expenditure to non-cash assets. R&D is the ratio of R&D to non-cash assets. Dividends is the ratio of dividends to non-cash assets. Cash Flow Volatility is the standard deviation of cash flow to non-cash assets in the prior five years. Year Dummy Variables are the dummy variables for the years in the sample and not reported in the table. Industry Dummy Variables are the dummy variables for the industries defined by two-digit SIC codes and not reported in the table. The p-value is calculated based on Heteroscedasticity-Consistent standard errors, and is noted in the parentheses. *, **, and *** represent significance levels of 10%, 5%, and 1%, respectively.

	ΔROA	Net ΔROA
Intercept	-0.118	0.403
	(0.43)	(0.19)
Other Bank Loans Dummy	0.041***	0.068*
	(0.01)	(0.08)
Debt Issues Dummy	0.030**	0.061*
	(0.03)	(0.07)
Equity Issues Dummy	-0.021	0.042
	(0.56)	(0.59)
Relative Value	-0.016	0.019
	(0.83)	(0.91)
Hostile	-0.001	0.054
	(0.98)	(0.41)
Size $_{t-1}$	0.008	-0.020
	(0.20)	(0.15)
ROA $_{t-1}$	-0.549***	-0.738***
	(0.01)	(0.01)
M/B $_{t-1}$	0.004	0.015
	(0.11)	(0.35)
Leverage $_{t-1}$	0.056	-0.061
	(0.11)	(0.42)
Tangibility $_{t-1}$	-0.028	-0.008
	(0.51)	(0.96)
Capital Expenditure $_{t-1}$	-0.409**	-0.116
	(0.02)	(0.83)
R&D $_{t-1}$	0.271*	0.227
	(0.09)	(0.47)
Dividends $_{t-1}$	0.244*	2.456**
	(0.08)	(0.05)
Cash Flow Volatility $_{t-1}$	0.033	-0.030
	(0.34)	(0.79)
Year Dummy Variables	Yes	Yes
Industry Dummy Variables	Yes	Yes
Number of Observations	420	420
Adjusted R-Square	0.48	0.19

Table 4.12 Alternative Event Windows

The table shows the sub-group analysis on the relation between sources of financing and announcement returns. CAR (0, 0) and (-1, +1) are the cumulative abnormal returns over days (0, 0) and (-1, +1) around the announcement date (see text for details). Other Bank Loans Dummy equals one if an M&A is entirely financed by bank loans other than bank lines of credit, and equals zero otherwise. Debt Issues Dummy equals one if an M&A is entirely financed by debt issues, and equals zero otherwise. Equity Issues Dummy equals one if an M&A is entirely financed by equity issues, and equals zero otherwise. Relative Value is the ratio of deal value to the sum of the acquirer's market value of equity and deal value. Hostile equals one if an M&A is hostile, and zero otherwise. Size is the logarithm of non-cash assets. Cash Flow is income before extraordinary items divided by non-cash assets. M/B is market value of equity plus non-cash assets minus book value of equity, divided by non-cash assets. Leverage is the ratio of long-term debt to non-cash assets. Tangibility is the ratio of plant, property and equipment to non-cash assets. Capital Expenditure is the ratio of capital expenditure to non-cash assets. R&D is the ratio of R&D to non-cash assets. Dividends is the ratio of dividends to non-cash assets. Cash Flow Volatility is the standard deviation of cash flow to non-cash assets in the prior five years. Year Dummy Variables are the dummy variables for the years in the sample and not reported in the table. Industry Dummy Variables are the dummy variables for the industries defined by two-digit SIC codes and not reported in the table. The p-value is calculated based on Heteroscedasticity-Consistent standard errors, and is noted in the parentheses. *, **, and *** represent significance levels of 10%, 5%, and 1%, respectively.

	CAR (0, 0)	CAR (-1, +1)
Intercept	0.013	0.085**
	(0.65)	(0.05)
Other Bank Loans Dummy	0.010*	0.016*
	(0.08)	(0.08)
Debt Issues Dummy	0.012*	0.021*
	(0.08)	(0.08)
Equity Issues Dummy	0.005	0.001
	(0.56)	(0.95)
Relative Value	0.049***	0.098***
	(0.01)	(0.01)
Hostile	-0.016	0.001
	(0.12)	(0.97)
Size $_{t-1}$	-0.001	-0.004**
	(0.46)	(0.04)
Cash Flow $_{t-1}$	-0.021	-0.018**
	(0.15)	(0.04)
M/B $_{t-1}$	0.001**	0.001
	(0.04)	(0.62)
Leverage $_{t-1}$	0.006	-0.001*
	(0.50)	(0.07)
Tangibility $_{t-1}$	-0.004	0.006
	(0.70)	(0.70)
Capital Expenditure $_{t-1}$	-0.023	-0.076**
	(0.43)	(0.02)
R&D $_{t-1}$	-0.018	0.021
	(0.64)	(0.31)
Dividends $_{t-1}$	0.025	0.023
	(0.56)	(0.69)
Cash Flow Volatility $_{t-1}$	-0.006	-0.043*
	(0.72)	(0.07)
Year Dummy Variables	Yes	Yes
Industry Dummy Variables	Yes	Yes
Number of Observations	449	449
Adjusted R-Square	0.05	0.09

Table 4.13A Alternative Measure of Corporate Governance —
Announcement Returns

The table shows the sub-group analysis on the relation between sources of financing and announcement returns. CAR (-3, +3) is the cumulative abnormal return over days (-3, +3) around the announcement date (see text for details). Low (High) Corporate Governance indicates a firm's institutional ownership is below (above) the median institutional ownership. Other Bank Loans Dummy equals one if an M&A is entirely financed by bank loans other than bank lines of credit, and equals zero otherwise. Debt Issues Dummy equals one if an M&A is entirely financed by debt issues, and equals zero otherwise. Equity Issues Dummy equals one if an M&A is entirely financed by equity issues, and equals zero otherwise. Relative Value is the ratio of deal value to the sum of the acquirer's market value of equity and deal value. Hostile equals one if an M&A is hostile, and zero otherwise. Size is the logarithm of non-cash assets. Cash Flow is income before extraordinary items divided by non-cash assets. M/B is market value of equity plus non-cash assets minus book value of equity, divided by non-cash assets. Leverage is the ratio of long-term debt to non-cash assets. Tangibility is the ratio of plant, property and equipment to non-cash assets. Capital Expenditure is the ratio of capital expenditure to non-cash assets. R&D is the ratio of R&D to non-cash assets. Dividends is the ratio of dividends to non-cash assets. Cash Flow Volatility is the standard deviation of cash flow to non-cash assets in the prior five years. Year Dummy Variables are the dummy variables for the years in the sample and not reported in the table. Industry Dummy Variables are the dummy variables for the industries defined by two-digit SIC codes and not reported in the table. The p-value is calculated based on Heteroscedasticity-Consistent standard errors, and is noted in the parentheses. *, **, and *** represent significance levels of 10%, 5%, and 1%, respectively.

	CAR (-3, +3)	
	Low Corporate Governance	High Corporate Governance
Intercept	0.098	-0.041
	(0.25)	(0.66)
Other Bank Loans Dummy	0.026*	0.007
	(0.08)	(0.79)
Debt Issues Dummy	0.042**	0.004
	(0.04)	(0.87)
Equity Issues Dummy	0.009	-0.002
	(0.72)	(0.94)
Relative Value	0.149***	0.085
	(0.01)	(0.29)
Hostile	0.056***	-0.132***
	(0.01)	(0.01)
Size $_{t-1}$	-0.005	-0.001
	(0.23)	(0.88)
Cash Flow $_{t-1}$	-0.019	-0.003
	(0.13)	(0.97)
M/B $_{t-1}$	0.001*	-0.003
	(0.08)	(0.55)
Leverage $_{t-1}$	0.038	0.020
	(0.17)	(0.52)
Tangibility $_{t-1}$	0.001	-0.030
	(0.99)	(0.48)
Capital Expenditure $_{t-1}$	-0.038	0.060
	(0.61)	(0.56)
R&D $_{t-1}$	0.087	-0.035
	(0.43)	(0.55)
Dividends $_{t-1}$	-0.170	-0.140
	(0.64)	(0.11)
Cash Flow Volatility $_{t-1}$	-0.065*	-0.056
	(0.07)	(0.11)
Year Dummy Variables	Yes	Yes
Industry Dummy Variables	Yes	Yes
Number of Observations	224	225
Adjusted R-Square	0.17	0.05

Table 4.13B Alternative Measure of Corporate Governance — Net Changes in Operating Performance

The table shows the sub-group analysis on the relation between sources of financing and the net changes in operating performance. Net ΔROA is the difference between an acquirer's change in ROA and its matched comparable firm's change in ROA from year t-1 to t+1, where ROA is the ratio of EBIT to non-cash assets. The comparable firms are matched by propensity score matching based on size, cash flow, market-to-book ratio, leverage, tangibility, capital expenditure, R&D, dividends and cash flow volatility (see text for details). Low (High) Corporate Governance indicates a firm's institutional ownership is below (above) the median institutional ownership. Other Bank Loans Dummy equals one if an M&A is entirely financed by bank loans other than bank lines of credit, and equals zero otherwise. Debt Issues Dummy equals one if an M&A is entirely financed by debt issues, and equals zero otherwise. Equity Issues Dummy equals one if an M&A is entirely financed by equity issues, and equals zero otherwise. Relative Value is the ratio of deal value to the sum of the acquirer's market value of equity and deal value. Hostile equals one if an M&A is hostile, and zero otherwise. Size is the logarithm of non-cash assets. M/B is market value of equity plus non-cash assets minus book value of equity, divided by non-cash assets. Leverage is the ratio of long-term debt to non-cash assets. Tangibility is the ratio of plant, property and equipment to non-cash assets. Capital Expenditure is the ratio of capital expenditure to non-cash assets. R&D is the ratio of R&D to non-cash assets. Dividends is the ratio of dividends to non-cash assets. Cash Flow Volatility is the standard deviation of cash flow to non-cash assets in the prior five years. Year Dummy Variables are the dummy variables for the years in the sample and not reported in the table. Industry Dummy Variables are the dummy variables for the industries defined by two-digit SIC codes and not reported in the table. The p-value is calculated based on Heteroscedasticity-Consistent standard errors, and is noted in the parentheses. *, **, and *** represent significance levels of 10%, 5%, and 1%, respectively.

