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Financing Mergers and Acquisitions

Empirical Evidence on the Performance and Cost of Capital

Mario Fischer

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1. Univ.-Prof. Dr. Christoph Kaserer

2. Univ.-Prof. Dr. Reiner Braun

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Abstract

The present doctoral thesis empirically examines financial issues surrounding mergers and acquisitions. My focus is on the change of the cost of capital caused by diversification and on the influence of a takeover's financial structure on the acquiring firm's performance. Starting with all sources of financing, the first part models the decision of how to finance a takeover and shows the corresponding value impacts. The second part investigates the influence of loan characteristics and explains the previously found payment effect with a financing effect. The third part disentangles the coinsurance effect and the diversification discount in the context of takeovers and provides evidence for their coexistence.

Die vorliegende Dissertation untersucht finanzielle Aspekte bei Unternehmensübernahmen. Mein empirischer Fokus liegt dabei auf der Veränderung der Kapitalkosten aufgrund von Diversifizierung sowie auf dem Einfluss der Finanzierungsstruktur auf den Erfolg des Käuferunternehmens. Ausgehend von allen Finanzierungsquellen modelliert der erste Teil, wie eine Übernahme finanziert wird, und zeigt die Auswirkungen auf den Unternehmenswert. Der zweite Teil untersucht den Einfluss von Bankkrediten und erklärt den häufig nachgewiesenen Zahlungseffekt mit einem Finanzierungseffekt. Der dritte Teil trennt den Coinsurance Effect vom Diversification Discount bei Unternehmensübernahmen und belegt eine Koexistenz dieser Effekte.

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Chapter 1

Introduction

1.1 Motivation

On January 10th, 2000 – right at the peak of the dot-com bubble – AOL announced that it would purchase Time Warner to create AOL Time Warner. With a transaction value of 165 billion U.S. Dollar, this marks one of the biggest takeovers of all time.[1] Higher takeover activity in periods of growth is commonly observed in academia[2] and therefore, the announcement of AOL seems ordinary at first glance. In fact, Figure 1.1 reveals that takeover activity during the dot-com bubble was at an all-time high, and the number of worldwide mergers and acquisitions almost reached this peak again before the financial crisis in 2008. At the same time, Figure 1.1 emphasizes the overall relevance of mergers and acquisitions with a combined worldwide transaction value of public acquirers exceeding the mark of one trillion U.S. Dollar in 2015.[3] In general, approximately 50 percent of those takeovers are undertaken by U.S. acquirers – both in combined transaction value and number of acquisitions. The huge transaction values, the high number of yearly takeovers, and the resulting substantial long-run implications for the associated companies are doubtless reasons for the great deal of attention that mergers and acquisitions have received from managers as well as academics.

[1] Source: SDC Platinum. The terms acquisition, merger, takeover, and transaction are used interchangeably in this thesis.

[2] If appropriate, the corresponding literature throughout this thesis is only cited once in Chapter 2.

[3] Note that Figure 1.1 only considers completed takeovers as of March 2016, and some of the announced takeovers in 2015 might be completed later in 2016, further increasing the aggregated transaction value.

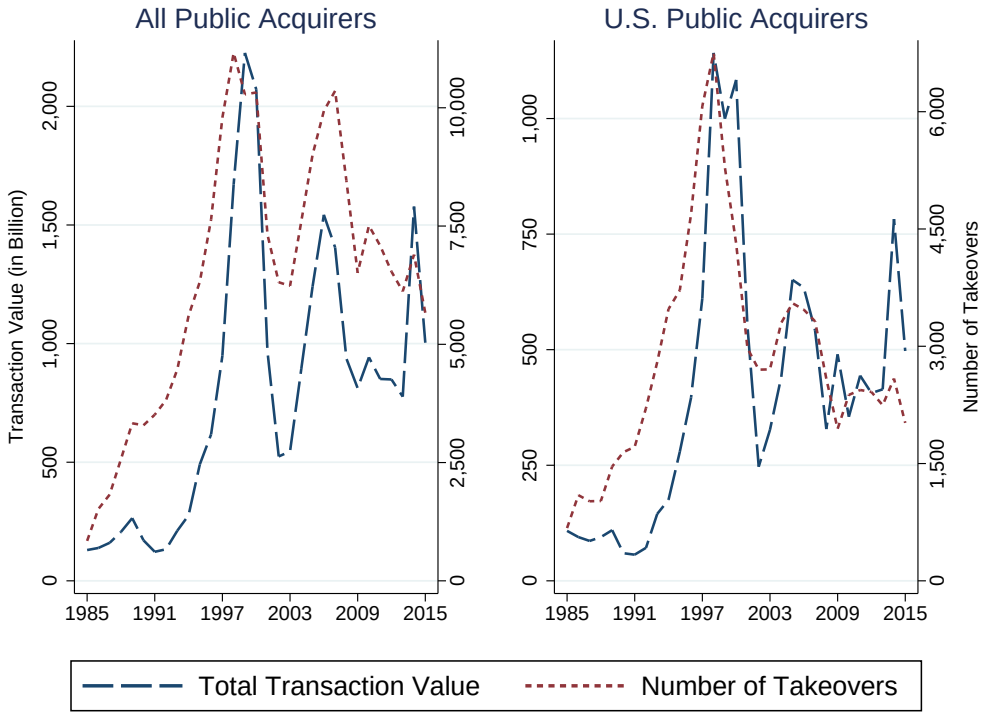

Figure 1.1: Takeover Activity of Public Firms

This figure shows all completed takeovers undertaken by public companies from 1985 to 2015 as of March 2016, summarized by announcement year. The only restriction is that the public acquirer bought more than 50 percent of the target in one transaction. Whereas the yearly number of observations also includes takeovers with an undisclosed transaction value, the yearly total of the transaction value in billion U.S. Dollar only considers takeovers with a disclosed transaction value. Source: SDC Platinum.

Besides the timing of AOL's announcement, it is noticeable that AOL paid completely with its own stocks – at a time when its stocks reached an extremely high valuation. The latter seems to concern academics and start a new wave of empirical studies on the effect of payment method in takeovers (for example, Ang and Cheng, 2006; Dong et al., 2006; Savor and Lu, 2009). A closely-related strand of literature focuses on the possibility of overvaluations during merger waves and posits that mispriced acquirers could use their overvalued shares to acquire (less overvalued) targets. Transferring this to the case of AOL Time Warner, the overvalued stocks of AOL could have been used as a currency. However, capital markets revised this mispricing shortly afterwards and consequently, the stock price of AOL dropped.

The case of AOL and Time Warner provides an illustrative example as to why the announcement returns for stock-paid and cash-paid takeovers might differ. Assuming that

the announcement returns are an indication for the success of a takeover,[4] it directly follows that the capital market might view takeovers differently, based on the means of payment. Figure 1.2 provides further evidence for this reasoning, as 2001 has a very low level of average cash proportion as payment method. Assuming that most takeovers are paid in either cash or stocks, Figure 1.2 implies a high level of stock payment during the dot-com bubble. After hitting the bottom during the dot-com bubble, the average proportion of cash payment in takeovers almost continuously grows until it finally drops again in 2015. This development leads to the question of why companies prefer a certain payment method and what the implications of each method are.

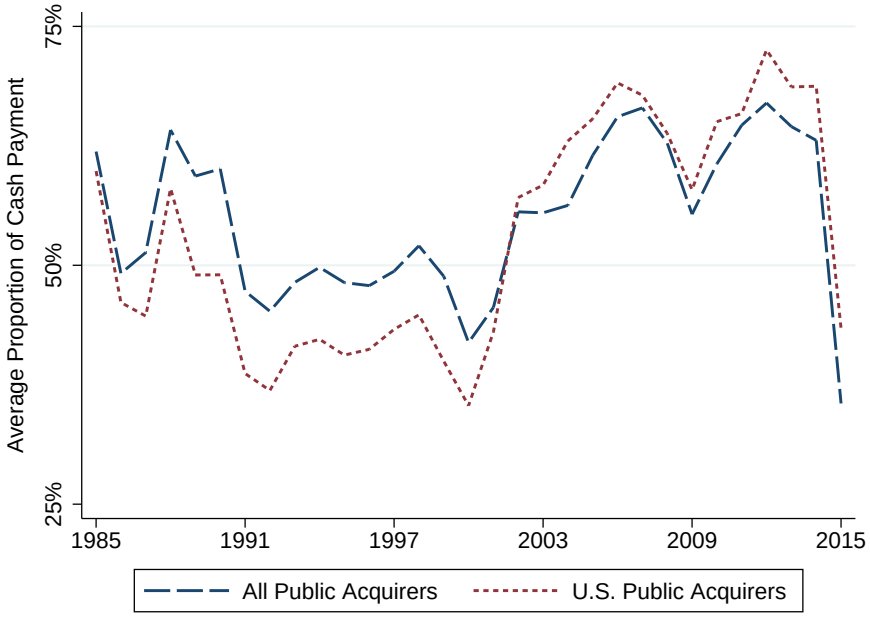

Figure 1.2: Payment Method in Takeovers

This figure shows the average proportion of cash payment for all completed takeovers with a disclosed payment method undertaken by public companies from 1985 to 2015 as of March 2016, summarized by announcement year. The only restriction is that the public acquirer bought more than 50 percent of the target in one transaction. Source: SDC Platinum.

Even though AOL and Time Warner are again stand-alone brands, and overwhelming empirical evidence suggests that cash payment outperforms stock payment in takeovers, the economic rationale for this outperformance is still up for discussion. This is rather shocking, as mergers and acquisitions are among the most influential decisions for com-

[4]Even though this assumption is common in empirical studies (for example, Andrade, Mitchell, and Stafford, 2001; Bruner, 2002; Schlingemann, 2004; Betton, Eckbo, and Thorburn, 2008), the valuation effect of the bidder might be problematic if there is still a large probability that the takeover will not occur or if acquirers simultaneously release other information (for example, Hietala, Kaplan, and Robinson, 2003; Bhagat et al., 2005; Barraclough et al., 2013; Borochin, 2014).

panies – and finding the appropriate financing and payment method are crucial aspects. So far, the (implied) academic assumption is that the payment method might be a valid approximation for the involved debt financing. In this context, Schlingemann (2004) states that *the form of payment has been used as a proxy or substitute for the source of financing* (p. 684), and Martynova and Renneboog (2009) argue that in previous literature *the term 'means of payment' is usually considered as synonymous to the 'source of takeover financing'* (p. 290). The underlying rationale is that companies only have access to a very limited amount of cash at a given point in time. Unless the acquirer saves free cash flows long before the actual takeover, there will not be sufficient liquid assets available for cash payment. Therefore, additional debt financing is needed to be able to pay for the target with cash.

It is at this precise point that the present thesis contributes to empirical research in three ways. First, I shed light onto the question of how the sources of financing impact the success of a takeover. Previous empirical evidence on the financing decision for takeovers is scarce; this might be caused by the low availability of data for the source of financing. Second, I use a special setting in the context of mergers and acquisitions to investigate the effects of bank financing. This allows one to make conclusions on the impact of bank financing as well as on the influence of loan characteristics. Additionally, assuming that a company is not using a second source of external financing if it borrows a loan, one can question the regular assumption in academic literature of cash payment being equal to debt financing. Third, we[5] examine the change in the underlying cost of capital caused by takeover-introduced diversification. Even though the latter has huge economic implications for an acquirer, previous academic studies have proposed two opposite views on the effect of diversification in takeovers. On the one hand, there is empirical evidence for a diversification discount, which would imply higher cost of capital. On the other hand, the coinsurance effect lowers the variation in cash flows for a more diversified firm and therefore, should result in lower cost of capital, as the risk of bankruptcy decreases.

[5]Note that Chapter 6 is mostly based on Bielstein, Fischer, and Kaserer (2015) – a joint research project with Patrick Bielstein and Christoph Kaserer. Therefore, Chapter 6 as well as all related paragraphs use the plural instead of singular to acknowledge their involvement and contributions.

1.2 Research Questions and Contributions

As aforementioned, the method of payment in takeovers has attracted a great deal of academic attention and consequently, researchers have outlined several possible explanations for an outperformance of cash payment compared to stock payment. However, the studies are inconclusive, and it is argued that the method of payment might just be an approximation of the underlying source of financing. Whereas data on the payment method is easily accessible, the source of financing for a takeover is most likely undisclosed. So far, only Bharadwaj and Shivdasani (2003) and Martynova and Renneboog (2009) overcome this obstacle and directly focus on the connection between the payment method and the source of financing with a sample of 115 cash tender offers and a hand-collected sample of 1,361 European takeovers, respectively. This very scarce research on the source of financing in takeovers leaves a lot of room for several related questions that do not only have practical implications, but also contribute to different research strands.

Before turning to the three empirical investigations, this thesis provides an extremely comprehensive survey of related literature, focusing on rationales for takeovers, the involved payment method as well as the involved source of financing, the effects of corporate diversification, and theories about a firm's capital structure. Overall, the survey is based on more than 400 previous studies on these topics and summarizes major implications. This survey greatly surpasses previous literature reviews in number of studies as well as level of detail for the payment method and the source of financing. For example, comparable surveys of Bruner (2002) and Martynova and Renneboog (2008) summarize around 100 and 200 studies, respectively.

The first empirical setting investigates an international sample of takeovers where the involved source of financing is disclosed. In contrast to Bharadwaj and Shivdasani (2003), the sample is not restricted to a certain payment method. The information of this sample is similar to that used in the study of Martynova and Renneboog (2009). However, I consider an international sample, whereas Martynova and Renneboog (2009) focus on European takeovers. Therefore, I expand their results on the announcement returns to a worldwide sample which, in particular, includes the United States. Besides the announcement return of the acquirer, the study sheds detailed light on the initial financing decision as well as on the long-run performance of the acquirer after the takeover. In the study of

Bharadwaj and Shivdasani (2003), the decision of how to finance a takeover is approximated with independent regressions. I propose a sequential model with connected steps for this decision because the initial availability of cash reserves determines if an acquirer needs additional external sources. The long-run performance of different sources of financing is so far completely overlooked in academic studies, even though there exist several explanations that would support an influence of the source of financing on the long-run performance of the acquirer. On the one hand, financing an acquisition with internal cash could underperform due to possible empire building behavior of managers with free cash flows. On the other hand, using credit financing for a takeover might improve not only the initial target selection, but also the integration process, as banks can help initially screen and closely monitor the later integration progress.

Altogether, my first empirical investigation not only contributes to the literature on mergers and acquisitions, but also helps to explain traditional corporate finance issues. If a takeover is seen as an investment project, I empirically show the validity of traditional theories on marginal financing of those investment projects. For most other investment projects, any breakdown of the underlying source of financing is arbitrary for company outsiders. However, the case of takeovers allows insights to the actual sources of financing and therefore, the setting indirectly tests traditional capital structure theories with a focus on marginal financing.

My descriptive statistics in this first empirical part suggest that the relative size of the target is larger when credit financing is used and decreases for higher proportion of internal funds. As expected, more internal cash as financing source is connected to acquirers with lower levels of leverage. In the sequential model, the initial decision if the takeover should be financed with internal funds is driven by the relative size of the target, the completion time, and the acquirer's pre-takeover cash level. When then deciding the exact proportion of external funds, the method of payment, the acquirer's pre-takeover leverage, and the bidding competition gain importance. During the three-day announcement window, credit-financed takeovers perform the best, with abnormal returns of approximately two percent. Internal financing creates abnormal returns of around one percent, whereas takeovers financed with new issues do not generate any abnormal returns. Fully cash-paid acquisitions realize abnormal returns almost four percentage points higher than those of stock-paid takeovers. For the long-run performance, results are less clear due to

measurement problems. Nevertheless, I apply several settings, and my results suggest only minor changes in the long-run compared to short-run market reactions, indicating that the capital market efficiently prices all information at the announcement. More precisely, only new issues as financing source continue to significantly underperform with around one percent per month compared to the Carhart (1997) four-factor model.