	Net ΔROA	
	Low Corporate Governance	High Corporate Governance
Intercept	0.179	0.292
	(0.44)	(0.61)
Other Bank Loans Dummy	0.064**	0.056
	(0.05)	(0.30)
Debt Issues Dummy	0.131***	0.022
	(0.01)	(0.61)
Equity Issues Dummy	0.061	-0.043
	(0.31)	(0.44)
Relative Value	-0.161	-0.227
	(0.18)	(0.35)
Hostile	0.045	0.030
	(0.64)	(0.72)
Size $_{t-1}$	0.007	-0.025
	(0.43)	(0.20)
ROA $_{t-1}$	-0.549***	-1.744***
	(0.01)	(0.01)
M/B $_{t-1}$	0.017	0.025
	(0.26)	(0.16)
Leverage $_{t-1}$	-0.136*	-0.095
	(0.07)	(0.51)
Tangibility $_{t-1}$	-0.052	-0.252**
	(0.61)	(0.04)
Capital Expenditure $_{t-1}$	-0.776***	0.219
	(0.01)	(0.43)
R&D $_{t-1}$	-0.460	0.511
	(0.15)	(0.24)
Dividends $_{t-1}$	-0.399	0.042
	(0.19)	(0.97)
Cash Flow Volatility $_{t-1}$	-0.106	-0.234
	(0.24)	(0.10)
Year Dummy Variables	Yes	Yes
Industry Dummy Variables	Yes	Yes
Number of Observations	217	208
Adjusted R-Square	0.26	0.27

Table 4.14A The Public Status of Target Firms — Announcement Returns

The table reports the impact of the public status of target firms on announcement return. CAR (-3, +3) is the cumulative abnormal return over days (-3, +3) around the announcement date (see text for details). Other Bank Loans Dummy equals one if an M&A is entirely financed by bank loans other than bank lines of credit, and equals zero otherwise. Debt Issues Dummy equals one if an M&A is entirely financed by debt issues, and equals zero otherwise. Equity Issues Dummy equals one if an M&A is entirely financed by equity issues, and equals zero otherwise. Public equals one if the target firm of an M&A is public firm. Relative Value is the ratio of deal value to the sum of the acquirer's market value of equity and deal value. Hostile equals one if an M&A is hostile, and zero otherwise. Size is the logarithm of non-cash assets. Cash Flow is income before extraordinary items divided by non-cash assets. M/B is market value of equity plus non-cash assets minus book value of equity, divided by non-cash assets. Leverage is the ratio of long-term debt to non-cash assets. Tangibility is the ratio of plant, property and equipment to non-cash assets. Capital Expenditure is the ratio of capital expenditure to non-cash assets. R&D is the ratio of R&D to non-cash assets. Dividends is the ratio of dividends to non-cash assets. Cash Flow Volatility is the standard deviation of cash flow to non-cash assets in the prior five years. Year Dummy Variables are the dummy variables for the years in the sample and not reported in the table. Industry Dummy Variables are the dummy variables for the industries defined by two-digit SIC codes and not reported in the table. The p-value is calculated based on Heteroscedasticity-Consistent standard errors, and is noted in the parentheses. *, **, and *** represent significance levels of 10%, 5%, and 1%, respectively.

	CAR (-3, +3)
Intercept	0.074
	(0.24)
Other Bank Loans Dummy	0.022*
	(0.07)
Debt Issues Dummy	0.028**
	(0.04)
Equity Issues Dummy	0.009
	(0.59)
Public	0.004
	(0.70)
Relative Value	0.141***
	(0.01)
Hostile	-0.049*
	(0.06)
Size $_{t-1}$	-0.004
	(0.16)
Cash Flow $_{t-1}$	0.007
	(0.91)
M/B $_{t-1}$	-0.001
	(0.86)
Leverage $_{t-1}$	0.017
	(0.57)
Tangibility $_{t-1}$	0.003
	(0.93)
Capital Expenditure $_{t-1}$	-0.116
	(0.32)
R&D $_{t-1}$	-0.006
	(0.75)
Dividends $_{t-1}$	-0.037
	(0.57)
Cash Flow Volatility $_{t-1}$	-0.086***
	(0.01)
Year Dummy Variables	Yes
Industry Dummy Variables	Yes
Number of Observations	449
Adjusted R-Square	0.13

Table 4.14B The Public Status of Target Firms — Net Changes in Operating Performance

The table reports the impact of the public status of target firms on the changes in operating performance. ROA is the ratio of EBIT to non-cash assets. ΔROA is the change in ROA from year t-1 to t+1. Net ΔROA is the difference between an acquirer's change in ROA and its matched comparable firm's change in ROA from year t-1 to t+1.The comparable firms are matched by propensity score matching based on size, cash flow, market-to-book ratio, leverage, tangibility, capital expenditure, R&D, dividends and cash flow volatility (see text for details). Other Bank Loans Dummy equals one if an M&A is entirely financed by bank loans other than bank lines of credit, and equals zero otherwise. Debt Issues Dummy equals one if an M&A is entirely financed by debt issues, and equals zero otherwise. Equity Issues Dummy equals one if an M&A is entirely financed by equity issues, and equals zero otherwise. Public equals one if the target firm of an M&A is public firm. Relative Value is the ratio of deal value to the sum of the acquirer's market value of equity and deal value. Hostile equals one if an M&A is hostile, and zero otherwise. Size is the logarithm of non-cash assets. M/B is market value of equity plus non-cash assets minus book value of equity, divided by non-cash assets. Leverage is the ratio of long-term debt to non-cash assets. Tangibility is the ratio of plant, property and equipment to non-cash assets. Capital Expenditure is the ratio of capital expenditure to non-cash assets. R&D is the ratio of R&D to non-cash assets. Dividends is the ratio of dividends to non-cash assets. Cash Flow Volatility is the standard deviation of cash flow to non-cash assets in the prior five years. Year Dummy Variables are the dummy variables for the years in the sample and not reported in the table. Industry Dummy Variables are the dummy variables for the industries defined by two-digit SIC codes and not reported in the table. The p-value is calculated based on Heteroscedasticity-Consistent standard errors, and is noted in the parentheses. *, **, and *** represent significance levels of 10%, 5%, and 1%, respectively.

	ΔROA	Net ΔROA
Intercept	-0.076	0.407***
	(0.36)	(0.01)
Other Bank Loans Dummy	0.031**	0.040*
	(0.01)	(0.06)
Debt Issues Dummy	0.021*	0.062**
	(0.08)	(0.04)
Equity Issues Dummy	0.002	0.068
	(0.90)	(0.20)
Public	0.015	0.026
	(0.20)	(0.20)
Relative Value	0.005	-0.182***
	(0.90)	(0.01)
Hostile	-0.054	-0.028
	(0.11)	(0.51)
Size $_{t-1}$	0.005	-0.013**
	(0.11)	(0.02)
ROA $_{t-1}$	-0.653***	-0.699***
	(0.01)	(0.01)
M/B $_{t-1}$	0.007	-0.010***
	(0.20)	(0.01)
Leverage $_{t-1}$	0.038	-0.041
	(0.22)	(0.41)
Tangibility $_{t-1}$	-0.034	-0.018
	(0.31)	(0.76)
Capital Expenditure $_{t-1}$	-0.150*	-0.187
	(0.09)	(0.17)
R&D $_{t-1}$	0.115	0.092
	(0.33)	(0.64)
Dividends $_{t-1}$	0.173**	0.769
	(0.05)	(0.23)
Cash Flow Volatility $_{t-1}$	-0.036	0.023
	(0.18)	(0.83)
Year Dummy Variables	Yes	Yes
Industry Dummy Variables	Yes	Yes
Number of Observations	425	425
Adjusted R-Square	0.40	0.30

Table 4.15 Alternative Comparable Firms

The table shows the relation between sources of financing and the changes in operating performance. Net ΔROA is the difference between an acquirer's change in ROA and its matched comparable firm's change in ROA from year t-1 to t+1, where ROA is the ratio of EBIT to non-cash assets. The comparable firms are matched by propensity score matching using the "without replacement" method based on size, cash flow, market-to-book ratio, leverage, tangibility, capital expenditure, R&D, dividends and cash flow volatility (see text for details). Other Bank Loans Dummy equals one if an M&A is entirely financed by bank loans other than bank lines of credit, and equals zero otherwise. Debt Issues Dummy equals one if an M&A is entirely financed by debt issues, and equals zero otherwise. Equity Issues Dummy equals one if an M&A is entirely financed by equity issues, and equals zero otherwise. Relative Value is the ratio of deal value to the sum of the acquirer's market value of equity and deal value. Hostile equals one if an M&A is hostile, and zero otherwise. Size is the logarithm of non-cash assets. M/B is market value of equity plus non-cash assets minus book value of equity, divided by non-cash assets. Leverage is the ratio of long-term debt to non-cash assets. Tangibility is the ratio of plant, property and equipment to non-cash assets. Capital Expenditure is the ratio of capital expenditure to non-cash assets. R&D is the ratio of R&D to non-cash assets. Dividends is the ratio of dividends to non-cash assets. Cash Flow Volatility is the standard deviation of cash flow to non-cash assets in the prior five years. Year Dummy Variables are the dummy variables for the years in the sample and not reported in the table. Industry Dummy Variables are the dummy variables for the industries defined by two-digit SIC codes and not reported in the table. The p-value is calculated based on Heteroscedasticity-Consistent standard errors, and is noted in the parentheses. *, **, and *** represent significance levels of 10%, 5%, and 1%, respectively.

	Net ΔROA
Intercept	0.516***
	(0.01)
Other Bank Loans Dummy	0.045*
	(0.07)
Debt Issues Dummy	0.056*
	(0.06)
Equity Issues Dummy	0.047
	(0.46)
Relative Value	-0.126
	(0.23)
Hostile	0.042
	(0.41)
Size $_{t-1}$	-0.014*
	(0.06)
ROA $_{t-1}$	-0.842***
	(0.01)
M/B $_{t-1}$	0.003
	(0.27)
Leverage $_{t-1}$	-0.067
	(0.17)
Tangibility $_{t-1}$	-0.004
	(0.95)
Capital Expenditure $_{t-1}$	-0.429**
	(0.05)
R&D $_{t-1}$	0.337
	(0.10)
Dividends $_{t-1}$	1.628**
	(0.02)
Cash Flow Volatility $_{t-1}$	-0.125
	(0.27)
Year Dummy Variables	Yes
Industry Dummy Variables	Yes
Number of Observations	425
Adjusted R-Square	0.31

Table 5.1A Summary Statistics

The table reports univariate statistics. I use a sample of 623 US M&As with cash payment from 1985 to 2013. ΔEV Sales Multiple is the difference in Excess Value calculated based on sales multiple between one year after acquisition and one year before acquisition (see text for details). Relative Value is the ratio of deal value to the sum of the acquirer's market value of equity and deal value. Size is logarithm of total assets. Profit is the ratio of earnings before interest and tax to sales. Growth is the ratio of capital expenditure to sales. LEV is the ratio of long-term debt to total assets. Size2 is the square of log of total assets. ΔAdjusted Investment is the change of Adjusted Investment between one year after acquisition and one year before acquisition. ΔRelative Value Added is the change of Relative Value Added between one year after acquisition and one year before acquisition. Inverse of Average q equals 1/qe, where qe is the equally weighted average q across segments in the firm. Diversity is the standard deviation of a firms' asset-weighted q divided by equally weighted q. Firm Size is logarithm of total sales. Herfindahl Index of Segment Size is based on segment's share of total assets of the firm. Coefficient of Variation of Segment qs is the standard deviation of segment qs divided by the mean of segment qs. Coefficient of Variation of Segment size is the standard deviation of segment's share of total firm assets divided by the average segment share. Firm Size is logarithm of sales.