A closely-related topic is examined in the second empirical part of this thesis. Assuming that a company is not using a second source of external financing if it borrows a syndicated loan allows one to question the regular assumption in academic literature of cash payment being equal to debt financing. Similarly to Bharadwaj and Shivdasani (2003), I apply a sample of takeovers with information on the involved bank loan. Nevertheless, my investigation differs in several aspects from their research. First, I use an international sample in contrast to the sample of domestic takeovers in the United States. Second, my setting allows for variation in the method of payment. Bharadwaj and Shivdasani (2003) focus on cash tender offers and therefore prevent any non-cash payment. Third, I use information on the syndicated loan to investigate the resulting abnormal returns of the takeover.

From a corporate governance perspective, this not only helps filter out the economic rationale for the outperformance of cash payments, but also allows one to examine the influence of debt characteristics on the success of a takeover. From a corporate finance perspective, the study adds to the understanding of project financing and again, adds to the understanding of capital structure decisions in general. The main contribution of this investigation to the growing merger and acquisition literature is that it separates both effects – the method of payment and the source of financing.

My investigation provides evidence that the payment method is just an estimator of debt proportion in takeovers, confirming Martynova and Renneboog (2009). Although percentage of cash has significant explanatory power to account for the sources of financing, variation still remains. In a next step, my study presents unique empirical evidence that the outperformance of cash payment might actually just be an outperformance of debt financing. Using a typical regression setting similar to other researchers, controlling for the real financial structure renders the payment method insignificant. This finding has major implications regarding the economic rationale for the outperformance of cash payment and helps to narrow the theoretical explanations. My sample of bank-financed takeovers

confirms the results of Bharadwaj and Shivdasani (2003), as those acquisitions do generate, on average, positive abnormal returns for acquirers' shareholders. The effect is not only of statistical significance, but also economical importance, with over two percent in three days around the announcement. Furthermore, my analyses reveal that banks can significantly contribute to the success of a takeover. Higher bank involvement in form of greater deal leverage, higher loan cost, longer maturity, lower interest coverage, or no previous banking relationship is a signal for a more successful takeover and hence, helps to create value for acquirers' shareholders.

The third and final empirical part of this thesis turns the focus away from the source of financing and investigates the changes in the cost of capital introduced by the takeover. Our study contributes to the long-lasting academic debate on the wealth effects of corporate diversification and helps to reconcile two opposing views. So far, there is still no consensus on whether or under what conditions corporate diversification is beneficial or detrimental to shareholders. On the one hand, researchers emphasize the bright side of internal capital markets. By creating a coinsurance effect, corporate diversification is able to reduce the harmful impact of credit constraints on long-term investment decisions of stand-alone firms. Furthermore, the non-perfectly correlated cash flows of different segments can also reduce the deadweight cost of bankruptcy. This effect is expected to lower the cost of capital if diversification increases as a consequence of the takeover. On the other hand, previous studies highlight the dark side of internal capital markets, causing the well-documented diversification discount. From a theoretical perspective, the diversification discount roots in agency problems caused by poorly governed internal capital markets (for example, Jensen, 1986; Rajan, Servaes, and Zingales, 2000; Scharfstein and Stein, 2000). Therefore, the expectation based on the diversification discount is that the cost of capital rises if the diversification increases. However, more recent investigations indicate that the diversification discount might either be a statistical artifact or caused by endogeneity issues.

To reconcile those differences, the present thesis makes use of acquisitions in which the acquirer buys 100 percent of the target. This allows one to investigate how the combined firm's post-merger cost of capital differentiates from the expected cost of capital if one considers a synthetic firm of the pre-merger (stand-alone) acquirer and target. Thereby, we avoid matching diversified firms to stand-alone companies which mitigates endogeneity

concerns. This setting further allows us to isolate the effect of a change in diversification on the cost of capital.

The empirical results strongly suggest that both previous effects (the coinsurance effect and the diversification discount) exist and influence the cost of capital in the expected direction. Theoretically, an investor could decide to hold a portfolio of stand-alone firms or an equivalent diversified company. In perfect capital markets, those two alternatives mainly differentiate because of the existence of internal capital markets for the diversified company. The analyses presented in this thesis unite the different views on corporate diversification by the rationale of internal capital markets. For acquirers that have a lot of experience in managing internal capital markets or already have high-quality internal capital markets in place, the positive coinsurance effect dominates the negative diversification discount. However, if the acquirer is lacking experience in managing internal capital markets or the internal capital markets work insufficiently, higher takeover-introduced diversification increases the cost of capital. Therefore, the diversification discount outweighs the coinsurance effect. The results have major implications regarding a firm's choice to diversify. Furthermore, the presented results help reconcile the previously conflicting empirical results.

1.3 Structure of Thesis

The remainder of this thesis is organized as follows. Chapter 2 outlines the theoretical framework and the literature overview for all three empirical parts of the thesis. After showing why companies might be interested in engaging in the market for corporate control, several capital structure theories are discussed. As I investigate the funding of a takeover, the focus here lies on the impact of marginal funding. Next, empirical studies regarding the method of payment and source of financing are summarized, as those are the most related strands of literature. Finally, the literature regarding the cost of capital and corporate diversification is presented. Overall, Chapter 2 provides a very comprehensive survey of related literature, as it is based on more than 400 previous studies and summarizes major implications for the three empirical parts of this thesis.

In Chapter 3, the approaches used to empirically measure the performance of acquirers are described. Besides short-run abnormal returns, Chapter 3 also considers long-run

abnormal returns. Several settings are presented, which ensures that the later results are robust regarding the performance measurement. Additionally, the statistical inferences regarding those measures are discussed briefly.

The first empirical part is presented in Chapter 4 and deals with all sources of financing for takeovers. After outlining the related hypotheses, I describe the data and variables used in detail. Next, the empirical results are shown, starting with descriptive statistics. The main focus lies on modeling the financial decision and the acquirer's performance based on the underlying source of financing – in the short run as well as in the long run. For both time horizons, several robustness tests are executed to confirm the original results. However, as common in empirical studies, there are some limitations to my investigation. Chapter 4 ends with a short summary of the main results.

Chapter 5 covers the second empirical part, which is constricting the source of financing to internal funds and bank loans. Similar to Chapter 4, I begin with stating the hypotheses and describing the data used. After introducing important variables and presenting descriptive statistics, Chapter 5 investigates the link between payment method and source of financing. Next, I examine how bank involvement affects the announcement returns of a takeover and how different loan characteristics have an influence on the success of an acquisition. Again, the chapter finishes with the limitations of the presented analyses and a short summary.

The third and last empirical investigation of this thesis is conducted in Chapter 6. The outlined hypotheses are concerned with corporate diversification and the cost of capital instead of implications of the financing source as in the first two empirical parts. This chapter uses a unique data set, and several additional variables of interest are implemented. As before, descriptive statistics are shown and followed by regressions with different settings. To demonstrate the economical significance of the effects, in-sample figures in U.S. Dollar are calculated. Before discussing several limitations, a battery of robustness tests is conducted. Finally, the main results of this chapter are summarized.

Last but not least, Chapter 7 concludes the present thesis, and the most important implications of the three empirical investigations are summarized. At the very end, an outlook for further research is presented.

Chapter 2

Theoretical Framework and Literature Overview

2.1 Rationales for Takeovers

2.1.1 Preface

Based on the general perception that takeovers are usually not related to positive abnormal returns for acquirers' shareholders (for example, Bruner, 2002; Martynova and Renneboog, 2008; Eckbo, 2009), a large body of literature that considers the rationales for the existence of acquisitions has emerged. This chapter subsequently summarizes several important aspects that are currently discussed in financial literature; however, it does not provide a perfectly exhaustive overview of all possible rationales. For example, macroeconomic developments, geographic expansion, influences of (de-)regulation, and transfer of corporate governance standards are not addressed in this chapter. Furthermore, the chapter focuses mostly on empirical work, as the contributions of this thesis are of empirical nature. Consequently, theoretical models are excluded in this literature overview (for example, Morellec and Zhdanov, 2005; Lambrecht and Myers, 2007; Hackbarth and Miao, 2012; Tarsalewska, 2015). The emergence of internal capital markets and possible effects of corporate diversification are separately discussed in Chapter 2.5.

A final remark is supposed to clarify the term *synergy* in this context, as it is differently employed in the literature. For example, Trautwein (1990) considers three types

of synergies: financial synergies, managerial synergies, and operational synergies. This thesis applies a narrow definition of synergies and explicitly refers to changes in the cost of capital (financial synergies) or the disciplinary role of takeovers (managerial synergies). Hence, synergies in this thesis are similar to operational synergies in Trautwein (1990).

2.1.2 Synergy Motive and Market Power

One of the most obvious reasons to enter the market for corporate control from an acquirer's perspective is the potential to realize operational improvements in the form of synergies. The synergy motive covers different dimensions of operational improvements, such as the realization of cost savings, potential revenue increases, efficiency gains, or improved margins. Furthermore, the concept also includes the possibility of the combined company to offer unique products or services. Particularly important for larger mergers might additionally be the resulting market power of the combined firm. A merged firm with high market power is expected to be unfavorable to suppliers and might also be detrimental to rivals. Even though those operational improvements or the gain in market power are supposed to be of highest priority for the long-term benefits of acquirers, the actual empirical knowledge on such synergies is rather rare. Andrade, Mitchell, and Stafford (2001) state that *the long-term effects of mergers, and what makes some successful and other not* are *issues we know least about* (p. 684).

Several empirical studies try to address this shortage in understanding and provide evidence of such efficiency gains in horizontal takeovers. Fee and Thomas (2004) find empirical results consistent with an improvement in productive efficiency of the merging firms. More precisely, the results of their sample of horizontal mergers suggest that efficiency-increasing buying power (in contrast to monopolistic collusion) is a source of gains. Similar results are obtained by Shahrur (2005), who also confirms that takeovers are driven by an effort to increase efficiency. In his study, increased buying power is important when suppliers are concentrated. Shenoy (2012) extends those results of horizontal takeovers and shows that efficiency enhancement is also a rationale for vertical takeovers. For a sample in the utility industry, Becher, Mulherin, and Walkling (2012) confirm efficiency effects in mergers. Empirical results for post-merger operating performance are mostly supporting those improvements (for example, Healy, Palepu, and Ruback, 1992;

Heron and Lie, 2002; Powell and Stark, 2005; Carline, Linn, and Yadav, 2009).[1] Using a text-based approach, Hoberg and Phillips (2010) add to those findings, as their results show that product market synergies are crucial for the success of a takeover.

Overall, empirical studies face several problems in conducting research on possible synergies, as different effects might interfere with each other, and separating them is difficult. Furthermore, standardized prices are not always observable. As a consequence, researchers try to identify special settings which allow a more detailed argumentation, even though the setting might limit the generalization of the results. Among those settings are studies which use management estimates (for example, Houston, James, and Ryngaert, 2001; Becher, Mulherin, and Walkling, 2012), focus on the airline (for example, Borenstein, 1990; Werden, Joskow, and Johnson, 1991; Kim and Singal, 1993; Singal, 1996) or banking (for example, Akhavein, Berger, and Humphrey, 1997; Prager and Hannan, 1998; Houston, James, and Ryngaert, 2001; Sapienza, 2002; Campa and Hernando, 2006) industries, implement data on product prices and output (for example, Barton and Sherman, 1984; McGuckin and Nguyen, 1995; Schoar, 2002), and focus on expenditures for research and development (for example, Phillips and Zhdanov, 2013; Bena and Li, 2014). Those studies usually provide some evidence of an improvement in productivity.[2] Furthermore, small firms tend to spend more on research and development, whereas larger firms tend to buy those small, research-intense firms. In an attempt to differentiate between cost saving and revenue enhancement, Houston, James, and Ryngaert (2001) use managements' and analysts' estimates in bank mergers and conclude that the primary source of expected gains is cost savings. Based on managements' estimates, the average revenue gain only accounts for seven percent of the total valuation gain. Differentiating between operational synergies and tax savings, Devos, Kadapakkam, and Krishnamurthy (2009) show that 83.5 percent of total gains is attributable to operational synergies with the remaining 16.5 percent to tax savings.

Closely-related to synergy motives is the concept of higher market power in the context of horizontal mergers. Besides an increase in revenues or lower costs for inputs, Stigler

[1] Notably, Ghosh (2001) argues that such results might be biased by acquirers' superior pre-takeover performance and acquirers' size. After controlling for that, he is unable to find evidence for operating improvements.

[2] The consequences on price changes for customers are less clear. For example, Borenstein (1990) as well as Kim and Singal (1993) show higher fares in the airline industry, whereas Prager and Hannan (1998) as well as Sapienza (2002) find at least partly lower interest rates after mergers between banks.

(1964) suggests that higher market power of single firms facilitates collusion with rivals – restricted output or higher (lower) output (input) prices could be a consequence. The existence of the collusion hypothesis is generally rejected by empirical studies (for example, Eckbo, 1983; Stillman, 1983; Fee and Thomas, 2004; Becher, Mulherin, and Walkling, 2012).[3] However, those takeovers might still be able to generate higher buying power (for example, Fee and Thomas, 2004; Shahrur, 2005; Bhattacharyya and Nain, 2011).

2.1.3 Disciplinary Role

Also related to the synergy motive is the concept of a disciplinary role of takeovers. For example, Maksimovic, Phillips, and Prabhala (2011) report that acquirers sell or close almost half of the acquired plants and hence, restructure the target within the subsequent years. They find that skillful acquirers retain more acquired plants and that those plants increase in productivity. This highlights the possibility that the acquirer's management might have superior ability to manage the target and can generate value by restructuring the target after the takeover.[4] Consequently, the sole threat of a (hostile) takeover might reduce agency costs, as it disciplines the management of possible targets (for example, Jensen and Ruback, 1983; Jensen, 1988; Scharfstein, 1988; Karpoff and Malatesta, 1989).

Earlier empirical evidence on the pre-takeover performance of targets is mixed and mostly lacks in statistical significance (for example, Mandelker, 1974; Langetieg, 1978; Asquith, 1983; Malatesta, 1983). In a more recent study, Agrawal and Jaffe (2003) are also unable to find that targets are generally underperforming before the takeover and *conclude that the conventional view that targets perform poorly is not supported by the data* (p. 744). However, their findings do not allow one to reject the hypothesis of a disciplinary role of takeovers for at least two reasons. First, removing the management of the target and hence, improving the performance of the target might only be one motive in the market for corporate control. Second, they consider realized takeovers and, as stated above, the sole threat of getting acquired might be sufficient to discipline the management

[3] It is worth noting that operational efficiency instead of monopoly power seems to be a very stable merger motive, as this also holds true for the first U.S. merger wave, starting in 1897 (Banerjee and Eckard, 1998).

[4] A related strand of literature considers bankrupt firms (for example, Hotchkiss and Mooradian, 1998; Strömberg, 2000; Thorburn, 2000; Hotchkiss et al., 2008). Hotchkiss and Mooradian (1998) report a purchase discount of 45 percent if the target is bankrupt.

of potential targets. Consequently, Kini, Kracaw, and Mian (2004) suggest that one can see *the corporate takeover market as a 'court for last resort'* (p. 1511).

A different kind of picture is drawn when examining studies that investigate the turnover of the target's management after a (hostile) takeover (for example, Martin and McConnell, 1991; Agrawal and Walkling, 1994; Franks and Mayer, 1996; Hartzell, Ofek, and Yermack, 2004). Those studies provide evidence that the turnover of a target's management is unusually high. However, as targets do not seem to underperform before the takeover, one has to be cautious in interpreting those higher turnover rates. In the study of Kini, Kracaw, and Mian (2004), CEO turnover is likelier in hostile takeovers, which leads them to conclude that this might be related to the disagreement over the transaction price. In a recent attempt to mitigate the involved endogeneity, Lel and Miller (2015) use the initiation of takeover laws to investigate the disciplinary role of takeovers in an international setting. Overall, their findings are in line with the disciplinary role of takeovers, as the introduction of takeover laws yields to more acquisitions and a higher CEO turnover of poorly performing firms.

2.1.4 Incentives of Acquirer's Management

Besides a possible incentive provided by the underperformance of the target's management, the literature also focuses on a direct incentive for the acquirer's management. As the average shareholder of acquirers does not benefit from a takeover, the management might be incentivized by private benefits. The suggested reasons for such behavior are diverse, and not all imply that the management intentionally accepts to destroy shareholder value.

This holds particularly true for the hubris hypothesis of Roll (1986). He argues that the bidding firm might pay too much for a target when individual hubris is part of the decision making process. For example, the acquirer's management might simply overestimate possible synergies and hence, accept too high of a premium. Several empirical studies provide evidence that hubris of the acquirer's management at least partly influences takeover decisions (for example, Berkovitch and Narayanan, 1993; Hayward and Hambrick, 1997; Rau and Vermaelen, 1998; Goergen and Renneboog, 2004). Recently, Malmendier and Tate (2008) do not only show evidence for hubris in the more negative announcement returns

when the acquirer has an overconfident CEO, but also for the frequency of acquisitions. Acquisitions are 65 percent likelier if the CEO is classified as overconfident.[5]

A second reason for the acquirer's management to engage in value-destroying takeovers is their pursuit of firm size and the desire to add new segments. Larger firm size or the addition of those new segments implies several benefits for managers, such as higher compensation (for example, Murphy, 1985; Jensen, 1986; Jensen and Murphy, 1990; Yim, 2013),[6] achieving higher entrenchment (Shleifer and Vishny, 1989), ensuring the long-run survival as an independent firm (Donaldson and Lorsch, 1983), or satisfying their envy (Goel and Thakor, 2010). Furthermore, an increase in firm size might improve job security (Shleifer and Vishny, 1989).

Last but not least, the management is typically underdiversified when human capital is taken into account, as most of the salary and future career depends on the success of the current company. Therefore, managers might reduce personal risk by diversifying their company, even though such a diversification might be suboptimal for shareholders. The latter can easily diversify their own portfolios by investing in the potential target (Amihud and Lev, 1981). This argument is confirmed by the empirical results of May (1995) and Cai and Vijh (2007).

2.1.5 Industry-Wide and Market-Wide Clustering

Besides incentives on firm level, a strand of recent literature investigates the motivation on the industry level. This can be motivated by earlier considerations, which suggest that industry-wide takeovers might appear as result of technological change (Coase, 1937), resource reallocation based on valuation discrepancies (Gort, 1969), or excess capacity (Jensen, 1993). Empirically, this industry-wide clustering is shown in earlier and more recent investigations (for example, Nelson, 1959; Gort, 1969; Andrade and Stafford, 2004; Harford, 2005). An illustrative example of an impulse to boost industry-wide takeover

[5] Ferris, Jayaraman, and Sabherwal (2013) extend their results to an international setting.

[6] One common empirical finding is that more performance-sensitive compensation yields to better acquisitions (for example, Lewellen, Loderer, and Rosenfeld, 1985; Lambert and Larcker, 1987; Datta, Iskandar-Datta, and Raman, 2001; Minnick, Unal, and Yang, 2010). Interestingly, the total wealth gains for acquirer's management increases by the takeover even in cases where the pre-takeover equity-based salary declines because of negative announcement returns. Bliss and Rosen (2001) explain this by the strong effect of size on compensation, and Harford and Li (2007) explain it by additional new stock and option grants. Besides the compensation for the acquirer's management, the compensation of the target's management is also considered in the literature (for example, Walkling and Long, 1984; Agrawal and Walkling, 1994; Cotter and Zenner, 1994; Hartzell, Ofek, and Yermack, 2004).

activity is deregulation – shown by several empirical studies (for example, Mitchell and Mulherin, 1996; Mulherin and Boone, 2000; Andrade, Mitchell, and Stafford, 2001).

Based on industry-wide shocks and the possible private benefits for managers as previously outlined, Gorton, Kahl, and Rosen (2009) propose a theory where industry shocks fuel industry-wide takeovers. Those takeovers are value-enhancing in the beginning, and the gains decline to value-destroying later on. The initial acquirers make value-enhancing acquisitions and increase in size. This in turn concerns managers of other firms because having bigger rivals makes it more likely to get acquired and consequently, lose the private benefits of running an independent company. Therefore, these managers decide to acquire other companies (or even the initial acquirers) themselves, although those takeovers can be value-destroying. Phalippou, Xu, and Zhao (2015) empirically test this theory by investigating the announcement returns of buying previously active acquirers. They find that the number of companies bought by the target over the last three years is negatively related to the announcement returns of acquiring that target.

Apart from being clustered on an industry level, takeovers are also clustered over time – in particular, in times of expansion (for example, Andrade, Mitchell, and Stafford, 2001; Harford, 2005; Moeller, Schlingemann, and Stulz, 2005; Duchin and Schmidt, 2013). Those times are characterized by high stock market valuations, which would allow mispriced acquirers to use their overvalued shares as currency to acquire (less overvalued) targets (for example, Shleifer and Vishny, 2003; Rhodes-Kropf and Viswanathan, 2004; Rhodes-Kropf, Robinson, and Viswanathan, 2005; Savor and Lu, 2009). The empirical results are typically able to strengthen this reasoning. For example, Bouwman, Fuller, and Nain (2009) find that acquirers have higher announcement returns in times of high stock market valuations but worse long-run performance than other acquirers. The latter is also found by Duchin and Schmidt (2013). Additionally, they stress that the inferior performance during merger waves may be driven by agency problems. Fu, Lin, and Officer (2013) investigate the quality of takeovers by overvalued acquirers. Their results suggest that these acquirers overpay for their targets and are unable to realize synergies. Like Duchin and Schmidt (2013), they also find evidence that weak corporate governance is related to such behavior.

2.1.6 Capital Structure

Two popular topics with regard to the capital structure decision are the use of financial slack to create liquidity and a possible tax benefit. For the former, Myers and Majluf (1984) suppose that a takeover can create value if it combines a firm with a surplus of financial slack with one lacking in financial slack. This theoretical consideration is in line with empirical evidence of Bruner (1988) and Smith and Kim (1994), as both studies find that takeovers are more successful for such combinations. In a closely-related study, Almeida, Campello, and Hackbarth (2011) develop a model and provide empirical evidence that financially constrained targets are acquired by firms with sufficient liquid assets in the same industry. Even if those takeovers are unable to generate operational synergies for the combined firm, they are useful by reallocating liquidity.

Benston (1980) argues that – even if tax purposes are not seen as defensible intention for takeovers from a social standpoint – tax reasons should be indeed recognized as motivation in this context. However, in empirical tests, the results of benefits from tax savings are rather mixed (for example, Butters and Lintner, 1951; Auerbach and Reishus, 1988; Hayn, 1989; Harris and Ravenscraft, 1991). As aforementioned, Devos, Kadapakkam, and Krishnamurthy (2009) separate operational synergies and tax savings with the result that takeovers generate hardly value by reducing tax payments.

2.2 Capital Structure and Financing Decisions

2.2.1 Financing Decisions of Companies

Because Chapter 4 and Chapter 5 of this thesis focus on the source of financing in takeovers, not only are capital structure motives in the context of a good match between acquirer and target relevant, but so are general theories about financing an additional investment project – in this case, a takeover from the standpoint of an acquirer.[7] Although testing capital structures is its own area of research, there is one special point relating takeovers and capital structure used in this thesis. A unique characteristic of acquisitions is that company outsiders sometimes have the chance of observing the investment project's fi-

[7]The chapter outlines several traditional capital structure considerations. A more extensive overview of these theories is provided in Harris and Raviv (1991) and Stein (2003). The recent introduction of other more dynamic models is not separately discussed here (for example, Chen, 2010; Bhagat, Bolton, and Subramanian, 2011; Bolton, Chen, and Wang, 2011; Hackbarth and Mauer, 2012).

nancing – in a direct way as in Chapter 4 or an indirect way as in Chapter 5. For most of the firm's other investment projects, any breakdown of the underlying funding is arbitrary for outsiders. However, during takeovers, information regarding the method of payment or associated financing decisions is often released. As acquisitions are among the largest investment decisions that companies typically face, capital structure theories are supposed to be of special importance in this thesis. Besides choosing the most suitable target and anticipating realistic benefits for the combined company, financing a transaction is certainly one of its most crucial aspects.

The two main sources of financing are internal funds, such as retained cash, and external funds. The latter can be classified as new equity in the form of a common stock issue or additional debt. This new debt is further divided into debt issue or bank financing with loans. Because funding for investment projects, such as takeovers, are provided to the company by different sources with various types of claims and related risks, the expected rate of return also differs amongst these sources. Besides non-uniform taxation of this funding and financial distress costs, both of which affect the optimal debt ratio in the trade-off theory, two other important influencing variables are recognized in theory. On the one hand, signaling effects of marginal funding are proposed by the pecking order theory. On the other hand, related agency costs as consequence of separating financial liability (investors) from operational decision making (managers) are the topic of the free cash flow theory. Those three capital structure theories are described hereinafter.

2.2.2 Trade-Off Theory

Starting with Modigliani and Miller (1958), the firm value is independent of the capital structure in perfect capital markets. In a revision of their statements with regard to taxes, Modigliani and Miller (1963) already mention that leverage outside conventional levels influences the cost of capital, and firms might have target leverage ratios. More formally, Kraus and Litzenberger (1973) loosen the restrictions of perfect capital markets and in their trade-off theory, introduce the effects of tax-deductible interest and costs of financial distress. Because interest charges on debt are usually tax-deductible, additional debt increases the firm's market value by adding to the tax shield – at least, when the firm earns its debt obligations. On the downside, cash flows are uncertain, and an increased level of debt also demands higher interest payments. The result is an increasing probability

of failure in interest payments and an associated risk of bankruptcy. The higher default probability reduces firm value with an increasing amount of debt. As a consequence, Kraus and Litzenberger (1973) formally introduce a static trade-off between the benefits of an additional tax shield and the drawback of higher costs of financial distress for the optimal level of debt.[8] The static trade-off theory predicts a moderate level of debt for the entire firm; however, it provides no clear indication as to which source of funds should be used in an acquisition.

Furthermore, the empirical evidence questions some of the predictions of a static trade-off (for example, Shyam-Sunder and Myers, 1999; Baker and Wurgler, 2002; Fama and French, 2002).[9] Introducing costs of recapitalization, Fischer, Heinkel, and Zechner (1989) suggest a dynamic version where firms have suboptimal capital structures until the benefits of recapitalization are sufficient to cover the costs of recapitalization. This idea of a dynamic trade-off theory is in line with empirical evidence of unsteady leverage adjustments of firms and their incentive to move towards target leverage ratios during large investments (for example, Leary and Roberts, 2005; Harford, Klasa, and Walcott, 2009; Uysal, 2011; Elsas, Flannery, and Garfinkel, 2014).[10] In a survey of 392 CFOs, Graham and Harvey (2001) show that only 19 percent of the respondents have neither a target leverage ratio nor a target range. However, only ten percent of the firms have strict target leverage ratios in place, which is consistent with the view of varying target ratios over longer time horizons (DeAngelo and Roll, 2014). Regarding the adjustment speed for deviations from the target leverage ratio, empirical evidence is somewhat inconclusive but typically suggests that the average firm closes around one-fourth of the gap per year (for example, Fama and French, 2002; Flannery and Rangan, 2006; Lemmon, Roberts, and Zender, 2008; Huang and Ritter, 2009). The observed heterogeneity might be caused by

[8] Besides an additional tax shield, stronger incentives can also be a benefit of higher leverage ratios (see the outlined free cash flow theory later in this chapter). On the other side, financial distress not only consists of direct, but also of indirect, costs such as agency costs (Jensen and Meckling, 1976), decline in sales (Opler and Titman, 1994), or lower liquidation values (Shleifer and Vishny, 1992). Even though several studies estimate those costs of financial distress (for example, Warner, 1977; Altman, 1984; Andrade and Kaplan, 1998; Korteweg, 2010), their importance is open for discussion (for example, Miller, 1977; Haugen and Senbet, 1978; Almeida and Philippon, 2007).

[9] Even though Byoun, Kim, and Yoo (2013) find higher leverage when the financed project has high risk, their results do not directly contradict the trade-off theory because their sample exclusively focuses on project finance, where the costs of distress are negligible.

[10] Using a similar methodology to Shyam-Sunder and Myers (1999), Chang and Dasgupta (2009) criticize the power of several tests of the dynamic trade-off theory.

different adjustment costs (Faulkender et al., 2012) or the manifestation of an internal capital market (Fier, McCullough, and Carson, 2013).

2.2.3 Pecking Order Theory

An explicit recommendation about the source of financing for a new project (such as a takeover) is provided by the pecking order theory of Myers (1984) and Myers and Majluf (1984). The starting point for this theory is the three common sources of funding available to firms: internal retained earnings, external debt, and external equity. In the presence of asymmetric information, managers know the true value of a firm better than its shareholders. In this setting, managers will prefer to issue new stocks when the firm is overvalued. From an investor's standpoint, this issuance discloses information about overvaluation and consequently, the share price will decrease. This adverse selection problem is minor in the case of debt financing and non-existent for internally accessible retained earnings. As a result, there exists the following hierarchy of financing new investment opportunities in the pecking order theory: first, retained earnings as internal financing; second, debt as preferred external source of financing; and in a third and final step, issuance of additional equity. This rather negative implication of new share issues is also in line with other theoretical models which assume asymmetric information (for example, Krasker, 1986; Narayanan, 1988; Noe, 1988; Lucas and McDonald, 1990) and empirical evidence of an underperformance for seasoned equity offerings (for example, Asquith and Mullins, 1986; Masulis and Korwar, 1986; Loughran and Ritter, 1995; Spiess and Affleck-Graves, 1995). An important implication of the pecking order theory is that a firm might pass up a project with a positive net present value if the firm would need to finance it with an equity issue. This is caused by the dilution effect on existing shareholders which can outweigh the benefit of the new project (even though the project has a positive net present value).[11]

With regard to empirical evidence on this theory, the inconsistency of studies is summarized by Leary and Roberts (2010) as *Shyam-Sunder and Myers (1999) conclude that the pecking order is a good descriptor of broad financing patterns; Frank and Goyal (2003)*

[11] Following Baker and Wurgler (2002), a firm's capital structure could be a result of previous stock returns when managers time the market and issue stocks in case of overvaluation. Campello and Graham (2013) show that high valuations might relax financing constraints as firms – in their sample, in particular, constrained non-tech firms – issue stocks and retain part of the corresponding proceeds as cash holdings.

conclude the opposite. Lemmon and Zender (2010)[12] *conclude that a 'modified' pecking order – which takes into account financial distress costs – is a good descriptor of financing behavior; Fama and French (2005) conclude the opposite. Frank and Goyal (2003) conclude that the pecking order better describes the behavior of large firms, as opposed to small firms; Fama and French (2005) conclude the opposite. Finally, Bharath, Pasquariello, and Wu (2009) argue that firms facing low information asymmetry account for the bulk of the pecking order's failings; Jung, Kim, and Stulz (1996) conclude the opposite* (p. 332). The empirical results of Leary and Roberts (2010) explain this apparent inconsistency partly with different ways to interpret the pecking order theory. Furthermore, their empirical results suggest that incentive conflicts (and not asymmetric information) drive behavior that follows the pecking order theory because firms with low asymmetric information seem to follow the pecking order theory. The latter is in line with the empirical tests of the pecking order theory conducted by Almeida and Campello (2010).