Variable	Mean	25th Percentile	Median	75th Percentile	Std Dev
ΔEV Sales Multiple	-0.1214	-0.3467	-0.0916	0.1175	0.4640
Relative Value	0.1401	0.0375	0.0929	0.1942	0.1424
Size $_{t-1}$	6.2290	5.0783	6.1771	7.3100	1.7242
Profit $_{t-1}$	0.1165	0.0559	0.0982	0.1667	0.1034
Growth $_{t-1}$	0.1101	0.0213	0.0418	0.0900	0.1695
LEV $_{t-1}$	0.2120	0.0434	0.1824	0.3305	0.1822
Size2 $_{t-1}$	41.7686	25.7893	38.1562	53.4361	22.4199
ΔAdjusted Investment in Segments					
Above Firms Average q and Weighted q	0.0005	0.0000	0.0000	0.0000	0.0195
Above Firms Average q but Below Weighted q	0.0026	0.0000	0.0000	0.0000	0.0387
Below Firms Average q but Above Weighted q	-0.0005	0.0000	0.0000	0.0000	0.0108
Below Firms Average q and Weighted q	0.0022	0.0000	0.0000	0.0000	0.0416
ΔRelative Value Added	0.0004	0.0000	0.0000	0.0000	0.0064
Herfindahl Index of Segment Size $_{t-1}$	0.8076	0.5337	1.0000	1.0000	0.2791
Diversity $_{t-1}$	0.0884	0.0000	0.0000	0.1109	0.1615
Firm Size $_{t-1}$	6.1360	4.9813	6.0808	7.2852	1.8091
Average of Segment q (Equally Weighted) $_{t-1}$	1.8815	1.3387	1.6417	2.1787	0.7800
Inverse of Average q $_{t-1}$	0.6023	0.4590	0.6091	0.7470	0.2159
Coefficient of Variation of Segment qs $_{t-1}$	0.0725	0.0000	0.0000	0.0927	0.1376
Coefficient of Variation of Segment Size $_{t-1}$	0.2279	0.0000	0.0000	0.3639	0.4022

Table 5.1B Univariate Statistics

	Number of Deals
Corporate Cash Holdings	233
Bank Lines of Credit	265
Mixed Lines & Cash	125
Total	623

Table 5.2 Univariate Analysis of Changes in Excess Value

The table reports the univariate analysis of changes in excess value. ΔEV Sales Multiple is the difference in Excess Value calculated based on sales multiple between one year after acquisition and one year before acquisition (see text for details). I report the mean test and the Wilcoxon Signed Rank median test in the table. *, **, and *** represent significance levels of 10%, 5%, and 1%, respectively.

	Bank Lines of Credit		Corporate Cash Holdings		Difference			
	Mean	Median	Mean	Median	Mean	p-value	Median	p-value
ΔEV Sales Multiple	-0.086	-0.075	-0.178	-0.135	0.092**	(0.03)	0.060**	(0.04)
	Mixed Lines & Cash		Corporate cash holdings		Difference			
	Mean	Median	Mean	Median	Mean	p-value	Median	p-value
ΔEV Sales Multiple	-0.091	-0.055	-0.178	-0.135	0.087	(0.12)	0.080	(0.12)
	Bank lines of credit		Mixed Lines & Cash		Difference			
	Mean	Median	Mean	Median	Mean	p-value	Median	p-value
ΔEV Sales Multiple	-0.086	-0.075	-0.091	-0.055	0.005	(0.92)	-0.020	(0.96)

Table 5.3 Changes in Excess Value

The table represents the effect of sources of financing on the changes of excess value of the firms after mergers and acquisitions. Excess Value defines as the log of the ratio of total market value to imputed value using median industry multipliers. ΔEV Sales Multiple is the difference in Excess Value calculated based on sales multiple between one year after acquisition and one year before acquisition (see text for details). Bank Lines of Credit Dummy equals one if an M&A is entirely financed by bank lines of credit, and equals zero otherwise. Mixed Lines & Cash Dummy equals one if an M&A is financed by a mix of bank lines of credit and corporate cash holdings. Firm Diversification is a dummy variable, it equals one for diversified firms and zero for single-segment firms. Relative Value is the ratio of deal value to the sum of the acquirer's market value of equity and deal value. Size is logarithm of total assets. Profit is the ratio of earnings before interest and tax to sales. Growth is the ratio of capital expenditure to sales. LEV is the ratio of long-term debt to total assets. Size2 is the square of log of total assets. Year Dummy Variables are the dummy variables for the years in the sample and not reported in the table. Industry Dummy Variables are the dummy variables for the industries defined by two-digit SIC codes and not reported in the table. The p-value is noted in the parentheses. *, **, and *** represent significance levels of 10%, 5%, and 1%, respectively.

	ΔEV Sales Multiple
Intercept	-0.321
	(0.16)
Bank Lines of Credit Dummy	0.090*
	(0.06)
Mixed Lines & Cash Dummy	0.053
	(0.32)
Firm Diversification $_{t-1}$	0.002
	(0.96)
Relative Value	0.226
	(0.15)
Size $_{t-1}$	-0.224***
	(0.01)
Profit $_{t-1}$	0.412
	(0.17)
Growth $_{t-1}$	0.465
	(0.13)
Size $_{t-2}$	0.253***
	(0.01)
Profit $_{t-2}$	0.093
	(0.80)
Growth $_{t-2}$	-0.178
	(0.54)
Size $_{t-3}$	-0.019
	(0.63)
Profit $_{t-3}$	-0.355
	(0.25)
Growth $_{t-3}$	-0.589**
	(0.02)
LEV $_{t-1}$	0.124
	(0.28)
Size2 $_{t-1}$	0.001
	(0.91)
Year Dummy Variables	Yes
Industry Dummy Variables	Yes
Number of Observations	592
Adjusted R-Square	0.11

Table 5.4 Changes in Internal Resources Transfers

The table represents the relation between the changes in Adjusted Investment and sources of financing. ∆Adjusted Investment is the change of Adjusted Investment one year after acquisition and one year before acquisition. Bank Lines of Credit Dummy equals one if an M&A is entirely financed by bank lines of credit, and equals zero otherwise. Mixed Lines & Cash Dummy equals one if an M&A is financed by a mix of bank lines of credit and corporate cash holdings. Relative Value is the ratio of deal value to the sum of the acquirer's market value of equity and deal value. Inverse of Average q equals $1/qe$, where qe is the equally weighted average q across segment in the firm. Diversity is the standard deviation of a firms' asset-weighted q divided by equally weighted q. Firm Size is logarithm of total sales. Herfindahl Index of Segment Size is based on segment's share of total assets of the firm. Coefficient of Variation of Segment qs is the standard deviation of segment qs divided by the mean of segment qs. Coefficient of Variation of Segment size is the standard deviation of segment's share of total firm assets divided by the average segment share. Year Dummy Variables are the dummy variables for the years in the sample and not reported in the table. Industry Dummy Variables are the dummy variables for the industries defined by two-digit SIC codes and not reported in the table. The p-value is calculated based on Heteroscedasticity-Consistent standard errors, and is noted in the parentheses. *, **, and *** represent significance levels of 10%, 5%, and 1%, respectively.

5.4A: Basic Specification

	∆Adjusted Investment in Segments with			
	$q > \bar{q}$ $\lambda q > \overline{\lambda q}$	$q > \bar{q}$ $\lambda q < \overline{\lambda q}$	$q < \bar{q}$ $\lambda q > \overline{\lambda q}$	$q < \bar{q}$ $\lambda q < \overline{\lambda q}$
Intercept	-0.012	0.010	0.007	0.018
	(0.26)	(0.31)	(0.28)	(0.26)
Bank Lines of Credit Dummy	0.005***	0.001	-0.001	-0.009***
	(0.01)	(0.85)	(0.21)	(0.01)
Mixed Lines & Cash Dummy	0.005*	-0.006	-0.001	-0.005
	(0.07)	(0.30)	(0.82)	(0.30)
Relative Value	0.004	-0.014	-0.001	-0.010
	(0.56)	(0.30)	(0.70)	(0.52)
Inverse of Average q t-1	-0.001	-0.002	0.001	0.008
	(0.74)	(0.78)	(0.91)	(0.22)
Diversity t-1	0.002	0.002	0.002	0.011
	(0.62)	(0.89)	(0.50)	(0.53)
Firm Size t-1	-0.001	0.001	-0.001**	-0.001
	(0.74)	(0.41)	(0.02)	(0.34)
Year Dummy Variables	Yes	Yes	Yes	Yes
Industry Dummy Variables	Yes	Yes	Yes	Yes
Number of Observations	623	623	623	623
Adjusted R-Square	0.02	0.04	0.02	0.03

5.4B: The Effect of Focus

	ΔAdjusted Investment in Segments with			
	$q > \bar{q}$ $\lambda q > \overline{\lambda q}$	$q > \bar{q}$ $\lambda q < \overline{\lambda q}$	$q < \bar{q}$ $\lambda q > \overline{\lambda q}$	$q < \bar{q}$ $\lambda q < \overline{\lambda q}$
Intercept	0.001	-0.001	0.009	0.011
	(0.99)	(0.92)	(0.16)	(0.59)
Bank Lines of Credit Dummy	0.005***	0.001	-0.001	-0.009***
	(0.01)	(0.79)	(0.20)	(0.01)
Mixed Lines & Cash Dummy	0.005**	-0.006	-0.001	-0.005
	(0.05)	(0.27)	(0.85)	(0.28)
Relative Value	0.005	-0.015	-0.001	-0.011
	(0.45)	(0.27)	(0.73)	(0.50)
Inverse of Average q_{t-1}	-0.001	-0.002	0.001	0.008
	(0.83)	(0.73)	(0.88)	(0.22)
Diversity $_{t-1}$	-0.004	0.008	0.001	0.015
	(0.43)	(0.60)	(0.85)	(0.47)
Firm Size $_{t-1}$	-0.001	0.001	-0.001***	-0.001
	(0.33)	(0.20)	(0.01)	(0.51)
Herfindahl Index of Segment Size $_{t-1}$	-0.011**	0.010	-0.002	0.007
	(0.04)	(0.19)	(0.31)	(0.47)
Industry Dummy Variables	Yes	Yes	Yes	Yes
Year Dummy Variables	Yes	Yes	Yes	Yes
Number of Observations	623	623	623	623
Adjusted R-Square	0.04	0.04	0.02	0.03

5.4C: The Effect of the Coefficient of Variation of Segment q

	ΔAdjusted Investment in Segments with			
	$q > \bar{q}$ $\lambda q > \overline{\lambda q}$	$q > \bar{q}$ $\lambda q < \overline{\lambda q}$	$q < \bar{q}$ $\lambda q > \overline{\lambda q}$	$q < \bar{q}$ $\lambda q < \overline{\lambda q}$
Intercept	-0.012	0.010	0.007	0.018
	(0.30)	(0.33)	(0.28)	(0.26)
Bank Lines of Credit Dummy	0.005***	0.001	-0.001	-0.009***
	(0.01)	(0.88)	(0.21)	(0.01)
Mixed Lines & Cash Dummy	0.006**	-0.006	-0.001	-0.005
	(0.04)	(0.26)	(0.82)	(0.25)
Relative Value	0.002	-0.013	-0.001	-0.009
	(0.76)	(0.34)	(0.70)	(0.56)
Inverse of Average q_{t-1}	0.001	-0.003	0.001	0.007
	(0.87)	(0.65)	(0.91)	(0.28)
Diversity $_{t-1}$	-0.009	0.008	0.002	0.017
	(0.16)	(0.64)	(0.53)	(0.47)
Firm Size $_{t-1}$	-0.001	0.001	-0.001**	-0.001
	(0.38)	(0.30)	(0.02)	(0.46)
Coeff. Variation of q_{t-1}	0.026**	-0.014	0.001	-0.013
	(0.03)	(0.43)	(0.99)	(0.50)
Industry Dummy Variables	Yes	Yes	Yes	Yes
Year Dummy Variables	Yes	Yes	Yes	Yes
Number of Observations	623	623	623	623
Adjusted R-Square	0.04	0.04	0.02	0.03