2.2.4 Free Cash Flow Theory

Similar to the pecking order theory, Jensen (1986) also distinguishes between managers and shareholders in his free cash flow theory, though his subject is existing agency costs. Although shareholders as principals have the financial liability of all actions, managers as agents make the operational decisions, generating a principal agent problem.[13] The area of interest is free cash flows, defined by Jensen (1986) as cash flows in excess of what is needed to finance all positive net present value projects. Because salary and reputation typically increase with the size of a company, managers have a strong incentive to control as many resources as possible. Any payout of free cash flows is avoided by managers, as it reduces the resources controlled by managers and thereby, reduces their power; instead, these free cash flows may be used to finance acquisitions even beyond the optimal size for shareholders – often referred to as empire building.[14]

[12] Note that this reference is changed to the revised and published version of their originally cited working paper.

[13] The corresponding agency theory is outlined in Jensen and Meckling (1976).

[14] Later, Jensen (2005) notes that a similar problem can emerge with overvalued equity. Not separately discussed here, but similar to the remarks of Jensen (1986) is the model of Stulz (1990). His model considers the advantages of debt as outlined by Jensen (1986) and the disadvantages of debt (preventing profitable projects for firms with low cash flows) in a trade-off setting and derives a financing policy which maximizes firm value based on the distribution of cash flows and their present value.

This conflict of interest between managers and investors over free cash flows can be mitigated by debt, an (permanent) increase in dividends, or stock repurchases. Jensen (1986) argues that the latter two promises of managers are rather weak because they are able to reverse them. However, debt creation ties future free cash flows because managers have to repay this debt and handle additional interest payments to prevent the firm from possibly going bankrupt. Consequently, Jensen (1986) recommends debt (without retention of the corresponding proceeds) as solution because debt reduces agency costs by binding free cash flows, and so decreases cash available for spending at the managers' discretion. Another advantage of debt to solve the agency problem is the monitoring of capital markets. Having tied the future free cash flows makes it less likely that the firm is able to finance future projects with internal funds. To now obtain the necessary additional funds, the manager has to incur this monitoring. The outlined reasoning of Jensen (1986) is supposed to be particularly important in firms with large free cash flows and low growth prospects.

A direct empirical investigation of the free cash flow is conducted by Lang, Stulz, and Walkling (1991). They analyze the announcement returns of acquirers and separate those acquirers according to their Tobin's Q (as an approximation for future investment opportunities) and their free cash flows. The results are in line with the expectations of the free cash flow theory, as the abnormal returns for bidders are negatively related to the level of cash flows if investment opportunities are expected to be poor (equals an acquirer with low Tobin's Q). However, this relation does not hold true for acquirers with good investment opportunities. Also for the case of acquirers, Doukas (1995) as well as Schlingemann (2004) confirm the earlier results of Lang, Stulz, and Walkling (1991) in support of the free cash flow theory.

Another strand of literature focuses on a more indirect approach and uses the cash level instead of free cash flows. Excessive cash reserves are mostly stockpiled free cash flows (Harford, 1999) and hence, those studies test the predictions of the free cash flow theory. In an international context, Dittmar, Mahrt-Smith, and Servaes (2003) provide evidence that weaker shareholder rights are related to greater cash holdings of firms. According to Kalcheva and Lins (2007) as well as Pinkowitz, Williamson, and Stulz (2007), capital markets also value cash less in countries with weak investor protection. Dittmar and Mahrt-Smith (2007) provide similar evidence with regard to the corporate governance

of firms. All of those empirical results are in line with the reasoning of the free cash flow theory. Somewhat different results are obtained by Harford, Mansi, and Maxwell (2008). They find that weak corporate governance is related to small cash reserves for a sample of U.S. firms. Although this finding contradicts the free cash flow theory, their further investigation provides evidence as expected by the free cash flow theory – namely, weak shareholder rights and simultaneously high cash reserves yield to more acquisitions because weakly governed managers spend their excess cash quickly. If excess cash is used for acquisitions, several studies suggest that those acquisitions are value-destroying (for example, Harford, 1999; Dittmar and Mahrt-Smith, 2007; Oler, 2008). In contrast, Maloney, McCormick, and Mitchell (1993) report that higher leverage improves managerial decisions, in particular in the context of acquisitions. Both of those results – worse acquisition performance when excess cash is high and superior performance when leverage is high – are again perfectly in line with the expectations of the free cash flow theory. Despite the overwhelming validation of this theory, the results of Bertrand and Mullainathan (2003) *suggest that active empire building may not be the norm and that managers may instead prefer to enjoy the quiet life* (p. 1043).

2.2.5 Screening, Signaling, and Monitoring of Banks

Chapter 4 and Chapter 5 of the present thesis focus not just on debt in general, but also on loans provided by banks, which are of particular importance.[15] Different studies examine a possible monitoring or screening role of financial intermediates such as banks and argue that this role is unique because it is not provided by a traditional bond issue. For example, Leland and Pyle (1977), Diamond (1984), and Boyd and Prescott (1986) argue that banks help to reduce information asymmetries. Fama (1985) argues that – compared to public debt – banks as holders of inside debt have access to private information. Furthermore, he follows the reasoning of Black (1975) and argues that banks can have a cost advantage in monitoring this inside debt. Houston and James (1996) justify this cost advantage with the inefficient monitoring of wide-spread bondholders because those are affected by duplication of monitoring.

[15] There exists comprehensive theoretical (for example, Diamond, 1991; Bolton and Freixas, 2000; Park, 2000; DeMarzo and Fishman, 2007) as well as empirical research (for example, Barclay and Smith, 1995; Hadlock and James, 2002; Rauh and Sufi, 2010; Colla, Ippolito, and Li, 2013) which focuses on debt heterogeneity.

Although these arguments are all theoretical, there also exists empirical evidence for a screening role of banks and thus, positive reaction of capital markets to the firm's announcement of a new bank loan (for example, James, 1987; Slovin, Johnson, and Glascock, 1992; Best and Zhang, 1993; Preece and Mullineaux, 1994). To illustrate, James (1987) reports an abnormal return of 1.93 percent over the two-day event window for bank financing, which is larger than stock price reactions to private debt placements (-0.91 percent over the two-day window) or public debt offerings (-0.11 percent over the two-day window) – underlining the uniqueness of banks compared to other debt. Somewhat different results are observed by Lummer and McConnell (1989), although their results on the overall sample confirm the findings of James (1987). Splitting their sample into new bank loans and loan revisions, they are unable to detect significant abnormal returns for the announcement of new bank loans but show significant reactions to loan revisions. More precisely, they find significant positive (significant negative) abnormal returns for favorable (unfavorable) loan revisions. The conclusion of Lummer and McConnell (1989) is that banks help reduce information asymmetries between firms and capital markets, but new loans do not offer any information per se. Billett, Flannery, and Garfinkel (1995) confirm positive returns of borrowing firms for private loan announcements and extend this literature with regard to the quality of lender. High-quality lenders, measured by their credit rating, are associated with significantly higher returns for borrowers. This reflects the conception that loans from good banks convey more positive information than loans from ordinary financial intermediates. However, it is interesting to note that Billett, Flannery, and Garfinkel (1995) are unable to show a difference between the capital market responding to banks and to other lenders.

Besides the overall capital market response to bank loans, there is also evidence that bank loans can be associated with favorable investments. For a sample of takeovers in Japan, Kang, Shivdasani, and Yamada (2000) investigate if the main bank of the acquirer (which usually serves as the primary debt source) influences the success of the investment decision. In line with the hypothesis that the main bank is well informed, they find that the strength of the banking relationship is strongly and positively associated with the abnormal returns around the announcement of the takeover. Furthermore, the announcement returns are also positively related to the part of the acquirer's pre-takeover leverage that is provided by banks. Based on those findings and a strand of literature which focuses

on the consequences of covenant violations on firms (for example, Beneish and Press, 1993; Chen and Wei, 1993; Chava and Roberts, 2008; Roberts and Sufi, 2009), Nini, Smith, and Sufi (2012) provide evidence that creditors help firms undertake value-enhancing actions after violations of covenants. A potentially disciplining role of banks is also suggested by Ivashina et al. (2009), though in a more indirect way. They argue that banks have an informational role in the takeover market, as they might convey private information of a potential target to potential acquirers. Consequently, the bank disciplines firms by the threat of becoming a target. However, this might be somewhat offset by the fact that firms with higher leverage are more likely to remain independent because their managers are more constrained regarding empire building (Zwiebel, 1996) and simultaneously are more committed to improving the company (Safieddine and Titman, 1999).

To recapitulate, banks help reduce information asymmetries because they are usually better informed, have inside information, and have evaluation capabilities. For outside investors, their willingness to lend money for an investment project, such as a takeover, might therefore imply a signal regarding the quality of the project. As a bank's screening process should allow it to identify bad takeovers, outside investors might expect that banks only spend money on valuable acquisitions. In addition, the ongoing execution of the takeover is supposed to be closely monitored by the bank; deviations from the planned integration process should occur less frequently.

2.3 Method of Payment

2.3.1 Choice of Payment Method

The introductory example of AOL and Time Warner stresses that capital markets might have a different view on cash payments than on stock payments in takeovers. In explaining those differences, previous research examining the influences of payment method on abnormal returns relies heavily on the assumption of the payment method being a valid approximation for the involved debt financing (for example, Faccio and Masulis, 2005; Harford, Klasa, and Walcott, 2009; Uysal, 2011; Karampatsas, Petmezas, and Travlos, 2014; Vermaelen and Xu, 2014). More precisely, cash payment is supposed to be financed with debt, whereas stock payment should be similar to equity financing. Harford, Klasa, and Walcott (2009) state that there is an *inherent connection between the method of pay-*

ment and the method of financing the acquisition (p. 3). Although this assumption seems reasonable, there might be cases where a company uses internal sources, such as retained earnings, for pure cash payments. Before turning to the source of financing directly in Chapter 2.4, it is essential to also consider other possible explanations for using one particular method of payment in takeovers. The most discussed rationales are tax effects, asymmetric information, managerial ownership, cash availability, and competition among bidders.[16]

Gilson, Scholes, and Wolfson (1988) suggest that tax effects might be important for targets' shareholders because the decision between stock and cash as means of payment results in significant differences in tax treatment. Cash-paid acquisitions are immediately taxed through capital gains tax, while taxation for stock-paid acquisitions is postponed until the target's shareholders sell their received shares from the acquirer. Accordingly, stock payment is the preferred method if shareholders of the target are considering tax treatment. The empirical evidence on that effect is inconclusive. On the one hand, Wansley, Lane, and Yang (1983) report that experts see the tax effect as noteworthy, and Ayers, Lefanowicz, and Robinson (2003) find that taxes influence the premium paid in the takeover. On the other hand, Franks, Harris, and Mayer (1988) show higher premiums in cash-paid takeovers for the United Kingdom; however, this effect exists even before the introduction of capital gains taxes. Therefore, they have a difficult time explaining their results in terms of tax treatment.

Built on the previously outlined pecking order theory and the assumption of asymmetric information,[17] acquirers will prefer stock payment when their stock is overvalued. This exploitation of misvaluation is anticipated by the capital market when means of payment is stocks, and a decrease in share price of the acquiring firm follows. Hence, an acquirer should favor cash payment to prevent any depreciation of its stocks. Several theoretical models that focus on the connection of overvaluation and acquisitions have been developed over the years. For example, Shleifer and Vishny (2003) and Rhodes-Kropf and Viswanathan (2004) theoretically explain valuation-driven mergers and therefore, merger

[16] Already mentioned aspects, such as capital structure decisions, are not separately discussed in detail here.

[17] In particular in the presence of asymmetric information, earnouts and convertible securities as method of payment gain importance. For empirical results on these, see Barbopoulos and Sudarsanam (2012) and Finnerty, Jiao, and Yan (2012), respectively.

waves.[18] Empirically, their theories are mostly confirmed (for example, Martin, 1996; Rhodes-Kropf, Robinson, and Viswanathan, 2005; Ang and Cheng, 2006; Savor and Lu, 2009). As a matter of fact, Ahern and Sosyura (2014) show that acquirers use media coverage to create a run-up of their share prices around the determination of the stock exchange ratio, and Chemmanur, Paeglis, and Simonyan (2009) provide evidence that acquirers using stock payment are overvalued, whereas those using cash payment are correctly priced.[19]

Ang and Cheng (2006) as well as Fu, Lin, and Officer (2013) empirically investigate how these acquisitions driven by overvalued buyers perform. The former provide evidence that there exist cases where takeovers by overvalued acquirers can benefit shareholders in the long run, if those acquirers are compared to matched firms with similar overvaluations that are not merging. The main finding of Fu, Lin, and Officer (2013) is that overvalued acquirers overpay for their targets and cannot realize synergy gains. Using insider trades, Akbulut (2013) confirms the underperformance of overvalued acquirers that pay with their own stocks. These findings are in accordance with Jensen (2005), who states that overvalued equity is used for value-destroying takeovers.

Overvaluation and asymmetric information is not only present for acquirers, but also for targets, as Hansen (1987) shows. When the target knows its value better than the bidding firm does, the acquirer prefers stock payment in order to share any valuation mistakes with the target. Thus, the management of an undervalued target would have an inclination toward receiving acquirer's shares instead of cash. This way, the target's owners can participate in any revaluation afterwards. For an overvalued target, the opposite holds true. Revaluation after a stock-paid takeover will lower the combined firm's value, and the target's owners will lose some of the benefits of overvaluation. The positive effect of using stocks as means of payment when the target is difficult to value is empirically shown by Officer, Poulsen, and Stegemoller (2009). Nevertheless, it is worth noting that

[18] Other theoretical models with regard to asymmetric information are designed in Fishman (1989) and Eckbo, Giammarino, and Heinkel (1990). The former stresses that target management rejects stock offers more often than cash offers. In the model of the latter, the acquirer's real value is revealed in the transactions by the mixture of cash and stock as payment method. Brown and Ryngaert (1991) develop a model that allows for asymmetric information and differences in tax treatment to explain the method of payment. Their empirical evidence is in line with the model's predictions.

[19] In contrast, Heron and Lie (2002) find no evidence that acquirers participate in earnings management prior to the takeover to generate a run-up of their share prices.

Chemmanur, Paeglis, and Simonyan (2009) find contrasting results, as stock payment is less likely when the acquirer faces high information asymmetries in evaluating the target.

As with asymmetric information, managerial ownership can also influence the payment method for both the acquirer and the target. This hypothesis implies that managers with a significant ownership in their respective firm want to retain a certain level of influence after the takeover. Thus, they choose their preferred method of payment with regard to their control rights afterwards. Ghosh and Ruland (1998) examine the relationship between managerial ownership of targets,[20] the payment method, and the probability of job retention. When target managers own shares of their firms, they will have voting rights and influence in the post-merger firm if the payment is done with the acquirer's stocks. An important reason for target managers to have voting rights in the combined firms might be job retention. In their empirical investigation, Ghosh and Ruland (1998) show a strong link between managerial ownership of targets and the likelihood of stock payment. Also, their results suggest that the management of targets in stock-paid takeovers have a higher probability of retaining their jobs.

On the other hand, Amihud, Lev, and Travlos (1990) show that managers of acquiring firms also have varying preferences on the payment method, depending on their influence. When managers value their control in the pre-merger company, they will avoid any stock issuance to prevent ownership dilution. Empirical results of Martin (1996) suggest that the likelihood of stock payment decreases only when the managers of the acquirer have a pre-merger ownership in the middle range of five to 25 percent. Otherwise, the management of the acquirer will have too little power anyway (for ownership under five percent) or too strong a position even in the post-merger company (for ownership over 25 percent). Faccio and Masulis (2005) extend these results to a sample of European takeovers; however, their middle range, with 20 to 60 percent, is distinctly higher than the one of Martin (1996). For family firms, Basu, Dimitrova, and Paeglis (2009) and Caprio, Croci, and Del Giudice (2011) show that the dilution of their ownership has significant influence on the decision to make an acquisition and on the means of payment.

In addition to the previous – more strategical – considerations for a specific payment method, researchers also focus on the acquirer's sheer access to cash, as the pecking order

[20] Note that Song and Walkling (1993) provide evidence for lower managerial ownership of targets, compared to other firms.

theory suggests the preferred use of internal cash, compared to new external sources of debt and equity.[21] Accordingly, firms with sufficient internal sources will pay for their targets with cash instead of stocks. Direct empirical evidence for this behavior is provided by Martin (1996). Going one step further, Harford (1999) even shows that *cash-rich firms are more likely than other firms to attempt acquisitions* (p. 1969). Besides direct cash availability, the existence of a credit rating and therefore, easier access to debt financing (which might be used for cash payment), positively influences the takeover activity (Harford and Uysal, 2014). Even though Karampatsas, Petmezas, and Travlos (2014) are unable to find a significant relation of the pure existence of an acquirer's credit rating and cash as means of payment, they show that the quality of the acquirer's credit rating is positively related to the fraction of cash payment. More generally, for a sample of asset sell-offs, Cao and Madura (2011) show that cash-constrained bidders are more likely to pay with stocks. Looking at the seller, their study indicates that cash-constrained sellers prefer cash payment. The latter is also found by Officer (2007), who shows that selling parent companies are more liquidity-constrained before the sale of their subsidiaries in cases of cash payment.

Last but not least, the literature highlights the relevance of cash payment to deter (possible) competition in takeover contests. Assuming asymmetric information, Berkovitch and Narayanan (1990) model the payment decision and show that the fraction of cash payment increases with potential competition. Empirical evidence on the competition hypothesis is not yet fully resolved. Whereas the earlier study of Jennings and Mazzeo (1993) is unable to provide unequivocal evidence, the results of later studies imply that the fraction of cash payment can help to deter competition (for example, Chemmanur, Paeglis, and Simonyan, 2009; Chen, Chou, and Lee, 2011; Offenberg and Pirinsky, 2015).

2.3.2 Short-Run Performance

The different motives behind the method of payment imply that acquirers and their shareholders can benefit or suffer from the choice of payment method. In empirical literature, the most common way to answer how this affects the acquiring firm is to analyze the ac-

[21] Gao (2011) combines the cash availability hypothesis with the market timing hypothesis and finds lower announcement returns for bidders with high cash reserves, indicating that investors consider it a sign of overvaluation when acquirers use stocks, even though they could pay in cash.

quirer's returns around the initial announcement of the takeover.[22] If the announcement of the takeover reveals positive information about the takeover, the capital market is supposed to react with higher returns than it would have reacted without the announcement.

An early strand of literature using this methodology differentiates between mergers and tender offers (for example, Kummer and Hoffmeister, 1978; Langetieg, 1978; Jarrell and Bradley, 1980; Asquith, Bruner, and Mullins, 1983). In a broad summary of those studies, Jensen and Ruback (1983) provide evidence that mergers underperform tender offers around the initial announcement. As tender offers are frequently associated with cash payment and mergers with stock payment (for example, Travlos, 1987; Loughran and Vijh, 1997; Datta, Iskandar-Datta, and Raman, 2001; Akbulut, 2013), this finding could have fueled the massive quantity of following investigations that focus on the means of payment. In fact, Asquith, Bruner, and Mullins (1990) state that *differences in returns for tender offers versus merger bids disappear once the form of financing is considered* (p. 26). The subsequent empirical literature on the payment method is summarized in Table 2.1.

Table 2.1: List of Short-Run Event Studies

Study *Considered Sample*	Results Regarding the Payment Method
Dodds and Quek (1985) *70 takeovers in the United Kingdom between 1974 and 1976*	Acquirers realize abnormal returns of 0.78 percent around the announcement in stock-paid takeovers and -1.92 percent in cash-paid ones.
Travlos (1987) *167 completed acquisitions of listed and unlisted targets in the United States from 1972 to 1981*	Acquirers' shareholders experience significant losses in stock-paid takeovers (-1.47 percent over the two-day window), while in cash-paid ones normal returns are earned (0.24 percent over the two-day window).
Wansley, Lane, and Yang (1987) *199 large takeovers in the United States between 1970 and 1978*	Over the two-day announcement period, cash payment is associated with significant positive abnormal returns of 1.44 percent, while stock payment shows insignificant abnormal returns of -0.27 percent.

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[22] A detailed explanation of the regularly used approaches is given in Chapter 3.1.

Table 2.1 – *Continued from Previous Page*

Franks, Harris, and Mayer (1988) *954 takeovers in the United Kingdom and 1,555 takeovers in the United States between 1955 and 1985*	For the United Kingdom, cash payment is associated with insignificant positive and stock payment with insignificant negative abnormal returns in the announcement month. For the United States, the study shows significant abnormal returns of 2.0 percent for cash payment and significant -0.9 percent for stock payment.
Eckbo and Langohr (1989) *256 tender offers (including minority buyouts) for public targets in France from 1966 to 1982*	Focusing on 38 public acquirers after 1970, cash payment (stock payment) is associated with insignificant abnormal returns of 0.6 percent (-0.9 percent) over the announcement week.
Amihud, Lev, and Travlos (1990) *209 acquisitions by 165 U.S. firms from 1981 to 1983*	Significant abnormal returns of -1.50 percent for stock-paid acquisitions and insignificant abnormal returns of 0.24 percent for cash-paid takeovers.
Asquith, Bruner, and Mullins (1990) *343 completed mergers of public targets from 1973 to 1983*	Two-day excess return is an insignificant 0.20 percent for cash payment and a significant -2.40 percent for stock payment. For mixed payment, they find a significant excess return of -1.47 percent.
Eckbo, Giammarino, and Heinkel (1990) *182 completed takeovers of listed and unlisted targets in Canada between 1964 and 1982*	Sole cash payment (sole stock payment) is connected with insignificant (significant) abnormal returns of 1.43 percent (2.72 percent) over the announcement month. For mixed payments, the authors find significant abnormal returns of 5.68 percent.
Loderer and Martin (1990) *5,172 U.S. takeovers of private and public targets between 1965 and 1984*	Six-day abnormal returns are an insignificant 0.52 percent for tender offers and a significant 0.99 percent for mergers.
Morck, Shleifer, and Vishny (1990) *326 acquisitions of listed U.S. bidders from 1975 to 1987*	In their regression setting, the involvement of stock payment has no significant explanatory power with regard to changes in the bidders' values around the announcements.
Brown and Ryngaert (1991) *342 acquisitions of listed targets in the United States from 1981 to 1986*	Whereas sole cash payment is related to insignificant abnormal returns of -0.06 percent over the two-day window, mixed payment and sole stock payment are related to significant abnormal returns of -2.48 percent and -2.73 percent, respectively.

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Table 2.1 – *Continued from Previous Page*

Franks, Harris, and Titman (1991) *399 U.S. acquisitions of listed targets between 1975 and 1984*	Sole cash (stock) payment earns insignificant (significant) returns of 0.83 percent (-3.15 percent) during the bidding process.
Servaes (1991) *704 completed acquisitions of listed targets in the United States from 1972 to 1987*	Abnormal returns during the takeover process are always significant and 3.44 percent, -5.86 percent, and -3.74 percent in magnitude for sole cash, sole stock, and mixed payment, respectively.
Byrd and Hickman (1992) *128 U.S. takeovers of listed targets between 1980 and 1987*	In their regression setting, sole cash payment has no significant explanatory power with regard to the two-day cumulative abnormal returns of the acquirer.
Kaplan and Weisbach (1992) *282 large acquisitions of listed and unlisted targets by U.S. acquirers between 1969 and 1987*	Acquirers' abnormal returns around the announcements are a significantly 3.52 percentage points higher for cash payments than for stock payments.
Maloney, McCormick, and Mitchell (1993) *428 mergers of U.S. firms from 1962 to 1982 and additionally, a second sample of 389 U.S. takeovers between 1982 and 1986*	For the first sample of mergers, stock payment significantly underperforms cash payment by slightly more than two percentage points over the three-day announcement window. For the second sample of takeovers between 1982 and 1986, this significant underperformance is slightly below two percentage points.
Smith and Kim (1994) *177 successful and unsuccessful U.S. tender offers for public targets between 1980 and 1986*	Regression setting always shows a negative coefficient for stock payment on the cumulative abnormal returns; however, this variable is not significant on usual significance levels.
Dewenter (1995) *116 chemical and 268 retail takeovers (including minority purchases) of public U.S. targets by U.S. and foreign acquirers between 1978 and 1989*	Regression setting is unable to find a significant influence of the payment method on the acquirers' announcement returns, regardless of the industry (chemical or retail).
De, Fedenia, and Triantis (1996) *660 tender offers made by U.S. acquirers between 1962 and 1988*	Regressions mostly show a significant negative coefficient for sole stock payment. This lowers the two-day cumulative abnormal returns for the acquirer by around two percentage points compared to sole cash payments.

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Chang (1998) *281 completed U.S. takeovers of private targets by public acquirers from 1981 to 1992*	For the sample of private targets, acquirers earn a significant abnormal return of 2.64 percent over the two-day announcement window for mixed and sole stock payment. For sole cash payment, this sample shows normal returns. Using a comparable sample with listed targets, sole cash payment is still associated with normal returns, whereas mixed and sole stock payment is associated with a significant abnormal return of -2.46 percent.
Emery and Switzer (1999) *347 completed U.S. takeovers of public targets from 1967 to 1987*	Whereas pure cash payment is associated with an insignificant abnormal return for the acquirer of 0.09 percent, acquirers in stock-paid takeovers experience significant abnormal returns of -1.95 percent over the two-day announcement window.
Hubbard and Palia (1999) *392 takeovers by public U.S. acquirers from 1961 to 1970*	Based on their regressions, the effect of the payment method on the acquirers' cumulative abnormal returns is inconclusive.
Kang, Shivdasani, and Yamada (2000) *154 takeovers by listed Japanese acquirers between 1977 and 1993*	Cash and stock payment yield similar abnormal returns which are both significantly positive over the two-day announcement window.
Kohers and Kohers (2000) *1,634 mergers with listed and unlisted targets in high-tech industries from 1987 to 1996*	Acquirers of high-tech targets realize similar abnormal returns over the two-day announcement window, regardless of the means of payment. These abnormal returns are significant and positive.
Leeth and Borg (2000) *466 U.S. acquirers of listed and unlisted targets between 1919 and 1930*	Abnormal returns for acquirers are not statistically different between stock-paid and cash-paid takeovers.
Walker (2000) *278 U.S. acquisitions between 1980 and 1996*	Whereas cash-paid takeovers have an insignificant abnormal return of 0.52 percent during a five-day announcement window, stock-paid takeovers realize a significant abnormal return of -3.28 percent. The results are qualitatively similar if a matched-firm approach or a regression setting is implemented.
Andrade, Mitchell, and Stafford (2001) *4,256 takeovers of listed U.S. firms between 1973 and 1998*	Stock-paid and mixed-paid takeovers are connected to a significant abnormal return of -1.5 percent, whereas cash-paid takeovers realize normal returns (an insignificant 0.4 percent) over the three-day window.

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Datta, Iskandar-Datta, and Raman (2001) *1,719 completed takeovers by U.S. acquirers from 1993 to 1998*	Acquisitions without any cash payment realize an insignificant abnormal return of -0.10 percent over the two-day announcement window. In contrast, the abnormal return of cash-paid takeovers is a significant 0.52 percent.
DeLong (2001) *280 mergers between U.S. public companies (with at least one financial firm) between 1988 and 1995*	Regression setting does not provide any evidence of a different market reaction to the announcement of cash-paid compared to stock-paid takeovers.
Fuller, Netter, and Stegemoller (2002) *3,135 acquisitions with U.S. acquirers buying at least five targets from 1990 to 2000*	Insignificant abnormal returns for cash-paid acquisitions of public targets (0.34 percent) and significant negative returns for stock-paid transactions (-2.62 percent). Positive significant abnormal returns for both methods of payment when the target is private (1.62 percent with cash payment and 2.43 percent with stock payment).
Heron and Lie (2002) *859 completed acquisitions of listed U.S. firms between 1985 and 1997*	Whereas cash and mixed payment show normal (insignificant and positive) abnormal returns for the acquirer, the three-day announcement returns are significantly negative for stock payment.
Officer (2003) *2,511 takeovers and bids with at least one U.S. company from 1988 to 2000*	In the regression setting, cash and mixed payment receive a barely significant and very small coefficient in explaining the cumulative abnormal returns.
Sudarsanam and Mahate (2003) *519 completed takeovers of listed firms in the United Kingdom between 1983 and 1995*	No significant difference for both payment methods in announcement returns for glamour bidders, but a significant relative outperformance of cash-paid acquisitions compared to stock-paid ones when the acquirer is categorized as value firm. Compared to the benchmark models, cash-paid takeovers realize normal returns, whereas stock-paid acquisitions have significant negative abnormal returns.
Yook (2003) *311 completed takeovers between U.S. firms from 1985 to 1996*	Whereas cash bidders realize normal returns (insignificant -0.71 percent), the median loss for acquirers in stock-paid takeovers is a significant -1.51 percent over the two-day announcement window.

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Goergen and Renneboog (2004) *187 European bids of at least 100 million U.S. Dollar from 1993 to 2000*	Shareholders of acquiring firms experience significantly higher returns in stock-paid takeovers (abnormal returns of 2.57 percent over the five-day announcement window) than in cash-paid ones (announcement returns of 0.90 percent).
Holmén and Knopf (2004) *121 successful and unsuccessful takeover bids of listed Swedish firms between 1985 and 1995*	According to the regression results, pure cash-paid takeovers realize significantly higher cumulative abnormal returns of almost three percentage points, compared to other forms of payment.
Mitchell, Pulvino, and Stafford (2004) *2,130 takeovers of listed U.S. firms between 1994 and 2000*	The three-day announcement returns vary highly between the different means of payment. Cash payment is the only type associated with significant positive abnormal returns for acquirers (0.96 percent). Floating-exchange-ratio settlements earn normal returns (0.58 percent), whereas collar and fixed-exchange-ratio settlements significantly underperform (-0.88 percent and -2.73 percent, respectively).
Moeller, Schlingemann, and Stulz (2004) *12,023 completed takeovers of listed U.S. acquirers between 1980 and 2001*	Over all acquirers, stock payment is associated with significant abnormal returns of 0.15 percent, whereas cash-paid takeovers show a significant 1.38 percent. The underperformance of stock payment is particularly relevant for large acquirers. In contrast, small acquirers realize almost similar (insignificantly different) abnormal returns in stock-paid and cash-paid takeovers with 2.03 percent and 2.17 percent, respectively.
Officer (2004) *1,366 U.S. merger bids between 1991 and 1999*	Takeovers with cash and mixed payments have with an insignificant 0.27 percent and an insignificant 0.14 percent, respectively, a normal performance during the three-day announcement window. For stock-paid takeovers, a significant abnormal return of -1.96 percent is observed. For settlements including a collar, a (partly significant) underperformance is found.
Bhagat et al. (2005) *1,018 tender offers with listed U.S. firms between 1962 and 2001*	Pure cash payment (with a significant abnormal return of 0.76 percent) significantly outperforms pure stock payment (significant -2.73 percent). Even though the signs for both methods of payment remain valid, the significance vanishes when the sample is restricted to takeovers with competing bids.