5.4D: The Effect of the Coefficient of Variation of Segment Size

	ΔAdjusted Investment in Segments with			
	$q > \bar{q}$ $\lambda q > \overline{\lambda q}$	$q > \bar{q}$ $\lambda q < \overline{\lambda q}$	$q < \bar{q}$ $\lambda q > \overline{\lambda q}$	$q < \bar{q}$ $\lambda q < \overline{\lambda q}$
Intercept	-0.011	0.013	0.006	0.017
	(0.29)	(0.19)	(0.31)	(0.29)
Bank Lines of Credit Dummy	0.005***	0.001	-0.001	-0.009***
	(0.01)	(0.86)	(0.21)	(0.01)
Mixed Lines & Cash Dummy	0.005*	-0.005	-0.001	-0.005
	(0.07)	(0.31)	(0.78)	(0.29)
Relative Value	0.004	-0.012	-0.002	-0.012
	(0.49)	(0.34)	(0.63)	(0.46)
Inverse of Average q_{t-1}	-0.001	-0.001	0.001	0.008
	(0.77)	(0.82)	(0.95)	(0.22)
Diversity $_{t-1}$	-0.020	-0.053	0.016*	0.053*
	(0.14)	(0.12)	(0.06)	(0.09)
Firm Size $_{t-1}$	-0.001	0.001	-0.001*	-0.001
	(0.49)	(0.90)	(0.07)	(0.56)
Coeff. Variation of segment size $_{t-1}$	0.010*	0.025	-0.006	-0.019
	(0.08)	(0.14)	(0.11)	(0.12)
Industry Dummy Variables	Yes	Yes	Yes	Yes
Year Dummy Variables	Yes	Yes	Yes	Yes
Number of Observations	623	623	623	623
Adjusted R-Square	0.03	0.05	0.03	0.03

Table 5.5 Changes in Overall Efficiency of Transfers

The table reports the relation between the changes in value added by allocation and sources of financing. ΔRelative Value Added is the change of Relative Value Added one year after acquisition and one year before acquisition. Bank Lines of Credit Dummy equals one if an M&A is entirely financed by bank lines of credit, and equals zero otherwise. Mixed Lines & Cash Dummy equals one if an M&A is financed by a mix of bank lines of credit and corporate cash holdings. Relative Value is the ratio of deal value to the sum of the acquirer's market value of equity and deal value. Inverse of Average q equals $1/qe$, where qe is the equally weighted average q across segment in the firm. Diversity is the standard deviation of a firms' asset-weighted q divided by equally weighted q. Firm Size is logarithm of total sales. Year Dummy Variables are the dummy variables for the years in the sample and not reported in the table. Industry Dummy Variables are the dummy variables for the industries defined by two-digit SIC codes and not reported in the table. The p-value is calculated based on Heteroscedasticity-Consistent standard errors, and is noted in the parentheses. *, **, and *** represent significance levels of 10%, 5%, and 1%, respectively.

	ΔRelative Value Added
Intercept	-0.007**
	(0.02)
Bank Lines of Credit Dummy	0.001**
	(0.03)
Mixed Lines & Cash Dummy	0.001
	(0.74)
Relative Value	0.001
	(0.67)
Inverse of Average q_{t-1}	-0.002
	(0.14)
Diversity $_{t-1}$	-0.001
	(0.61)
Firm Size $_{t-1}$	0.001
	(0.28)
Year Dummy Variables	Yes
Industry Dummy Variables	Yes
Number of Observations	623
Adjusted R-Square	0.07

Table 5.6 The Choice of Sources of Financing

The table reports the multinomial logistic regression. The dependent variable is categorical. It equals zero if an M&A is entirely financed by corporate cash holdings, equals one if an M&A is entirely financed by bank lines of credit, and equals two if an M&A is financed by a mixed source of bank lines of credit and corporate cash holdings. Relative Value is the ratio of deal value to the sum of the acquirer's market value of equity and deal value. Cash is the ratio of cash and marketable securities to non-cash assets. Firm Diversification is a dummy variable, it equals one for diversified firms and zero for single-segment firms. Unused Lines of Credit is the ratio of unused lines of credit to non-cash assets. Institutional Ownership is the ratio of shares owned by institutional investors to the total shares outstanding. Size is the logarithm of non-cash assets. Cash Flow is income before extraordinary items divided by non-cash assets. M/B is market value of equity plus non-cash assets minus book value of equity, divided by non-cash assets. Leverage is the ratio of long-term debt to non-cash assets. Tangibility is the ratio of plant, property and equipment to non-cash assets. Capital Expenditure is the ratio of capital expenditure to non-cash assets. R&D is the ratio of R&D to non-cash assets. Dividends is the ratio of dividends to non-cash assets. Cash Flow Volatility is the standard deviation of cash flow to non-cash assets in the prior five years. Year Dummy Variables are the dummy variables for the years in the sample and not reported in the table. Industry Dummy Variables are the dummy variables for the industries defined by two-digit SIC codes and not reported in the table. The p-value is noted in the parentheses. *, **, and *** represent significance levels of 10%, 5%, and 1%, respectively.

	Cash=0, Line=1, Mixed Line & Cash= 2	
	1	2
Intercept	14.224***	4.218
	(0.01)	(0.29)
Relative Value	9.238***	8.858***
	(0.01)	(0.01)
Firm Diversification $_{t-1}$	0.015	0.531
	(0.97)	(0.22)
Cash $_{t-1}$	-13.010***	-4.890***
	(0.01)	(0.01)
Unused Lines of Credit $_{t-1}$	7.559***	3.767*
	(0.01)	(0.08)
Institutional Ownership $_{t-1}$	1.511**	2.380***
	(0.03)	(0.01)
Size $_{t-1}$	-0.734***	-0.247
	(0.01)	(0.15)
Cash Flow $_{t-1}$	-1.429	0.601
	(0.68)	(0.85)
M/B $_{t-1}$	0.636**	0.518**
	(0.02)	(0.02)
Leverage $_{t-1}$	1.097	-0.667
	(0.37)	(0.60)
Tangibility $_{t-1}$	-1.686	-0.635
	(0.27)	(0.69)
Capital Expenditure $_{t-1}$	4.593	-0.760
	(0.24)	(0.85)
R&D $_{t-1}$	-1.213	-2.416
	(0.85)	(0.64)
Dividends $_{t-1}$	-2.895	1.155
	(0.80)	(0.92)
Cash Flow Volatility $_{t-1}$	-0.702	0.181
	(0.57)	(0.89)
Year Dummy Variables	Yes	Yes
Industry Dummy Variables	Yes	Yes
Number of Observations	350	248
Pseudo R-Square	0.63	0.63

Table 5.7A Heckman Two-Stage Estimation — Second Stage: Excess Value

The table represents the effect of sources of financing on the changes of excess value of the firms after mergers and acquisitions. Excess Value defines as the log of the ratio of total market value to imputed value using median industry multipliers. ΔEV Sales Multiple is the difference in Excess Value calculated based on sales multiple between one year after acquisition and one year before acquisition (see text for details). Bank Lines of Credit Dummy equals one if an M&A is entirely financed by bank lines of credit, and equals zero otherwise. Mixed Lines & Cash Dummy equals one if an M&A is financed by a mix of bank lines of credit and corporate cash holdings. Firm Diversification is a dummy variable, it equals one for diversified firms and zero for single-segment firms. Relative Value is the ratio of deal value to the sum of the acquirer's market value of equity and deal value. Size is logarithm of total assets. Profit is the ratio of earnings before interest and tax to sales. Growth is the ratio of capital expenditure to sales. LEV is the ratio of long-term debt to total assets. Size2 is the square of log of total assets. Inverse Mills Ratio is calculated based on the estimates in the multinomial logistic regression as reported in Table 5.6. Year Dummy Variables are the dummy variables for the years in the sample and not reported in the table. Industry Dummy Variables are the dummy variables for the industries defined by two-digit SIC codes and not reported in the table. The p-value is noted in the parentheses. *, **, and *** represent significance levels of 10%, 5%, and 1%, respectively.

	ΔEV Sales Multiple	ΔEV Sales Multiple
Intercept	-0.232	-0.280
	(0.58)	(0.59)
Bank Lines of Credit Dummy	0.181**	
	(0.02)	
Mixed Lines & Cash Dummy		0.150
		(0.20)
Firm Diversification $_{t-1}$	0.027	-0.022
	(0.65)	(0.78)
Relative Value	0.176	-0.319
	(0.47)	(0.44)
Size $_{t-1}$	-0.273*	-0.295
	(0.06)	(0.13)
Profit $_{t-1}$	0.366	0.766
	(0.36)	(0.25)
Growth $_{t-1}$	-0.019	-1.009
	(0.96)	(0.31)
Size $_{t-2}$	0.247*	0.342*
	(0.06)	(0.07)
Profit $_{t-2}$	0.269	0.070
	(0.60)	(0.93)
Growth $_{t-2}$	-0.376	-0.224
	(0.36)	(0.80)
Size $_{t-3}$	-0.049	-0.077
	(0.53)	(0.47)
Profit $_{t-3}$	-0.223	-0.566
	(0.59)	(0.31)
Growth $_{t-3}$	0.009	0.592
	(0.98)	(0.36)
LEV $_{t-1}$	0.048	0.288
	(0.77)	(0.19)
Size2 $_{t-1}$	0.006	0.003
	(0.45)	(0.72)
Inverse Mills Ratio	-0.037	-0.032
	(0.39)	(0.60)
Year Dummy Variables	Yes	Yes
Industry Dummy Variables	Yes	Yes
Number of Observations	341	246
Adjusted R-Square	0.08	0.17

Table 5.7B Heckman Two-Stage Estimation — Second Stage: Internal Resources Transfers

The table represents the relation between changes in Adjusted Investment and sources of financing. ΔAdjusted Investment is the change of Adjusted Investment one year after acquisition and one year before acquisition. Bank Lines of Credit Dummy equals one if an M&A is entirely financed by bank lines of credit, and equals zero otherwise. Mixed Lines & Cash Dummy equals one if an M&A is financed by a mix of bank lines of credit and corporate cash holdings. Relative Value is the ratio of deal value to the sum of the acquirer's market value of equity and deal value. Inverse of Average q equals $1/qe$, where qe is the equally weighted average q across segment in the firm. Diversity is the standard deviation of a firms' asset-weighted q divided by equally weighted q. Firm Size is logarithm of total sales. Inverse Mills Ratio is calculated based on the estimates in the multinomial logistic regression as reported in Table 5.6 Year Dummy Variables are the dummy variables for the years in the sample and not reported in the table. Industry Dummy Variables are the dummy variables for the industries defined by two-digit SIC codes and not reported in the table. The p-value is calculated based on Heteroscedasticity-Consistent standard errors, and is noted in the parentheses. *, **, and *** represent significance levels of 10%, 5%, and 1%, respectively.