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Conn et al. (2005) *4,344 takeovers by listed acquirers in the United Kingdom between 1984 and 1998*	Over the three-day announcement window, the authors find normal returns for fully cash-paid takeovers of public targets and a significant underperformance of such takeovers with other payment methods. For the acquisition of a private target, both categories of means of payment are associated with significant positive abnormal returns.
Moeller, Schlingemann, and Stulz (2005) *12,023 completed takeovers of listed U.S. acquirers between 1980 and 2001*	Defining large loss deals as acquisitions where shareholders lose more than one billion U.S. Dollar, stock payment is more common among these takeovers than cash payment. From 1998 to 2001, large loss deals have lower fractions of cash payment (on average, 22.6 percent is paid with cash) compared to all other takeovers (on average, 56.9 percent is paid with cash). Furthermore, large loss deals are more often associated with pure stock payment than other deals from 1998 to 2001. Both differences in means are significant.
Ang and Cheng (2006) *711 fully cash-paid and 1,574 fully stock-paid mergers with listed U.S. acquirers between 1981 and 2001*	Acquirers in stock-paid takeovers are significantly more overvalued than acquirers in cash-paid takeovers. The results based on abnormal returns around the announcement of stock-paid takeovers suggest that the acquirer's shareholders can benefit from the takeover dependent on the prior overvaluation.
Dong et al. (2006) *2,922 completed and 810 withdrawn takeovers of listed U.S. firms from 1978 to 2000*	Bidders in stock-paid takeovers have, on average, significantly higher valuations than bidders in cash-paid takeovers. For cumulative abnormal returns, they observe lower returns if the bidder is more overvalued.
Faccio, McConnell, and Stolin (2006) *4,429 acquisitions with listed and unlisted targets in Western Europe from 1996 to 2001*	Significant negative five-day abnormal returns for stock-paid acquisitions of listed targets (-1.81 percent) and insignificant positive abnormal returns for cash-paid ones (0.30 percent) are observed. For unlisted targets, both abnormal returns are significant and positive (3.90 percent for pure stock payment and 1.17 percent for pure cash payment). The abnormal returns for mixed payments are in between the ones of cash and stock payment.

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Moeller, Schlingemann, and Stulz (2007) *4,322 successful and withdrawn takeovers of private or public U.S. targets with pure stock and pure cash payment between 1980 and 2002*	Over the three-day announcement window, the abnormal return for the acquirer is -2.28 percent for pure stock payment and 0.67 percent for pure cash payment when the target is public. The resulting difference of 2.95 percentage points is significant when the target is public. For private targets, the acquirer realizes abnormal returns of 3.42 percent for pure stock payment. The resulting difference to the case of public targets of 5.70 percentage points is significant.
Betton, Eckbo, and Thorburn (2008) *15,987 bidders for U.S. targets between 1980 and 2005*	Acquirers of public targets have significant three-day abnormal returns of -0.87 percent, whereas acquirers of private targets have significant abnormal returns of 1.76 percent. Acquirers in mergers (tender offers) have significant (insignificant) mean announcement returns of 0.69 percent (0.76 percent). For fully cash-paid (fully stock-paid) acquisitions, the significant abnormal return is 0.81 percent (0.25 percent) for the acquirer. For private targets, the acquirers' announcement returns are always positive and mostly significant, independent of the payment method. For public targets, the acquirers' announcement returns tend to be greater for all-cash bids than for all-stock bids.
Oler (2008) *2,226 completed U.S. takeovers from 1972 to 2003*	Fully stock-paid takeovers are associated with significantly worse returns than takeovers conducted with other means of payment.
Basu, Dimitrova, and Paeglis (2009) *103 U.S. acquirers with initial public offerings between 1993 and 2000 (takeovers until 2004)*	Whereas cash-paid takeovers are associated with two-day abnormal returns of 2.2 percent for the acquirer, stock-paid takeovers are associated with -2.3 percent; both values are barely significant. Splitting the sample into acquirers which are still affiliated with the founding family and the remaining firms, the underperformance (outperformance) of stock payment (cash payment) is only significant in the latter firms.
Betton, Eckbo, and Thorburn (2009) *4,417 takeover bids for listed U.S. targets between 1973 and 2002*	No significant influence of a dummy for cash payment on the acquirer's cumulative abnormal return from 40 days prior to the announcement until one day after the announcement exists.

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Bouwman, Fuller, and Nain (2009) *2,944 acquisitions by listed U.S. acquirers announced between 1979 and 2002*	Three-day announcement returns are significantly positive for cash-paid takeovers (0.38 percent) and significantly negative for stock-paid ones (-1.47 percent). Mixed payment is associated with insignificant abnormal returns of 0.02 percent.
Cooney, Moeller, and Stegemoller (2009) *68 unlisted U.S. targets with previously withdrawn initial public offerings between 1996 and 2005*	Even though the regressions show a negative influence of (mostly) stock payment on acquirers' three-day announcement returns, the variable remains insignificant in all settings.
Officer, Poulsen, and Stegemoller (2009) *735 (1,944) acquisitions of unlisted (listed) U.S. targets from 1995 to 2004*	Significant positive influence of (mostly) stock payment on acquirers' three-day announcement returns when the target is difficult to value. This is supposed to be true for private targets.
Savor and Lu (2009) *1,773 successful and 355 unsuccessful takeover bids by listed U.S. acquirers (excluding mixed payment) from 1978 to 2003*	Successful takeovers with pure cash payment are associated with a significant abnormal return of -3.3 percent for acquirers over a three-day event window. In contrast, successful takeovers with pure stock payment realize an insignificant abnormal return of 0.3 percent over the same time window.
Akbulut and Matsusaka (2010) *4,764 acquisitions of listed U.S. firms between 1950 and 2006*	Whereas fully stock-paid takeovers are associated with significant abnormal returns for the acquirer of -1.7 percent (for diversifying takeovers) and -2.3 percent (for related takeovers) over the symmetric three-day event window, fully cash-paid takeovers are associated with significant abnormal returns of 0.7 percent (for diversifying takeovers) and 0.5 percent (for related takeovers). The differences in means between the diversifying and the related category are in both cases insignificant. Mixed payment yields abnormal returns in between the estimates for fully cash-paid and fully stock-paid takeovers.
Chari, Ouimet, and Tesar (2010) *3,118 completed takeovers by listed acquirers in emerging and developed countries from 1986 to 2006*	Even though the variable for full cash payment (full stock payment) is positive (negative), it lacks significance in explaining the three-day announcement returns of acquirers in developed countries.

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Table 2.1 – *Continued from Previous Page*

Cai, Song, and Walkling (2011) *6,930 international takeovers by listed U.S. acquirers from 1985 to 2009*	Cash and mixed payments are associated with significant abnormal returns for the acquirer of 0.93 percent and 1.03 percent, respectively. In the same three-day window, takeovers with full stock payment realize normal returns (an insignificant 0.16 percent), and stock swaps (public targets) are associated with a significant -3.10 percent.
Martynova and Renneboog (2011) *2,419 European takeovers between 1993 and 2001*	Acquirers realize significant three-day announcement returns of 0.80 percent in fully cash-paid and an insignificant 0.12 percent in fully stock-paid takeovers. The difference is significant. In the regression setting, this underperformance of fully stock-paid takeovers holds true for all separately considered geographic areas of acquirers' location.
Netter, Stegemoller, and Wintoki (2011) *21,330 takeovers of listed and unlisted targets by listed U.S. acquirers from 1992 to 2009*	Acquisitions of listed targets show normal returns for acquirers when the payment method is mostly cash (an insignificant 0.2 percent). In mostly stock-paid takeovers, those acquirers realize a significant three-day abnormal return of -2.1 percent. The conclusions change when unlisted targets are considered, as mostly cash-paid (mostly stock-paid) acquisitions are associated with significant abnormal returns of 1.5 percent (2.9 percent).
Barbopoulos and Sudarsanam (2012) *4,788 takeover bids by listed acquirers in the United Kingdom from 1986 to 2008*	Five-day abnormal returns for bidders are, on average, significantly positive for cash and mixed payments (1.14 percent and 1.31 percent, respectively). In contrast, stock-paid takeovers are associated with normal returns (an insignificant 0.31 percent). Separating those takeovers by the target's organization, they report significant positive abnormal returns for cash, stock, and mixed payment of 0.93 percent, 1.36 percent, and 1.99 percent, respectively (1.39 percent, 1.93 percent, and 1.24 percent, respectively), when the target is private (a subsidiary). For public targets, cash payment continues to significantly outperform with 0.88 percent, whereas stock and mixed payments significantly underperform, with -1.48 percent and -1.23 percent, respectively.
Dittmar, Li, and Nain (2012) *4,471 competing bids of U.S. firms between 1980 and 2007*	In the regression setting, the variable for pure cash payment is unable to explain the acquirer's 200-day abnormal returns around the announcement date.

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Table 2.1 – *Continued from Previous Page*

Harford, Humphery-Jenner, and Powell (2012) *3,935 takeovers of private and public targets by listed U.S. acquirers between 1990 and 2005*	Regressions show an insignificant influence of full cash payment on the five-day abnormal returns for the acquirer. Full stock payment has a significant negative influence on those abnormal returns without a separation in listed and unlisted targets. If this separation is implemented, full stock payment has a significant positive influence if the target is private and a significant negative influence otherwise.
Akbulut (2013) *11,796 takeovers of listed U.S. firms between 1993 and 2009*	Whereas the three-day announcement returns are slightly positive for cash payment, the abnormal returns are slightly negative for stock payments.
Barraclough et al. (2013) *167 U.S. domestic takeovers with option data between 1996 and 2008*	Over a six-day event window, the researchers provide evidence for normal returns for acquirers in the case of cash offers and negative announcement returns in the case of stock offers.
Deng, Kang, and Low (2013) *1,556 completed takeovers of U.S. firms between 1992 and 2007*	In their regressions, a variable for full cash payment has no significant influence on the three-day announcement returns of the acquirer. However, they find some evidence that the involvement of stock payment lowers the announcement returns.
Vijh and Yang (2013) *2,734 acquisitions of listed U.S. firms between 1981 and 2004*	Pure stock payment is associated with lower three-day announcement returns for the acquirer as pure cash payment. This holds true for both small and large targets.

The table summarizes the relevant results (for my thesis) of published studies from an acquirer's point of view and with regard to the short-run abnormal returns of a takeover announcement. Most of the studies implement a market model and report average cumulative abnormal returns for public acquirers around the announcement date. The table makes no claims of being complete and explicitly excludes several perspectives, such as event studies without an investigation of the payment method, unpublished work, studies focusing on private acquirers, and studies examining the perspective of the target. The references given in Bruner (2002) and Betton, Eckbo, and Thorburn (2008) are used as the basis for this table.

Even though the results of the studies in Table 2.1 vary, two trends seem to be stable over the different studies and their respective time periods. First, cash payment is associated with higher announcement returns for the acquirer than stock payment. Most of the times, stock payment shows negative abnormal returns, whereas cash payment shows positive or at least normal returns around the announcement.[23] Second, this relation only

[23] In a recent study, Golubov, Petmezas, and Travlos (2016) argue that the announcement returns of stock-paid takeovers should be separated into the announcement of the takeover and the announcement of an equity issuance. Using seasoned equity offerings to approximate for the latter announcement, they conclude that the acquirers of stock-paid takeovers underperform because of the announcement of the equity issue. After controlling for this, stock-paid takeovers are no longer value-destroying.

holds true for public targets. For private targets, the payment method seems to have less influence on the abnormal returns of the acquirer, as all payment forms are generally associated with positive abnormal returns. Based on one of the most comprehensive data sets to date, Netter, Stegemoller, and Wintoki (2011) empirically confirm the latter relationship and state that it is *one of the single most perplexing statistics in bidder returns* (p. 2348) because they find that stock payment is associated with the highest (in case of private targets) and the lowest (in case of public targets) returns for the acquirer. The magnitude of this effect is also economically large in their sample, as bidders for private (public) targets realize returns of 2.9 percent (-2.1 percent) in stock-paid takeovers. Those estimates are comparable to the ones reported by Moeller, Schlingemann, and Stulz (2007). They find three-day announcement returns for the acquirer of 3.4 percent (-2.3 percent) in case of private (public) targets and stock payment.

Aside from the returns to the acquiring company, some studies investigate the impact on the target's share price. To summarize those studies, they usually find significant positive abnormal returns for targets in the range of 15 to 30 percent (for example, Jensen and Ruback, 1983; Bruner, 2002; Bargeron et al., 2008; Betton, Eckbo, and Thorburn, 2008). This is in line with theoretical expectations that acquirers need to pay a premium on the current price to gain control of the target.

2.3.3 Long-Run Performance

For long-run performance studies, the setting is quite different and empirical research is less conclusive. Two obvious differences are the fact that the former target is mostly consolidated into the acquiring firm and that it is harder to measure long-run performance differences (compared to short-run announcement returns). Even though the latter will be discussed in more detail in Chapter 3.2, the results of Betton, Eckbo, and Thorburn (2008) provide an illustrative example. Using a large sample of merging firms, they find highly significant buy-and-hold abnormal returns for these merging firms of -21.9 percent on an equally-weighted basis. However, this significant underperformance disappears in their sample when they apply the calendar-time portfolio approach and benchmark the portfolio of merging firms against a five-factor asset pricing model. To account for the importance of the performance measure, Table 2.2 does not just provide the main results for long-run

studies which investigate the means of payment and their respective sample (similar to Table 2.1 for short-run studies), but also explicitly mentions the used methodology.

Table 2.2: List of Long-Run Event Studies

Study *Considered Sample and Methodology*	Results Regarding the Payment Method
Barnes (1984) *39 mergers of listed firms in the United Kingdom between 1974 and 1976; market model with industry adjustment in the subsequent five years*	Based on the presented figures, there seems to be no material performance difference between cash and stock payment in the subsequent years, although cash payment is associated with a smaller magnitude of negative returns.
Dodds and Quek (1985) *70 takeovers in the United Kingdom between 1974 and 1976; market model in the subsequent five years*	Acquirers in cash-paid and stock-paid takeovers accumulate negative returns in the subsequent five years. However, it is worth noting that both returns are distinctly positive after the subsequent two and three years.
Franks, Harris, and Mayer (1988) *Two samples of takeovers in the United Kingdom and United States between 1955 and 1985; different benchmark models over the subsequent two years*	Even though the value implications rely on the benchmark model, acquirers using cash perform better than acquirers using stock as means of payment.
Franks, Harris, and Titman (1991) *399 acquisitions from 1975 to 1984; different benchmark models (including calendar-time portfolio approach) over the subsequent three years*	Independent of the performance measure, cash payment outperforms stock payment. However, the resulting difference is not significant using a more advanced benchmark model.
Agrawal, Jaffe, and Mandelker (1992) *937 mergers and 227 tender offers of listed U.S. targets between 1955 and 1987; size-adjusted benchmark models over the subsequent five years*	Although not reported in a table, the authors state that their sample provides some evidence that the long-run performance of stock payment is worse than for cash payment. This holds true for tender offers as well as for mergers. However, the rare existence of stock payment for tender offers makes it hard to find a significant difference compared to tender offers with cash payment.

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Table 2.2 – *Continued from Previous Page*

Healy, Palepu, and Ruback (1992) *50 largest U.S. mergers between 1979 and 1984; operating cash flow returns*	Means of payment are unrelated to the post-merger performance in unreported results.
Gregory (1997) *452 successful takeovers in the United Kingdom from 1984 to 1992; six benchmark models for the subsequent two years*	Independent of the chosen benchmark model, acquirers in cash-paid takeovers (mostly negative and insignificant abnormal performance index) perform better compared to acquirers in stock-paid takeovers (always significantly negative abnormal performance index). Surprisingly, mixed payments perform best amongst the three categories based on the abnormal performance index.
Loughran and Vijh (1997) *947 takeovers of listed U.S. companies from 1970 to 1989; buy-and-hold abnormal returns in the subsequent five years*	Significant abnormal returns of -24.2 percent for stock-paid takeovers and insignificant abnormal returns of 18.5 percent for cash-paid takeovers. As expected, mixed payment is associated with insignificant abnormal returns between those of cash and stock payment.
Higson and Elliott (1998) *252 takeovers with information on the payment method in the United Kingdom from 1975 to 1990; buy-and-hold abnormal returns with size adjustment*	Whereas stock-paid takeovers are associated with a significant underperformance in the subsequent years, cash-paid takeovers significantly outperform their benchmarks.
Rau and Vermaelen (1998) *3,169 completed mergers and 348 completed tender offers of U.S. firms between 1980 and 1991; abnormal returns compared to a matched portfolio up to three years after the takeover*	Bidders in stock-paid mergers significantly (insignificantly) underperform in the subsequent year (three years). For cash-paid tender offers, the authors show a large and mostly significant outperformance over one year and three years after the takeover. As the results for glamour and value bidders in cash-paid mergers are contradictory, the study concludes that the long-run returns of acquirers are not completely driven by the means of payment.

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Mitchell and Stafford (2000) *2,193 takeovers of listed U.S. firms from 1958 to 1993; buy-and-hold abnormal returns and calendar-time portfolio approach*	Acquirers using stocks as payment method underperform other acquirers and matched benchmark firms in the three years following the takeover. For acquirers without any stock payment, the buy-and-hold abnormal returns are slightly positive or insignificant compared to the matched firms. Using the calendar-time portfolio approach, the conclusions remain unchanged.
Datta, Iskandar-Datta, and Raman (2001) *485 completed U.S. takeovers from 1993 to 1996; buy-and-hold abnormal returns for the subsequent three years*	Takeovers with and without cash payment are associated with insignificant negative abnormal returns over the subsequent years. Separating acquirers with relatively high equity-based compensation from those with low equity-based compensation, the former realize positive abnormal returns for both considered forms of payment, whereas the latter acquirers significantly underperform their benchmarks in both cases.
Ghosh (2001) *315 large takeovers of listed U.S. firms between 1981 and 1995; performance measures based on cash flows in the subsequent three years*	Cash-paid takeovers are associated with increased cash flows, whereas the opposite holds true for stock-paid ones.
Linn and Switzer (2001) *413 takeovers of listed U.S. firms from 1967 to 1987; operating performance with industry adjustment up to five years after the takeover*	Operating performance improves most for cash-paid takeovers, second for mixed payment, and least after stock-paid takeovers. This underperformance of stock payment is significant in the regression settings. In contrast, the variable separating tender offers from mergers has no influence on the operating performance after the takeover.
Heron and Lie (2002) *859 completed acquisitions of listed U.S. firms between 1985 and 1997; operating performance with industry adjustment up to three years after the takeover*	Results provide no evidence that operating performance after the takeover is related to the chosen means of payment.

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Table 2.2 – *Continued from Previous Page*

Sharma and Ho (2002) *36 takeovers of listed Australian firms between 1986 and 1991; different operating performance and return measures up to three years after the takeover*	No consistent differences over the post-takeover performance measures for the different categories of means of payment.
Sudarsanam and Mahate (2003) *519 completed takeovers of listed firms in the United Kingdom between 1983 and 1995; buy-and-hold abnormal returns based on four different benchmarks for the subsequent three years*	Cash-paid takeovers outperform stock-paid takeovers, independent of the categorization of the acquirer or the benchmark model. This outperformance is in all but one case significant.
Megginson, Morgan, and Nail (2004) *204 completed U.S. mergers between 1977 and 1996; different performance measures relative to focused firms over the subsequent three years*	Whereas cash and mixed payment are associated with normal (insignificant) returns, stock payment significantly underperforms. This underperformance for stock-paid takeovers is driven by diversifying mergers.
Moeller, Schlingemann, and Stulz (2004) *12,023 completed takeovers of listed U.S. acquirers between 1980 and 2001; calendar-time portfolio approach for the subsequent three years*	Overall, cash-paid and stock-paid takeovers insignificantly outperform the asset pricing model. For the stock-paid takeovers, this is mainly driven by large acquirers. This also holds true when only takeovers with private targets are considered. For public targets, cash-paid takeovers significantly outperform the model, whereas stock-paid takeovers yield a positive but insignificant outperformance.
Conn et al. (2005) *4,344 takeovers by listed acquirers in the United Kingdom between 1984 and 1998; calendar-time portfolio approach over the subsequent three years*	Acquirers insignificantly underperform the asset pricing model for private targets, independent of the means of payment. For public targets, this only holds true for fully cash-paid acquisitions. Takeovers of public targets with other means of payment significantly underperform the benchmark model.

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Gregory (2005) *217 completed takeovers of listed firms in the United Kingdom between 1984 and 1992; buy-and-hold abnormal returns for the subsequent five years*	In the regression setting, the variable on stock payment has no significant explanatory power with regard to the five-year performance of the acquirer.
Harford (2005) *Takeovers in 28 industries between 1981 and 2000; calendar-time portfolio approach over the subsequent three years*	Acquirers using stock payment tend to underperform acquirers using cash payment. Depending on the weighting, this underperformance of stock payment compared to cash-paid takeovers can be significant.
Powell and Stark (2005) *191 takeovers of listed firms in the United Kingdom between 1985 and 1993; different operating performance measures up to three years after the takeover*	Means of payment seems to have no explanatory power for the post-takeover performance.
Rosen (2006) *5,749 successful takeovers between 1982 and 2001; buy-and-hold abnormal returns (and calendar-time portfolio approach) for the three years after the takeover*	Stock payment yields to a subsequent underperformance for public and private targets, but not when the target is a subsidiary. The underperformance is insignificant in the earlier years of the sample.
Martynova, Oosting, and Renneboog (2007) *155 European takeovers between 1997 and 2001; different operating performance measures up to three years after the takeover*	Means of payment seems to have no explanatory power for the post-takeover performance.
Oler (2008) *2,226 completed U.S. takeovers from 1972 to 2003; buy-and-hold abnormal returns over the subsequent two years*	Based on the median and mean, stock-paid acquisitions significantly underperform other forms of payment by over ten percentage points.

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Bouwman, Fuller, and Nain (2009) *2,944 acquisitions by listed U.S. acquirers announced between 1979 and 2002; buy-and-hold abnormal returns and operating performance (additionally, calendar-time portfolio approach) over the subsequent two years*	Lower long-run performance for acquirers is shown when stock payment is used (significant buy-and-hold abnormal returns of -13.19 percent) instead of cash payment (insignificant buy-and-hold abnormal returns of -0.55 percent). The resulting difference is significant. For mixed payment, buy-and-abnormal returns are significant with -7.46 percent and hence, between those of cash and stock payment. Those results are qualitatively supported by the operating performance measure.
Dutta and Jog (2009) *1,300 completed takeovers with Canadian firms announced between 1993 and 2002; buy-and-hold abnormal returns and calendar-time portfolio approach over the subsequent three years*	Both approaches provide minor evidence that acquirers in cash-paid takeovers outperform, while acquirers in stock-paid takeovers underperform.
Savor and Lu (2009) *1,773 successful and 355 unsuccessful takeover bids by listed U.S. acquirers (excluding mixed payment) from 1978 to 2003; buy-and-hold abnormal returns (and calendar-time portfolio approach) up to the subsequent three years*	Acquirers in completed stock-paid takeovers are associated, on average, with significant buy-and-hold abnormal returns of -13.1 percent over the subsequent three years. In contrast, acquirers in cash-paid takeovers are associated with insignificant abnormal returns of 1.6 percent. Unsuccessful bidders underperform successful bidders in (attempted) stock-paid acquisitions. This underperformance does not hold true for cash payment.
Chari, Ouimet, and Tesar (2010) *3,118 takeovers by listed acquirers announced between 1986 and 2006; operating performance in the two subsequent years*	Stock-paid takeovers tend to decrease operating performance, although this effect is insignificant.

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Ma, Whidbee, and Zhang (2011) *1,077 takeovers of listed U.S. firms between 1978 and 2002; changes in intrinsic value and buy-and-hold abnormal returns up to three years after the takeover*	Intrinsic values after takeovers decrease for all three considered means of payment (stock, mixed, and cash), although this decrease is only significant for stock payment. The regression setting finds that the variable for fully stock-paid takeovers is insignificant in explaining the changes in intrinsic value. For the buy-and-hold abnormal returns, stock-paid takeovers significantly underperform the matched portfolio of firms, whereas mixed and cash payment are associated with insignificant abnormal returns. This relation is also confirmed in the regression setting.
Maksimovic, Phillips, and Prabhala (2011) *1,483 completed takeovers of U.S. targets between 1981 and 2000; plant sells, plant shut downs, and plant performance in the subsequent three years*	Method of payment does not influence the decision to shut down or sell a bought plant. Furthermore, it does not significantly influence the plant's productivity after the takeover.
Akbulut (2013) *11,796 takeovers of listed U.S. firms between 1993 and 2009; buy-and-hold abnormal returns and calendar-time portfolio approach up to three years after the takeover*	Buy-and-hold abnormal returns are insignificant for acquirers in cash-paid acquisitions and significantly negative for acquirers in stock-paid ones. The latter is also confirmed in the calendar-time portfolio approach. Using previous insider trading, the study concludes that stock-paid takeovers are not a value-creating strategy for overvalued acquirers.

The table summarizes the relevant results (for my thesis) of published studies from an acquirer's point of view and with regard to the long-run performance after a takeover. Several studies use the calendar-time portfolio approach, but do not apply it to separate samples of fully cash-paid and fully stock-paid takeovers. The table makes no claims of being complete and explicitly excludes several perspectives, such as event studies without an investigation of the payment method, unpublished work, studies focusing on private acquirers, and studies examining the perspective of the target. The references given in Agrawal and Jaffe (2000) and Martynova, Oosting, and Renneboog (2007) are used as the basis for this table.

Overall, the studies in Table 2.2 still provide some reason to believe that cash payment might be superior to stock payment, although the evidence is definitely more mixed than for abnormal returns around the announcement date, and statistical significance is rare. This conclusion is in line with most studies which differentiate between mergers and tender offers (for example, Langetieg, 1978; Agrawal, Jaffe, and Mandelker, 1992; Loderer and Martin, 1992; Rau and Vermaelen, 1998), if one assumes that mergers are mostly stock-

paid, while tender offers are mostly cash-paid. To see the tremendous economic significance of this effect for the long-run performance of an acquirer, Loughran and Vijh (1997) provide estimates by acquisition mode and payment method. For example, stock-paid mergers and cash-paid tender offers are associated with significant abnormal returns of -25.0 percent and 61.7 percent over the subsequent five years, respectively.

To come back to the initial example of AOL and Time Warner given in Chapter 1, Ang and Cheng (2006) try to provide some insights for the use of stock payment in takeovers – in particular, in view of the fact that those acquirers might suffer in the long run. According to their study, the probability of becoming an acquirer and using stock payment increases with the own overvaluation. Comparing overvalued acquirers in stock-paid takeovers with overvalued firms that do not engage in a takeover, they show that the former can gain by using their overvalued stock as currency when the target's premium-adjusted overvaluation is smaller than their own overvaluation.

2.4 Source of Financing

2.4.1 Direct Evidence

Even though the literature on the influence of the payment method on the success of a takeover is quite extensive, this cannot be said for the source of financing. So far, the (implied) academic assumption is that the payment method might be a valid approximation for the involved debt financing because companies only have access to a very limited amount of cash at a given point in time and hence, additional debt financing is needed to be able to pay for the target with cash. This might be an oversimplification, as cash might be raised with equity issuances (Celikyurt, Sevilir, and Shivdasani, 2010). Whereas this chapter outlines relevant studies that directly investigate the source of financing, the subsequent chapter considers studies with a more indirect approach that still allows for conclusions about the source of financing in takeovers.

Chronologically, the first of the former category is the study of Datta and Iskandar-Datta (1995). Their focus lies on the abnormal announcement returns for stockholders and bondholders in 63 partial acquisitions from 1982 to 1990. As a consequence of the research focus, the sample size is rather small, as they only consider very large partial acquisitions and restrict the sample to acquirers with outstanding liquid bonds. Partial

acquisitions have the advantage that they allow one to exclusively investigate the signaling effect, while holding tax effects, the payment method, and the mood of the takeover mostly constant. For the source of financing, their information is based on newspaper articles, and they differentiate between the three categories of equity, debt, and internal cash. Overall, their results indicate a loss for bondholders and normal returns for stockholders around the announcement. Subdivided into the sources of financing, debt financing is worse than stock financing for bondholders. For stockholders, it is the other way round, with stock financing as the worst source of financing.

The first of the two major direct investigations of the source of financing in takeovers is conducted by Bharadwaj and Shivdasani (2003). Their sample consists of 115 cash tender offers between 1990 and 1996 for which the source of financing is known, primarily using information from SDC Platinum, 14D-1 filings, and Dealscan. Bharadwaj and Shivdasani (2003) first examine under what circumstances bank financing is more likely to be used. As expected, bank financing is more prevalent when the acquirer's cash reserves are low or the relative size of the takeover is large. Overall, around 70 percent of the cash tender offers in their sample are at least partly bank-financed, and in half of the takeovers, bank financing is sufficient for the entire transaction value. With regard to the level of diversification, they do not find a difference in the likelihood of bank financing.

In a second step, Bharadwaj and Shivdasani (2003) examine the abnormal returns around the announcement of the takeover. In a univariate framework, their study demonstrates that cumulative abnormal returns for acquirers are higher when the acquisition is financed entirely with bank debt compared to acquisitions that are fully financed with internal funds. The former are associated with highly significant cumulative abnormal returns of 2.08 percent (two-day event window) and 4.00 percent (three-day event window), whereas the latter are related to insignificant cumulative abnormal returns of -0.32 percent (two-day event window) and 0.54 percent (three-day event window). Those results basically also hold true in the multivariate setting, as the cumulative abnormal returns around the announcement are positively related to the fraction of bank financing. The positive cumulative abnormal returns in bank-financed takeovers occur mostly for firms with poor performance and high information asymmetries. Therefore, Bharadwaj and Shivdasani (2003) conclude that their evidence is consistent with a monitoring and certification function of banks for favorable acquisitions. Although they provide an additional overview on

contractual agreements in the debt contracts, they do not quantitatively investigate their influence on the cumulative abnormal returns. As their sample exclusively consists of cash tender offers, the study is unable to differentiate between the payment and the financing effect. This gap is partly filled by the second major direct investigation of Martynova and Renneboog (2009), who for the first time examine the link between method of payment in takeovers and sources of financing.

Martynova and Renneboog (2009) hand-collect information on a sample of 1,361 European takeovers between 1993 and 2001. The information on the source of financing is primarily received by checking the corresponding news announcements. However, as the news announcements are rather vague and mostly do not disclose very detailed information, they face some limitations. More precisely, Martynova and Renneboog (2009) are unable to differentiate between different types of debt financing (bank credit or bond issue) and different types of equity financing (public or private placement). Additionally, the proportional breakdown is unavailable in news announcements and hence, the resulting categories for the source of financing in the study of Martynova and Renneboog (2009) are internal funds, equity issues, debt issues, and a combination of equity and debt issues. The latter three categories may include an unspecified proportion of internal funds. Similarly to Bharadwaj and Shivdasani (2003), Martynova and Renneboog (2009) also proceed in two steps: investigation of the determinants for the source of financing and then, examining the relevance of the financing decision on the cumulative abnormal returns of the acquirers around the announcement.