	ΔAdjusted Investment in Segments with							
	$q > \bar{q}$ $\lambda q > \overline{\lambda q}$	$q > \bar{q}$ $\lambda q < \overline{\lambda q}$	$q < \bar{q}$ $\lambda q > \overline{\lambda q}$	$q < \bar{q}$ $\lambda q < \overline{\lambda q}$	$q > \bar{q}$ $\lambda q > \overline{\lambda q}$	$q > \bar{q}$ $\lambda q < \overline{\lambda q}$	$q < \bar{q}$ $\lambda q > \overline{\lambda q}$	$q < \bar{q}$ $\lambda q < \overline{\lambda q}$
Intercept	-0.015	-0.006	0.005	0.020	0.004	0.045**	0.004	-0.012
	(0.24)	(0.57)	(0.23)	(0.31)	(0.68)	(0.02)	(0.32)	(0.57)
Bank Lines of Credit Dummy	0.004*	0.001	0.001	-0.012***				
	(0.08)	(0.76)	(0.81)	(0.01)				
Mixed Lines & Cash Dummy					-0.004	0.002	0.002	-0.005
					(0.23)	(0.83)	(0.31)	(0.44)
Relative Value	0.006	0.017	-0.011**	0.022	0.009	-0.049*	-0.004	-0.028
	(0.50)	(0.29)	(0.04)	(0.35)	(0.50)	(0.06)	(0.56)	(0.37)
Inverse of Average q t-1	0.002	-0.006	0.001	0.002	-0.008	-0.001	0.004*	0.011
	(0.60)	(0.35)	(0.75)	(0.78)	(0.13)	(0.99)	(0.09)	(0.24)
Diversity t-1	0.005	-0.016	0.003	-0.031	0.005	0.042**	-0.003	0.047
	(0.46)	(0.39)	(0.36)	(0.18)	(0.49)	(0.05)	(0.23)	(0.17)
Firm Size t-1	-0.001	-0.001	-0.001*	0.001	-0.001	-0.002	-0.001	0.002
	(0.42)	(0.85)	(0.08)	(0.94)	(0.53)	(0.31)	(0.74)	(0.26)
Inverse Mills Ratio	0.002	0.004	-0.002**	0.003	0.002	0.004	-0.002*	0.002
	(0.30)	(0.21)	(0.02)	(0.29)	(0.31)	(0.26)	(0.08)	(0.63)
Year Dummy Variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry Dummy Variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of Observations	348	348	348	348	248	248	248	248
Adjusted R-Square	0.03	0.15	0.07	0.03	0.06	0.18	0.18	0.02

Table 5.7C Heckman Two-Stage Estimation — Second Stage: Overall Efficiency of Transfers

The table reports the relation between the changes in value added by allocation and sources of financing. ΔRelative Value Added is the change of Relative Value Added one year after acquisition and one year before acquisition. Bank Lines of Credit Dummy equals one if an M&A is entirely financed by bank lines of credit, and equals zero otherwise. Mixed Lines & Cash Dummy equals one if an M&A is financed by a mix of bank lines of credit and corporate cash holdings. Relative Value is the ratio of deal value to the sum of the acquirer's market value of equity and deal value. Inverse of Average q equals $1/q_e$, where q_e is the equally weighted average q across segment in the firm. Diversity is the standard deviation of a firms' asset-weighted q divided by equally weighted q. Firm Size is logarithm of total sales. Year Dummy Variables are the dummy variables for the years in the sample and not reported in the table. Inverse Mills Ratio is calculated based on the estimates in the multinomial logistic regression as reported in Table 5.6. Industry Dummy Variables are the dummy variables for the industries defined by two-digit SIC codes and not reported in the table. The p-value is calculated based on Heteroscedasticity-Consistent standard errors, and is noted in the parentheses. *, **, and *** represent significance levels of 10%, 5%, and 1%, respectively.

	ΔRelative Value Added	
Intercept	-0.005*	-0.006**
	(0.07)	(0.04)
Bank Lines of Credit Dummy	0.002*	
	(0.08)	
Mixed Lines & Cash Dummy		-0.002
		(0.20)
Relative Value	0.003	0.004
	(0.36)	(0.31)
Inverse of Average q_{t-1}	-0.001	-0.003*
	(0.39)	(0.09)
Diversity $_{t-1}$	-0.001	-0.001
	(0.62)	(0.85)
Firm Size $_{t-1}$	0.001*	0.001
	(0.06)	(0.53)
Inverse Mills Ratio	-0.001	0.001
	(0.89)	(0.71)
Year Dummy Variables	Yes	Yes
Industry Dummy Variables	Yes	Yes
Number of Observations	348	248
Adjusted R-Square	0.06	0.12

Table 5.8A Sub-Group Analysis Based on Block Institutional Ownership — Changes in Excess Value

The table represents the effect of sources of financing on the changes of excess value of the firms after mergers and acquisitions. Excess Value defines as the log of the ratio of total market value to imputed value using median industry multipliers. ΔEV Sales Multiple is the difference in Excess Value calculated based on sales multiple between one year after acquisition and one year before acquisition (see text for details). Block equals one if there exists a block institutional ownership which exceeds 5% of the total shares outstanding, and equals zero otherwise. Bank Lines of Credit Dummy equals one if an M&A is entirely financed by bank lines of credit, and equals zero otherwise. Mixed Lines & Cash Dummy equals one if an M&A is financed by a mix of bank lines of credit and corporate cash holdings. Firm Diversification is a dummy variable, it equals one for diversified firms and zero for single-segment firms. Relative Value is the ratio of deal value to the sum of the acquirer's market value of equity and deal value. Size is logarithm of total assets. Profit is the ratio of earnings before interest and tax to sales. Growth is the ratio of capital expenditure to sales. LEV is the ratio of long-term debt to total assets. Size2 is the square of log of total assets. Year Dummy Variables are the dummy variables for the years in the sample and not reported in the table. Industry Dummy Variables are the dummy variables for the industries defined by two-digit SIC codes and not reported in the table. The p-value is noted in the parentheses. *, **, and *** represent significance levels of 10%, 5%, and 1%, respectively.

	ΔEV Sales Multiple	
	Block=0	Block=1
Intercept	-0.216	-0.519
	(0.35)	(0.39)
Bank Lines of Credit Dummy	0.134*	0.081
	(0.08)	(0.21)
Mixed Lines & Cash Dummy	0.116	0.021
	(0.20)	(0.77)
Firm Diversification $_{t-1}$	0.008	-0.023
	(0.90)	(0.68)
Relative Value	-0.107	0.637***
	(0.63)	(0.01)
Size $_{t-1}$	-0.051	-0.299**
	(0.67)	(0.03)
Profit $_{t-1}$	1.401***	0.284
	(0.01)	(0.48)
Growth $_{t-1}$	0.398	0.382
	(0.45)	(0.37)
Size $_{t-2}$	0.078	0.486***
	(0.49)	(0.01)
Profit $_{t-2}$	-1.176*	0.493
	(0.07)	(0.33)
Growth $_{t-2}$	-0.634	0.030
	(0.19)	(0.95)
Size $_{t-3}$	-0.020	-0.183**
	(0.68)	(0.03)
Profit $_{t-3}$	-0.114	-0.491
	(0.80)	(0.28)
Growth $_{t-3}$	-0.142	-0.633
	(0.69)	(0.14)
LEV $_{t-1}$	0.026	0.148
	(0.89)	(0.35)
Size2 $_{t-1}$	-0.001	0.002
	(0.87)	(0.85)
Year Dummy Variables	Yes	Yes
Industry Dummy Variables	Yes	Yes
Number of Observations	212	380
Adjusted R-Square	0.07	0.17

Table 5.8B Sub-Group Analysis Based on Block Institutional Ownership — Changes in Internal Resources Transfers

The table represents the relation between changes in Adjusted Investment and sources of financing. ΔAdjusted Investment is the change of Adjusted Investment one year after acquisition and one year before acquisition. Block equals one if there exists a block institutional ownership which exceeds 5% of the total shares outstanding, and equals zero otherwise. Bank Lines of Credit Dummy equals one if an M&A is entirely financed by bank lines of credit, and equals zero otherwise. Mixed Lines & Cash Dummy equals one if an M&A is financed by a mix of bank lines of credit and corporate cash holdings. Relative Value is the ratio of deal value to the sum of the acquirer's market value of equity and deal value. Inverse of Average q equals $1/qe$, where qe is the equally weighted average q across segment in the firm. Diversity is the standard deviation of a firms' asset-weighted q divided by equally weighted q. Firm Size is logarithm of total sales. Year Dummy Variables are the dummy variables for the years in the sample and not reported in the table. Industry Dummy Variables are the dummy variables for the industries defined by two-digit SIC codes and not reported in the table. The p-value is calculated based on Heteroscedasticity-Consistent standard errors, and is noted in the parentheses. *, **, and *** represent significance levels of 10%, 5%, and 1%, respectively.

	ΔAdjusted Investment in Segments with			
	$q > \bar{q}$ $\lambda q > \overline{\lambda q}$		$q < \bar{q}$ $\lambda q < \overline{\lambda q}$	
	Block=0	Block=1	Block=0	Block=1
Intercept	0.002	-0.003	0.010	0.006
	(0.64)	(0.70)	(0.51)	(0.44)
Bank Lines of Credit Dummy	0.005**	0.003	-0.015**	-0.003
	(0.04)	(0.23)	(0.03)	(0.40)
Mixed Lines & Cash Dummy	0.005*	0.002	-0.003	-0.005
	(0.08)	(0.45)	(0.79)	(0.20)
Relative Value	-0.007	0.002	0.007	0.011
	(0.40)	(0.77)	(0.84)	(0.52)
Inverse of Average q t-1	0.004	-0.006	0.012	-0.001
	(0.44)	(0.22)	(0.31)	(0.98)
Diversity t-1	-0.005	0.001	0.079***	-0.012
	(0.33)	(0.78)	(0.01)	(0.49)
Firm Size t-1	-0.001	-0.001	0.001	-0.001
	(0.39)	(0.69)	(0.68)	(0.97)
Year Dummy Variables	Yes	Yes	Yes	Yes
Industry Dummy Variables	Yes	Yes	Yes	Yes
Number of Observations	232	391	232	391
Adjusted R-Square	0.06	0.02	0.02	0.02

Table 5.8C Sub-Group Analysis Based on Block Institutional Ownership — Changes in Overall Efficiency of Transfers

The table reports the relation between the changes in value added by allocation and sources of financing. ΔRelative Value Added is the change of Relative Value Added one year after acquisition and one year before acquisition. Block equals one if there exists a block institutional ownership which exceeds 5% of the total shares outstanding, and equals zero otherwise. Bank Lines of Credit Dummy equals one if an M&A is entirely financed by bank lines of credit, and equals zero otherwise. Mixed Lines & Cash Dummy equals one if an M&A is financed by a mix of bank lines of credit and corporate cash holdings. Relative Value is the ratio of deal value to the sum of the acquirer's market value of equity and deal value. Inverse of Average q equals $1/qe$, where qe is the equally weighted average q across segment in the firm. Diversity is the standard deviation of a firms' asset-weighted q divided by equally weighted q. Firm Size is logarithm of total sales. Year Dummy Variables are the dummy variables for the years in the sample and not reported in the table. Industry Dummy Variables are the dummy variables for the industries defined by two-digit SIC codes and not reported in the table. The p-value is calculated based on Heteroscedasticity-Consistent standard errors, and is noted in the parentheses. *, **, and *** represent significance levels of 10%, 5%, and 1%, respectively.

	ΔRelative Value Added	
	Block=0	Block=1
Intercept	0.002	-0.003
	(0.16)	(0.20)
Bank Lines of Credit Dummy	0.001*	0.001
	(0.06)	(0.20)
Mixed Lines & Cash Dummy	0.001	-0.001
	(0.20)	(0.97)
Relative Value	-0.002	0.003
	(0.38)	(0.29)
Inverse of Average q_{t-1}	-0.001	-0.002
	(0.91)	(0.14)
Diversity $_{t-1}$	-0.002	-0.002
	(0.21)	(0.41)
Firm Size $_{t-1}$	-0.001	0.001
	(0.35)	(0.15)
Year Dummy Variables	Yes	Yes
Industry Dummy Variables	Yes	Yes
Number of Observations	232	391
Adjusted R-Square	0.10	0.09

Table 5.9A Sub-Group Analysis Based on Bankruptcy Risk — Changes in Excess Value

The table represents the effect of sources of financing on the changes of excess value of the firms after mergers and acquisitions. Excess Value defines as the log of the ratio of total market value to imputed value using median industry multipliers. ΔEV Sales Multiple is the difference in Excess Value calculated based on sales multiple between one year after acquisition and one year before acquisition (see text for details). Low (High) Bankruptcy risk indicates a firm's Altman Z-Score is equal or greater (less) than 1.81.Bank Lines of Credit Dummy equals one if an M&A is entirely financed by bank lines of credit, and equals zero otherwise. Mixed Lines & Cash Dummy equals one if an M&A is financed by a mix of bank lines of credit and corporate cash holdings. Firm Diversification is a dummy variable, it equals one for diversified firms and zero for single-segment firms. Relative Value is the ratio of deal value to the sum of the acquirer's market value of equity and deal value. Size is logarithm of total assets. Profit is the ratio of earnings before interest and tax to sales. Growth is the ratio of capital expenditure to sales. LEV is the ratio of long-term debt to total assets. Size2 is the square of log of total assets. Year Dummy Variables are the dummy variables for the years in the sample and not reported in the table. Industry Dummy Variables are the dummy variables for the industries defined by two-digit SIC codes and not reported in the table. The p-value is noted in the parentheses. *, **, and *** represent significance levels of 10%, 5%, and 1%, respectively.

	ΔEV Sales Multiple	
	Low Bankruptcy Risk	High Bankruptcy Risk
Intercept	-0.550**	-1.926**
	(0.02)	(0.05)
Bank Lines of Credit Dummy	0.094*	0.129
	(0.06)	(0.26)
Mixed Lines & Cash Dummy	0.057	0.100
	(0.31)	(0.47)
Firm Diversification $_{t-1}$	-0.004	0.117
	(0.93)	(0.44)
Relative Value	0.340**	0.048
	(0.05)	(0.87)
Size $_{t-1}$	-0.149	0.111
	(0.10)	(0.73)
Profit $_{t-1}$	0.452	0.363
	(0.22)	(0.47)
Growth $_{t-1}$	0.527	0.227
	(0.20)	(0.75)
Size $_{t-2}$	0.259**	0.039
	(0.02)	(0.80)
Profit $_{t-2}$	0.452	0.309
	(0.31)	(0.58)
Growth $_{t-2}$	-0.419	0.634
	(0.26)	(0.17)
Size $_{t-3}$	-0.051	0.239***
	(0.43)	(0.01)
Profit $_{t-3}$	-0.834**	-0.058
	(0.02)	(0.89)
Growth $_{t-3}$	-0.589*	-0.678
	(0.06)	(0.14)
LEV $_{t-1}$	0.131	0.515
	(0.35)	(0.21)
Size2 $_{t-1}$	-0.003	-0.030
	(0.54)	(0.26)
Year Dummy Variables	Yes	Yes
Industry Dummy Variables	Yes	Yes
Number of Observations	502	90
Adjusted R-Square	0.11	0.62

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Table 5.9B Sub-Group Analysis Based on Bankruptcy Risk — Changes in Internal Resources Transfers

The table represents the relation between changes in Adjusted Investment and sources of financing. ΔAdjusted Investment is the change of Adjusted Investment one year after acquisition and one year before acquisition. H Low (High) Bankruptcy risk indicates a firm's Altman Z-Score is equal or greater (less) than 1.81. Bank Lines of Credit Dummy equals one if an M&A is entirely financed by bank lines of credit, and equals zero otherwise. Mixed Lines & Cash Dummy equals one if an M&A is financed by a mix of bank lines of credit and corporate cash holdings. Relative Value is the ratio of deal value to the sum of the acquirer's market value of equity and deal value. Inverse of Average q equals $1/qe$, where qe is the equally weighted average q across segment in the firm. Diversity is the standard deviation of a firms' asset-weighted q divided by equally weighted q. Firm Size is logarithm of total sales. Year Dummy Variables are the dummy variables for the years in the sample and not reported in the table. Industry Dummy Variables are the dummy variables for the industries defined by two-digit SIC codes and not reported in the table. The p-value is calculated based on Heteroscedasticity-Consistent standard errors, and is noted in the parentheses. *, **, and *** represent significance levels of 10%, 5%, and 1%, respectively.

	ΔAdjusted Investment in Segments with			
	$q > \bar{q}$ $\lambda q > \overline{\lambda q}$		$q < \bar{q}$ $\lambda q < \overline{\lambda q}$	
	Low Bankruptcy Risk	High Bankruptcy Risk	Low Bankruptcy Risk	High Bankruptcy Risk
Intercept	-0.018	0.059***	0.015	-0.126**
	(0.12)	(0.01)	(0.35)	(0.03)
Bank Lines of Credit Dummy	0.004*	0.001	-0.008**	-0.022
	(0.07)	(0.85)	(0.02)	(0.21)
Mixed Lines & Cash Dummy	0.003	0.001	-0.005	0.010
	(0.20)	(0.86)	(0.20)	(0.70)
Relative Value	0.008	0.003	0.002	-0.073*
	(0.27)	(0.69)	(0.88)	(0.08)
Inverse of Average q_{t-1}	-0.001	-0.009	0.010	0.022
	(0.75)	(0.36)	(0.12)	(0.47)
Diversity $_{t-1}$	0.001	0.006	0.014	-0.043
	(0.82)	(0.35)	(0.30)	(0.25)
Firm Size $_{t-1}$	0.001	-0.006***	-0.002*	0.020***
	(0.40)	(0.01)	(0.08)	(0.01)
Year Dummy Variables	Yes	Yes	Yes	Yes
Industry Dummy Variables	Yes	Yes	Yes	Yes
Number of Observations	526	97	526	97
Adjusted R-Square	0.06	0.35	0.03	0.17

Table 5.9C Sub-Group Analysis Based on Bankruptcy Risk — Changes in Overall Efficiency of Transfers

The table reports the relation between the changes in value added by allocation and sources of financing. ΔRelative Value Added is the change of Relative Value Added one year after acquisition and one year before acquisition. Low (High) Bankruptcy risk indicates a firm's Altman Z-Score is equal or greater (less) than 1.81. Bank Lines of Credit Dummy equals one if an M&A is entirely financed by bank lines of credit, and equals zero otherwise. Mixed Lines & Cash Dummy equals one if an M&A is financed by a mix of bank lines of credit and corporate cash holdings. Relative Value is the ratio of deal value to the sum of the acquirer's market value of equity and deal value. Inverse of Average q equals $1/qe$, where qe is the equally weighted average q across segment in the firm. Diversity is the standard deviation of a firms' asset-weighted q divided by equally weighted q. Firm Size is logarithm of total sales. Year Dummy Variables are the dummy variables for the years in the sample and not reported in the table. Industry Dummy Variables are the dummy variables for the industries defined by two-digit SIC codes and not reported in the table. The p-value is calculated based on Heteroscedasticity-Consistent standard errors, and is noted in the parentheses. *, **, and *** represent significance levels of 10%, 5%, and 1%, respectively.

	ΔRelative Value Added	
	Low Bankruptcy Risk	High Bankruptcy Risk
Intercept	-0.009***	0.027***
	(0.01)	(0.01)
Bank Lines of Credit Dummy	0.001*	-0.004***
	(0.06)	(0.01)
Mixed Lines & Cash Dummy	-0.001	0.001
	(0.68)	(0.71)
Relative Value	0.003	0.004
	(0.33)	(0.14)
Inverse of Average q_{t-1}	-0.002	-0.010***
	(0.18)	(0.01)
Diversity $_{t-1}$	-0.002	-0.001
	(0.34)	(0.96)
Firm Size $_{t-1}$	0.001*	-0.002***
	(0.08)	(0.01)
Year Dummy Variables	Yes	Yes
Industry Dummy Variables	Yes	Yes
Number of Observations	526	97
Adjusted R-Square	0.10	0.48

Table 5.10A Acquirers with Multiple M&As — Changes in Excess Value

The table represents the effect of sources of financing on the changes of excess value of the firms after mergers and acquisitions. Excess Value defines as the log of the ratio of total market value to imputed value using median industry multipliers. ΔEV Sales Multiple is the difference in Excess Value calculated based on sales multiple between one year after acquisition and one year before acquisition (see text for details). Bank Lines of Credit Dummy equals one if an M&A is entirely financed by bank lines of credit, and equals zero otherwise. Mixed Lines & Cash Dummy equals one if an M&A is financed by a mix of bank lines of credit and corporate cash holdings. Firm Diversification is a dummy variable, it equals one for diversified firms and zero for single-segment firms. Relative Value is the ratio of deal value to the sum of the acquirer's market value of equity and deal value. Size is logarithm of total assets. Profit is the ratio of earnings before interest and tax to sales. Growth is the ratio of capital expenditure to sales. LEV is the ratio of long-term debt to total assets. Size2 is the square of log of total assets. Year Dummy Variables are the dummy variables for the years in the sample and not reported in the table. Industry Dummy Variables are the dummy variables for the industries defined by two-digit SIC codes and not reported in the table. The p-value is noted in the parentheses. *, **, and *** represent significance levels of 10%, 5%, and 1%, respectively.

	ΔEV Sales Multiple
Intercept	-0.230
	(0.35)
Bank Lines of Credit Dummy	0.091*
	(0.08)
Mixed Lines & Cash Dummy	0.070
	(0.22)
Firm Diversification $_{t-1}$	-0.003
	(0.94)
Relative Value	0.245
	(0.14)
Size $_{t-1}$	-0.248***
	(0.01)
Profit $_{t-1}$	0.345
	(0.29)
Growth $_{t-1}$	0.610**
	(0.04)
Size $_{t-2}$	0.243***
	(0.01)
Profit $_{t-2}$	0.193
	(0.64)
Growth $_{t-2}$	-0.337
	(0.28)
Size $_{t-3}$	-0.013
	(0.75)
Profit $_{t-3}$	-0.355
	(0.29)
Growth $_{t-3}$	-0.356
	(0.20)
LEV $_{t-1}$	0.144
	(0.24)
Size2 $_{t-1}$	0.003
	(0.62)
Year Dummy Variables	Yes
Industry Dummy Variables	Yes
Number of Observations	555
Adjusted R-Square	0.07

Table 5.10B Acquirers with Multiple M&As — Changes in Internal Resources Transfers

The table represents the relation between changes in Adjusted Investment and sources of financing. ΔAdjusted Investment is the change of Adjusted Investment one year after acquisition and one year before acquisition. Bank Lines of Credit Dummy equals one if an M&A is entirely financed by bank lines of credit, and equals zero otherwise. Mixed Lines & Cash Dummy equals one if an M&A is financed by a mix of bank lines of credit and corporate cash holdings. Relative Value is the ratio of deal value to the sum of the acquirer's market value of equity and deal value. Inverse of Average q equals $1/q_e$, where q_e is the equally weighted average q across segment in the firm. Diversity is the standard deviation of a firms' asset-weighted q divided by equally weighted q. Firm Size is logarithm of total sales. Year Dummy Variables are the dummy variables for the years in the sample and not reported in the table. Industry Dummy Variables are the dummy variables for the industries defined by two-digit SIC codes and not reported in the table. The p-value is calculated based on Heteroscedasticity-Consistent standard errors, and is noted in the parentheses. *, **, and *** represent significance levels of 10%, 5%, and 1%, respectively.

	ΔAdjusted Investment in Segments with			
	$q > \bar{q}$ $\lambda q > \overline{\lambda q}$	$q > \bar{q}$ $\lambda q < \overline{\lambda q}$	$q < \bar{q}$ $\lambda q > \overline{\lambda q}$	$q < \bar{q}$ $\lambda q < \overline{\lambda q}$
Intercept	-0.008	0.001	0.006**	0.009
	(0.38)	(0.89)	(0.03)	(0.30)
Bank Lines of Credit Dummy	0.005**	0.001	-0.001	-0.009***
	(0.02)	(0.96)	(0.36)	(0.01)
Mixed Lines & Cash Dummy	0.005*	-0.005	-0.001	-0.005
	(0.07)	(0.37)	(0.79)	(0.26)
Relative Value	0.002	-0.011	-0.003	-0.003
	(0.76)	(0.39)	(0.41)	(0.82)
Inverse of Average q_{t-1}	0.001	-0.001	-0.001	0.008
	(0.84)	(0.80)	(0.69)	(0.24)
Diversity $_{t-1}$	0.001	0.008	0.002	0.008
	(0.82)	(0.55)	(0.50)	(0.67)
Firm Size $_{t-1}$	-0.001	0.001	-0.001***	-0.001
	(0.56)	(0.35)	(0.01)	(0.52)
Year Dummy Variables	Yes	Yes	Yes	Yes
Industry Dummy Variables	Yes	Yes	Yes	Yes
Number of Observations	584	584	584	584
Adjusted R-Square	0.03	0.04	0.02	0.04

Table 5.10C Acquirers with Multiple M&As — Changes in Overall Efficiency of Transfers

The table reports the relation between the changes in value added by allocation and sources of financing. ΔRelative Value Added is the change of Relative Value Added one year after acquisition and one year before acquisition. Bank Lines of Credit Dummy equals one if an M&A is entirely financed by bank lines of credit, and equals zero otherwise. Mixed Lines & Cash Dummy equals one if an M&A is financed by a mix of bank lines of credit and corporate cash holdings. Relative Value is the ratio of deal value to the sum of the acquirer's market value of equity and deal value. Inverse of Average q equals $1/qe$, where qe is the equally weighted average q across segment in the firm. Diversity is the standard deviation of a firms' asset-weighted q divided by equally weighted q. Firm Size is logarithm of total sales. Year Dummy Variables are the dummy variables for the years in the sample and not reported in the table. Industry Dummy Variables are the dummy variables for the industries defined by two-digit SIC codes and not reported in the table. The p-value is calculated based on Heteroscedasticity-Consistent standard errors, and is noted in the parentheses. *, **, and *** represent significance levels of 10%, 5%, and 1%, respectively.

	ΔRelative Value Added
Intercept	-0.002
	(0.24)
Bank Lines of Credit Dummy	0.001**
	(0.02)
Mixed Lines & Cash Dummy	0.001
	(0.94)
Relative Value	0.001
	(0.50)
Inverse of Average q_{t-1}	-0.002*
	(0.09)
Diversity $_{t-1}$	-0.001
	(0.52)
Firm Size $_{t-1}$	0.001
	(0.18)
Year Dummy Variables	Yes
Industry Dummy Variables	Yes
Number of Observations	584
Adjusted R-Square	0.03

Table 5.11A Completion Year — Changes in Excess Value

The table represents the effect of sources of financing on the changes of excess value of the firms after mergers and acquisitions. Excess Value defines as the log of the ratio of total market value to imputed value using median industry multipliers. ΔEV Sales Multiple is the difference in Excess Value calculated based on sales multiple between one year after acquisition and one year before acquisition (see text for details). Bank Lines of Credit Dummy equals one if an M&A is entirely financed by bank lines of credit, and equals zero otherwise. Mixed Lines & Cash Dummy equals one if an M&A is financed by a mix of bank lines of credit and corporate cash holdings. Firm Diversification is a dummy variable, it equals one for diversified firms and zero for single-segment firms. Relative Value is the ratio of deal value to the sum of the acquirer's market value of equity and deal value. Size is logarithm of total assets. Profit is the ratio of earnings before interest and tax to sales. Growth is the ratio of capital expenditure to sales. LEV is the ratio of long-term debt to total assets. Size2 is the square of log of total assets. Year Dummy Variables are the dummy variables for the years in the sample and not reported in the table. Industry Dummy Variables are the dummy variables for the industries defined by two-digit SIC codes and not reported in the table. The p-value is noted in the parentheses. *, **, and *** represent significance levels of 10%, 5%, and 1%, respectively.

	ΔEV Sales Multiple
Intercept	-0.225
	(0.66)
Bank Lines of Credit Dummy	0.104**
	(0.04)
Mixed Lines & Cash Dummy	0.072
	(0.20)
Firm Diversification $_{t-1}$	-0.012
	(0.78)
Relative Value	0.280*
	(0.08)
Size $_{t-1}$	-0.332***
	(0.01)
Profit $_{t-1}$	0.169
	(0.12)
Growth $_{t-1}$	0.364
	(0.18)
Size $_{t-2}$	0.240***
	(0.01)
Profit $_{t-2}$	-0.095
	(0.66)
Growth $_{t-2}$	-0.086
	(0.77)
Size $_{t-3}$	-0.001
	(0.98)
Profit $_{t-3}$	0.128
	(0.41)
Growth $_{t-3}$	-0.342
	(0.22)
LEV $_{t-1}$	0.105
	(0.37)
Size2 $_{t-1}$	0.010
	(0.11)
Year Dummy Variables	Yes
Industry Dummy Variables	Yes
Number of Observations	581
Adjusted R-Square	0.14

Table 5.11B Completion Year — Changes in Internal Resources Transfers

The table represents the relation between changes in Adjusted Investment and sources of financing. ΔAdjusted Investment is the change of Adjusted Investment one year after acquisition and one year before acquisition. Bank Lines of Credit Dummy equals one if an M&A is entirely financed by bank lines of credit, and equals zero otherwise. Mixed Lines & Cash Dummy equals one if an M&A is financed by a mix of bank lines of credit and corporate cash holdings. Relative Value is the ratio of deal value to the sum of the acquirer's market value of equity and deal value. Inverse of Average q equals $1/qe$, where qe is the equally weighted average q across segment in the firm. Diversity is the standard deviation of a firms' asset-weighted q divided by equally weighted q. Firm Size is logarithm of total sales. Year Dummy Variables are the dummy variables for the years in the sample and not reported in the table. Industry Dummy Variables are the dummy variables for the industries defined by two-digit SIC codes and not reported in the table. The p-value is calculated based on Heteroscedasticity-Consistent standard errors, and is noted in the parentheses. *, **, and *** represent significance levels of 10%, 5%, and 1%, respectively.

	ΔAdjusted Investment in Segments with			
	$q > \bar{q}$ $\lambda q > \overline{\lambda q}$	$q > \bar{q}$ $\lambda q < \overline{\lambda q}$	$q < \bar{q}$ $\lambda q > \overline{\lambda q}$	$q < \bar{q}$ $\lambda q < \overline{\lambda q}$
Intercept	-0.010	0.012	0.004	0.011
	(0.38)	(0.28)	(0.41)	(0.15)
Bank Lines of Credit Dummy	0.005***	-0.001	-0.001	-0.006*
	(0.01)	(0.73)	(0.47)	(0.07)
Mixed Lines & Cash Dummy	0.006**	-0.006	-0.001	-0.004
	(0.04)	(0.28)	(0.93)	(0.47)
Relative Value	-0.003	-0.012	-0.003	0.019
	(0.63)	(0.37)	(0.54)	(0.24)
Inverse of Average q_{t-1}	-0.001	-0.001	-0.001	-0.001
	(1.00)	(0.88)	(0.91)	(0.90)
Diversity $_{t-1}$	0.006	0.003	0.003	-0.001
	(0.17)	(0.85)	(0.24)	(0.96)
Firm Size $_{t-1}$	-0.001	0.001	-0.001**	-0.001
	(0.91)	(0.45)	(0.03)	(0.85)
Year Dummy Variables	Yes	Yes	Yes	Yes
Industry Dummy Variables	Yes	Yes	Yes	Yes
Number of Observations	610	610	610	610
Adjusted R-Square	0.03	0.02	0.03	0.03

Table 5.11C Completion Year — Changes in Overall Efficiency of Transfers

The table reports the relation between the changes in value added by allocation and sources of financing. ΔRelative Value Added is the change of Relative Value Added one year after acquisition and one year before acquisition. Bank Lines of Credit Dummy equals one if an M&A is entirely financed by bank lines of credit, and equals zero otherwise. Mixed Lines & Cash Dummy equals one if an M&A is financed by a mix of bank lines of credit and corporate cash holdings. Relative Value is the ratio of deal value to the sum of the acquirer's market value of equity and deal value. Inverse of Average q equals $1/qe$, where qe is the equally weighted average q across segment in the firm. Diversity is the standard deviation of a firms' asset-weighted q divided by equally weighted q. Firm Size is logarithm of total sales. Year Dummy Variables are the dummy variables for the years in the sample and not reported in the table. Industry Dummy Variables are the dummy variables for the industries defined by two-digit SIC codes and not reported in the table. The p-value is calculated based on Heteroscedasticity-Consistent standard errors, and is noted in the parentheses. *, **, and *** represent significance levels of 10%, 5%, and 1%, respectively.

	ΔRelative Value Added
Intercept	-0.001
	(0.62)
Bank Lines of Credit Dummy	0.001**
	(0.04)
Mixed Lines & Cash Dummy	0.001
	(0.85)
Relative Value	-0.001
	(0.75)
Inverse of Average q_{t-1}	-0.001
	(0.24)
Diversity $_{t-1}$	0.001
	(0.68)
Firm Size $_{t-1}$	0.001
	(0.38)
Year Dummy Variables	Yes
Industry Dummy Variables	Yes
Number of Observations	610
Adjusted R-Square	0.06

Table 5.12 Alternative Measure of Excess Value

The table represents the effect of sources of financing on the changes of excess value of the firms after mergers and acquisitions. Excess Value defines as the log of the ratio of total market value to imputed value using median industry multipliers. ΔEV Sales Multiple is the difference in Excess Value calculated based on assets multiple between one year after acquisition and one year before acquisition. Bank Lines of Credit Dummy equals one if an M&A is entirely financed by bank lines of credit, and equals zero otherwise. Mixed Lines & Cash Dummy equals one if an M&A is financed by a mix of bank lines of credit and corporate cash holdings. Firm Diversification is a dummy variable, it equals one for diversified firms and zero for single-segment firms. Relative Value is the ratio of deal value to the sum of the acquirer's market value of equity and deal value. Size is logarithm of total assets. Profit is the ratio of earnings before interest and tax to sales. Growth is the ratio of capital expenditure to sales. LEV is the ratio of long-term debt to total assets. Size2 is the square of log of total assets. Year Dummy Variables are the dummy variables for the years in the sample and not reported in the table. Industry Dummy Variables are the dummy variables for the industries defined by two-digit SIC codes and not reported in the table. The p-value is noted in the parentheses. *, **, and *** represent significance levels of 10%, 5%, and 1%, respectively.

	ΔEV Assets Multiple
Intercept	-0.429***
	(0.01)
Bank Lines of Credit Dummy	0.066*
	(0.08)
Mixed Lines & Cash Dummy	0.055
	(0.20)
Firm Diversification $_{t-1}$	-0.021
	(0.51)
Relative Value	0.227**
	(0.05)
Size $_{t-1}$	-0.061
	(0.21)
Profit $_{t-1}$	-0.298
	(0.24)
Growth $_{t-1}$	0.171
	(0.41)
Size $_{t-2}$	0.100
	(0.16)
Profit $_{t-2}$	-0.236
	(0.45)
Growth $_{t-2}$	0.432
	(0.22)
Size $_{t-3}$	0.032
	(0.47)
Profit $_{t-3}$	0.291
	(0.25)
Growth $_{t-3}$	-0.443
	(0.16)
LEV $_{t-1}$	0.216***
	(0.01)
Size2 $_{t-1}$	-0.003
	(0.30)
Year Dummy Variables	Yes
Industry Dummy Variables	Yes
Number of Observations	592
Adjusted R-Square	0.08

Table 5.13A Alternative Measure of Corporate Governance — Changes in Excess Value

The table represents the effect of sources of financing on the changes of excess value of the firms after mergers and acquisitions. Excess Value defines as the log of the ratio of total market value to imputed value using median industry multipliers. ∆EV Sales Multiple is the difference in Excess Value calculated based on sales multiple between one year after acquisition and one year before acquisition (see text for details). Low (High) Corporate Governance indicates a firm's institutional ownership is below (above) the median institutional ownership. Bank Lines of Credit Dummy equals one if an M&A is entirely financed by bank lines of credit, and equals zero otherwise. Mixed Lines & Cash Dummy equals one if an M&A is financed by a mix of bank lines of credit and corporate cash holdings. Firm Diversification is a dummy variable, it equals one for diversified firms and zero for single-segment firms. Relative Value is the ratio of deal value to the sum of the acquirer's market value of equity and deal value. Size is logarithm of total assets. Profit is the ratio of earnings before interest and tax to sales. Growth is the ratio of capital expenditure to sales. LEV is the ratio of long-term debt to total assets. Size2 is the square of log of total assets. Year Dummy Variables are the dummy variables for the years in the sample and not reported in the table. Industry Dummy Variables are the dummy variables for the industries defined by two-digit SIC codes and not reported in the table. The p-value is noted in the parentheses. *, **, and *** represent significance levels of 10%, 5%, and 1%, respectively.

	∆EV Sales Multiple	
	Low Corporate Governance	High Corporate Governance
Intercept	-0.298	-0.412
	(0.16)	(0.52)
Bank Lines of Credit Dummy	0.114*	0.092
	(0.08)	(0.20)
Mixed Lines & Cash Dummy	0.036	0.069
	(0.66)	(0.35)
Firm Diversification $_{t-1}$	0.075	-0.122**
	(0.20)	(0.03)
Relative Value	0.033	0.538**
	(0.86)	(0.04)
Size $_{t-1}$	-0.098	-0.335*
	(0.26)	(0.06)
Profit $_{t-1}$	0.633	0.346
	(0.14)	(0.42)
Growth $_{t-1}$	0.197	0.356
	(0.58)	(0.54)
Size $_{t-2}$	0.177	0.426***
	(0.14)	(0.01)
Profit $_{t-2}$	-0.133	0.058
	(0.79)	(0.92)
Growth $_{t-2}$	-0.132	0.207
	(0.70)	(0.72)
Size $_{t-3}$	-0.042	-0.074
	(0.58)	(0.42)
Profit $_{t-3}$	-0.512	-0.170
	(0.19)	(0.76)
Growth $_{t-3}$	-0.588*	-0.525
	(0.06)	(0.25)
LEV $_{t-1}$	0.084	0.113
	(0.58)	(0.51)
Size2 $_{t-1}$	-0.002	-0.001
	(0.69)	(0.96)
Year Dummy Variables	Yes	Yes
Industry Dummy Variables	Yes	Yes
Number of Observations	286	306
Adjusted R-Square	0.08	0.13

Table 5.13B Alternative Measure of Corporate Governance — Changes in Internal Resources Transfers

The table represents the relation between changes in Adjusted Investment and sources of financing. ∆Adjusted Investment is the change of Adjusted Investment one year after acquisition and one year before acquisition. Low (High) Corporate Governance indicates a firm's institutional ownership is below (above) the median institutional ownership. Bank Lines of Credit Dummy equals one if an M&A is entirely financed by bank lines of credit, and equals zero otherwise. Mixed Lines & Cash Dummy equals one if an M&A is financed by a mix of bank lines of credit and corporate cash holdings. Relative Value is the ratio of deal value to the sum of the acquirer's market value of equity and deal value. Inverse of Average q equals $1/qe$, where qe is the equally weighted average q across segment in the firm. Diversity is the standard deviation of a firms' asset-weighted q divided by equally weighted q. Firm Size is logarithm of total sales. Year Dummy Variables are the dummy variables for the years in the sample and not reported in the table. Industry Dummy Variables are the dummy variables for the industries defined by two-digit SIC codes and not reported in the table. The p-value is calculated based on Heteroscedasticity-Consistent standard errors, and is noted in the parentheses. *, **, and *** represent significance levels of 10%, 5%, and 1%, respectively.

	∆Adjusted Investment in Segments with			
	$q > \bar{q}$ $\lambda q > \overline{\lambda q}$		$q < \bar{q}$ $\lambda q < \overline{\lambda q}$	
	Low Corporate Governance	High Corporate Governance	Low Corporate Governance	High Corporate Governance
Intercept	-0.019*	-0.004	0.024	0.004
	(0.07)	(0.68)	(0.14)	(0.71)
Bank Lines of Credit Dummy	0.005***	0.003	-0.011***	-0.003
	(0.01)	(0.25)	(0.01)	(0.54)
Mixed Lines & Cash Dummy	0.002	0.004	0.006	-0.006
	(0.46)	(0.21)	(0.28)	(0.20)
Relative Value	0.004	-0.001	-0.045***	0.006
	(0.46)	(0.88)	(0.01)	(0.74)
Inverse of Average q_{t-1}	-0.002	-0.001	0.019**	-0.005
	(0.55)	(0.76)	(0.04)	(0.51)
Diversity $_{t-1}$	-0.009	0.004	-0.007	0.033*
	(0.14)	(0.43)	(0.76)	(0.06)
Firm Size $_{t-1}$	-0.001	-0.001	-0.002	0.001
	(0.38)	(0.46)	(0.17)	(1.00)
Year Dummy Variables	Yes	Yes	Yes	Yes
Industry Dummy Variables	Yes	Yes	Yes	Yes
Number of Observations	312	311	312	311
Adjusted R-Square	0.03	0.11	0.09	0.08

Table 5.13C Alternative Measure of Corporate Governance — Changes in Overall Efficiency of Transfers

The table represents the relation between changes in Adjusted Investment and sources of financing. ΔRelative Value Added is the change of Relative Value Added one year after acquisition and one year before acquisition. Low (High) Corporate Governance indicates a firm's institutional ownership is below (above) the median institutional ownership. Bank Lines of Credit Dummy equals one if an M&A is entirely financed by bank lines of credit, and equals zero otherwise. Mixed Lines & Cash Dummy equals one if an M&A is financed by a mix of bank lines of credit and corporate cash holdings. Relative Value is the ratio of deal value to the sum of the acquirer's market value of equity and deal value. Inverse of Average q equals $1/qe$, where qe is the equally weighted average q across segment in the firm. Diversity is the standard deviation of a firms' asset-weighted q divided by equally weighted q. Firm Size is logarithm of total sales. Year Dummy Variables are the dummy variables for the years in the sample and not reported in the table. Industry Dummy Variables are the dummy variables for the industries defined by two-digit SIC codes and not reported in the table. The p-value is calculated based on Heteroscedasticity-Consistent standard errors, and is noted in the parentheses. *, **, and *** represent significance levels of 10%, 5%, and 1%, respectively.

	ΔRelative Value Added	
	Low Corporate Governance	High Corporate Governance
Intercept	0.001	0.002
	(0.79)	(0.56)
Bank Lines of Credit Dummy	0.002***	0.001
	(0.01)	(0.63)
Mixed Lines & Cash Dummy	-0.001	0.001
	(0.63)	(0.64)
Relative Value	-0.003	-0.002
	(0.88)	(0.65)
Inverse of Average q_{t-1}	-0.001	-0.001
	(0.23)	(0.95)
Diversity $_{t-1}$	-0.002	-0.002
	(0.30)	(0.43)
Firm Size $_{t-1}$	0.001	-0.001
	(0.73)	(0.35)
Year Dummy Variables	Yes	Yes
Industry Dummy Variables	Yes	Yes
Number of Observations	312	311
Adjusted R-Square	0.04	0.13

Appendix

Variable Definitions

Excess Value

Following Berger and Ofek (1995), *Excess Value* is defined as,

$$Excess\ Value = Ln(V/I(V)) \tag{1}$$

$$IV = \sum_{i=1}^{n} AI_i * \left(Ind_i(V/AI)_{mf}\right) \tag{2}$$

Where V is firm's total capital (market value of common equity plus book value of debt),
n is total number of segment i's firm,
$I(V)$ is imputed value of the sum of a firm's segments as stand-alone firms,
AI_i is segment i's value of accounting item used in the valuation multiple,
$Ind_i(V/AI)_{mf}$ is multiple of total capital to an accounting item for the median single-segment firm in the in segment i's industry.

Adjusted Investment Ratio

Following Rajan et al. (2000), *Adjusted Investment Ratio* is defined as,

$$\frac{I_j}{BA_j} - \frac{I_j^{ss}}{BA_j^{ss}} - \sum_{j=1}^{n} w_j \left(\frac{I_j}{BA_j} - \frac{I_j^{ss}}{BA_j^{ss}}\right) \tag{3}$$

Where ss refers to single segment firms,
I_j is capital expenditure of segment j,
BA_j is the book value of assets of segment j,
(I_j^{ss}/BA_j^{ss}) is the asset-weighted average capital expenditure to assets ratio for the single segment firms in the corresponding industry,
w_j is the ratio of segment assets to firm assets.

Relative Value Added by Allocation

Following Rajan et al. (2000), *Relative Value Added* by allocation is define as,

$$\frac{\sum_{j=1}^{n} BA_j (q_j - \bar{q}) \left(\frac{I_j}{BA_j} - \frac{I_j^{ss}}{BA_j^{ss}} - \sum_{j=1}^{n} w_j \left(\frac{I_j}{BA_j} - \frac{I_j^{ss}}{BA_j^{ss}} \right) \right)}{BA} \qquad (4)$$

Where ss refers to single segment firms,
$\bar{q}$ is the asset-weighted average of segment q's for the firm.
I_j is capital expenditure of segment j.
BA_j is the book value of assets of segment j.
(I_j^{ss}/BA_j^{ss}) is the asset-weighted average capital expenditure to assets ratio for the single segment firms in the corresponding industry.
w_j is the ratio of segment assets to firm assets.

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