They show that the financing decision of the bidding firm is explained by the pecking order theory, the cost of capital, and a bidder's preference regarding the means of payment (because of risk sharing, threat of control change, or risk of a bid's failure). However, their study does not provide evidence that agency conflicts between shareholders and creditors (or between shareholders and managers) drive the financing decision. Bidders possess preferences for the source of financing which depend on their own characteristics as well as the characteristics of the takeover. In line with the pecking order theory, internal funds are primarily used by cash-rich firms. When internal funds are insufficient, companies with low leverage prefer borrowing, while firms with high pre-takeover stock price run-ups favor an equity issue. Combining the payment method and the source of financing, Martynova and Renneboog (2009) show that strategic preferences for the payment method

influence the underlying financing decision. If an acquirer seeks risk sharing and therefore prefers stock payment, equity financing is applied. However, if the acquirer is susceptible to control change, equity financing is less likely. In their sample, approximately one-third of fully cash-paid takeovers is partly financed with external debt or equity.

When investigating the cumulative abnormal returns, Martynova and Renneboog (2009) confirm the earlier results of Bharadwaj and Shivdasani (2003) that fully cash-paid acquisitions financed with internal funds significantly underperform those financed with debt. Whereas the former are associated with 0.79 percent over the three-day event window, the latter are associated with 1.32 percent. Equity financing (independent of the means of payment) is associated with even lower cumulative abnormal returns of 0.49 percent over the three-day event window. Independent of the source of financing, full cash payment is related to higher cumulative abnormal returns than full stock payment. The outperformance of debt-financed takeovers can be explained by debt conveying the absence of stock overvaluation and helping to limit empire building of managers. Martynova and Renneboog (2009) conclude that the underlying financing source has a significant impact on the market reaction around the announcement of a takeover.

Similar to the empirical approach in Chapter 4 of this thesis, Dittmar, Li, and Nain (2012) and Vladimirov (2015) also use the information on the source of financing provided by SDC Platinum. Even though it is not the main focus of Dittmar, Li, and Nain (2012), the related variable on debt financing is positive and statistically significant in explaining the acquirers' cumulative abnormal returns around the announcement.[24] Their study also suggests that there is a relation between debt financing and cash payment, as debt might be used to pay in cash. More recently, Vladimirov (2015) models the financial decision in takeovers.[25] His study includes an empirical investigation mostly concerned with the determinants for non-debt financing and the implications of non-debt financing for the takeover premium. Nevertheless, the respective variable of non-debt financing is negative and significant in explaining the acquirers' cumulative abnormal returns around the announcement.

[24]It is worth noting that Dittmar, Li, and Nain (2012) use the actual dollar amount instead of the proportional breakdown (as Chapter 4) in their regression setting. For the payment method, a dummy variable for pure cash-paid takeovers is implemented by Dittmar, Li, and Nain (2012). The corresponding coefficient's sign and significance vary.

[25]See also Morellec and Zhdanov (2008) for a theoretical model of the bidders' financing strategies.

2.4.2 Indirect Evidence

Besides those studies directly examining the source of financing in takeovers, there are three related investigations that use a more indirect approach: Schlingemann (2004), Harford, Klasa, and Walcott (2009), and Elsas, Flannery, and Garfinkel (2014).

The closest of the three studies to Chapter 4 and Chapter 5 of this thesis is Schlingemann (2004), as his focus is also on the relation between financing decision and the acquirer's gain. The sample consists of 623 cash tender offers between 1984 and 1998; therefore, the means of payment are constant in this study. In contrast to the previous studies on the source of financing, Schlingemann (2004) circumvents the problem of low data availability by looking at the original source (internally generated, common equity, or debt) of the acquirer's cash in the year before the takeover. Consequently, he examines the relation between the acquirer's pre-takeover financing decisions and the cumulative abnormal returns of the announcement. His results suggest that the previous financing decisions of acquirers have significant implications for the gains in takeovers. More precisely, the acquirers' cumulative abnormal returns are positively correlated to cash from equity financing and negatively correlated to internally generated cash from free cash flows. For cash from debt financing, Schlingemann (2004) does not find a significant correlation. Overall, his results support the pecking order theory and the free cash flow theory.

More focused on the financing decision of the acquirer than on the gains of the takeover are Harford, Klasa, and Walcott (2009) and Elsas, Flannery, and Garfinkel (2014). Both studies empirically investigate the validity of traditional theories on a firm's capital structure in the context of large acquisitions. Harford, Klasa, and Walcott (2009) consider a sample of 1,188 large acquisitions (relative size is at least 20 percent) between 1981 and 2000. The problem of data unavailability for the source of financing is circumvented, as Harford, Klasa, and Walcott (2009) look at the acquirer's debt levels before and after the takeover. The main focus is to understand how deviations from the target capital structure influence the acquirer's choice to finance a takeover, and how the capital structure after the takeover is adjusted correspondingly. They find that if the pre-takeover leverage is above the target leverage ratio, acquirers are more likely to finance the takeover with equity. For debt-financed takeovers, acquirers actively manage their capital structure in the subsequent five years back towards the target leverage ratio. Furthermore, managers

of acquiring firms are more likely to increase their leverage as consequence of the takeover if the acquirer's target leverage ratio also increases because of the takeover. The study confirms previous research that cash payment is likely financed with new debt. Taking their results together, Harford, Klasa, and Walcott (2009) provide evidence which is consistent with costly adjustments of the capital structure and a target leverage ratio.

Last but not least, Elsas, Flannery, and Garfinkel (2014) use a sample of 1,345 large acquisitions (exceeding 30 percent of book assets and more than twice the trailing investment expenditure) by U.S. acquirers between 1989 and 2006.[26] Data on the source of financing is extracted from the statement of cash flows, and as the considered events are almost the complete expenditure in the respective years,[27] this indirect approach yields a reliable breakdown of the source of financing for large acquisitions. Elsas, Flannery, and Garfinkel (2014) use this setting of major investments to investigate the capital structure decision of firms because those firms are expected to be confronted with relatively low marginal costs of adjusting their leverage. Their descriptive results suggest that major acquisitions are mostly financed with equity issues (median financing proportions in the event year is 31 percent) and debt issues (41 percent). Operational cash flows (14 percent) are less important as a source of financing for those takeovers. Only approximately 4.5 percent of the large acquisitions are mostly financed by internal funds. Overall, their results suggest that issued securities tend to move acquirers toward their target leverage ratios. As expected, equity issues are more common after stock price run-ups, and more profitable firms make more use of the funds from operating cash flows. Even though their results do not support the traditional pecking order theory, the empirical results are in line with other studies which consider an irregular or costly adjustment of a firm's leverage ratio (for example, Leary and Roberts, 2005; Strebulaev, 2007; Harford, Klasa, and Walcott, 2009).

[26] Elsas, Flannery, and Garfinkel (2014) also investigate built investments. However, the results on acquisitions are more appropriate for the present thesis and hence, the results on built investments are not separately described.

[27] Table 4 of Elsas, Flannery, and Garfinkel (2014) reports that approximately 12 percent of the yearly expenditures of acquirers is assigned to built investments.

2.5 Corporate Diversification and Internal Capital Markets

2.5.1 Functioning of Internal Capital Markets

So far, the provided literature overview is concerned with the view of the external capital market on a firm; or to put it differently, with observations across firms. Chapter 6 partly changes the view to internal capital markets; or to within firm observations. Hence, the remainder of the literature overview focuses on internal capital markets, and more precisely, on the interaction of internal capital markets, diversification, and the cost of capital.[28]

In a first step, it is critical to emphasize the differences between financing by external capital markets and financing by internal capital markets. Stein (2003) particularly mentions informational asymmetries and agency problems. Whereas external capital markets manage the allocation of financial resources between investors and companies, internal capital markets distribute resources of companies over their divisions or projects. With regard to control of those resources and the ultimate choice of projects, a firm's CEO usually has more immediate influence than a provider of external financing (Coase, 1937). In particular, in the case of external financing by a bank, the bank distributes capital to a company without having control over the firm. In contrast, internal capital markets distribute capital among business units owned by the firm.[29] This directly yields to another difference: Firms can just approach another bank in case they do not receive the expected financing terms, whereas business units are usually unable to access other financing options besides the distribution by the headquarter. Aside from the easier reassignment of resources in the latter case, Gertner, Scharfstein, and Stein (1994) argue that internal capital markets result in higher monitoring incentives and weaken entrepreneurial behavior of managers simultaneously (Aghion and Tirole, 1997). Based on the outlined theory in Chapter 2.2, internal capital markets also offer less costly financing than externally raised funds, as there are no transaction costs and fewer problems with information asymmetries (Martin and Sayrak, 2003).

[28] Part of this literature overview is based on the previous surveys of Martin and Sayrak (2003), Stein (2003), Maksimovic and Phillips (2007), Erdorf et al. (2013), and Maksimovic and Phillips (2013). As before, explicit contributions of theoretical models are mostly excluded from this literature overview (for example, Meyer, Milgrom, and Roberts, 1992; Gertner, Scharfstein, and Stein, 1994; Stein, 1997; Rajan, Servaes, and Zingales, 2000; Scharfstein and Stein, 2000).

[29] Stein (1997) argues that – under a given credit constraint – financing by headquarters can potentially add more value than financing by banks.

On the level of the company, several studies provide evidence that internal capital markets actually reallocate money, and Stein (2003) concludes that *it is clear that the internal capital market can generate economically significant reallocations of resources across a firm's operating segments* (p. 150). A common approach in this context is to focus on firms or segments with a distinct industry focus. For example, Lamont (1997) uses the oil price drop in 1986 and shows that oil firms significantly reduced their investments in segments outside of the oil industry. Khanna and Tice (2001) use the market entry of Walmart into discount stores and find that diversified firms make superior investments with well functioning internal capital markets. For the pharmaceutical industry, Guedj and Scharfstein (2004) find support of functioning internal capital markets by using the clinical trial strategies for possible cancer drugs.[30] Last but not least, previous studies are able show reallocations of capital within the financial industry (for example, Houston, James, and Marcus, 1997; Campello, 2002; Cremers, Huang, and Sautner, 2011). On a wider scope, the results of Shin and Stulz (1998) suggest that internal capital markets of conglomerates exist but are less active than one would expect, assuming efficient internal capital markets. Furthermore, they provide empirical evidence of socialistic behavior within conglomerates, which is in line with findings of Gertner, Powers, and Scharfstein (2002) but which contrasts with the evidence of Maksimovic and Phillips (2002) and Chevalier (2004). Based on Ozbas and Scharfstein (2010), the reallocation of capital might be harmful to conglomerates, as those firms invest too little in growth industries due to agency problems. In business groups, this socialistic behavior could also be explained by efforts to prevent default of one firm within the group and possible spillover effects on the remaining firms of the group (Gopalan, Nanda, and Seru, 2007).

On the level of business units, internal capital markets could result in various behaviors of the respective managers.[31] For example, Milgrom (1988) proposes that division managers want to receive a large budget and hence, might spend too much effort trying to influence the headquarter's decision about resource allocation.[32] Almost contrasting

[30] Without a focus on the pharmaceutical industry, Seru (2014) investigates the impact of being in a conglomerate on research and development.

[31] Because this paragraph is solely needed as a basic understanding for the remainder of this chapter and because the literature on resource allocation is extensive (for example, Harris, Kriebel, and Raviv, 1982; Antle and Eppen, 1985; Dunk, 1993; Harris and Raviv, 1996; Bernardo, Cai, and Luo, 2001), I only outline occasional examples for benefits and related costs here.

[32] Meyer, Milgrom, and Roberts (1992) extend this argument to a firm's level of diversification.

is the implication for division managers in the model of Brusco and Panunzi (2005), as efficient resource allocation on a company level can reduce division managers' incentives and hence, their commitment. The underlying rationale is that redistributing cash flows generated by the division manager diminishes his effort to generate those cash flows in the first place. Stein (2002) argues in both directions, dependent on the resilience of information. While dealing with mostly soft information could reduce a division manager's effort, as this information is hardly transferable, dealing with hard information could have the opposite effect on the division manager. A more recent strand of literature in this area suggests that resource allocation is (mostly negatively) influenced by personal attributes of managers (for example, Xuan, 2009; Duchin and Sosyura, 2013; Glaser, Lopez-De-Silanes, and Sautner, 2013; Graham, Harvey, and Puri, 2015).

Based on the controversial effects of internal capital markets, the natural question arises of when internal capital markets are valuable. Several studies stress that internal capital markets can help firms and become more valuable when external capital markets tighten (for example, Kuppuswamy and Villalonga, 2010; Yan, Yang, and Jiao, 2010; Hovakimian, 2011). Billett and Mauer (2003) directly connect internal capital markets with firm value and conclude that financing constraints of segments drive this relation. Hubbard and Palia (1999) argue that increased informational efficiency of external capital markets has diminished the advantages of internal capital markets. Assuming that internal capital markets exist among diversified firms (Stein, 2003), evidence of a downward trend over time is provided by Lichtenberg (1992) as well as Comment and Jarrell (1995). At the same time, Montgomery (1994) finds an increase in diversification for the largest 500 companies in the United States. In a cross-country perspective, Fauver, Houston, and Naranjo (2003) provide evidence for a link between a country's development and the value of corporate diversification. As internal capital markets are usually linked to diversified firms, understanding the effects of diversification is a logical step when considering internal capital markets.[33]

The wide array of effects of diversification is stated by Martin and Sayrak (2003) as follows: *Opinions of managers, creditors, and stockholders differ greatly regarding the*

[33]Montgomery (1994) suggests three theoretical considerations as to why a company diversifies: agency theory, responses to excess capacity, and market power. After diversifying, those firms have at least two more distinct differences (besides the existence of an internal capital market) when compared to stand-alone firms: first, how they deal with stakeholders; second, an additional administrative layer (Bhide, 1990).

merits of corporate diversification. For example, managers may want their firm to engage in diversification as a means of reducing firm specific risk that affects the value of their future compensation. Similarly, the firm's creditors may prefer that the firm diversify its investments to reduce the likelihood of a dip in cash flows that could result in delays in repayment or outright failure to repay loans. At the same time, stockholders who own diversified portfolios of common stocks may not want the firm to diversify if they can do it more cheaply in their individual investment portfolios (p. 39).

Overall, the wealth effects of corporate diversification and internal capital markets are highly discussable (Stein, 2003). Before turning to the two opposing views for firm value in the following, it is worth noting that a remarkably large body of more recent literature highlights measurement errors (for example, Whited, 2001; Villalonga, 2004a; Glaser and Müller, 2010; Custódio, 2014; Rudolph and Schwetzler, 2014) and endogeneity concerns (for example, Campa and Kedia, 2002; Graham, Lemmon, and Wolf, 2002; Chevalier, 2004; Villalonga, 2004b) when investigating the value implications of corporate diversification. Explicitly controlling for both, Colak and Whited (2007) look at spin-offs and divestitures of conglomerates and are unable to find an improvement in investment efficiency afterwards.

2.5.2 Diversification Discount

The first of the two opposing views on corporate diversification and its value implications is based on the pioneering studies of Lang and Stulz (1994) as well as Berger and Ofek (1995). Both studies show the existence of a diversification discount, as diversified firms are valued with distinctly lower multiples than stand-alone counterparts. Berger and Ofek (1995) estimate an average loss in firm value of 13 to 15 percent and find that this discount is partly driven by socialistic behavior and overinvestments. Notwithstanding, Lang and Stulz (1994) find evidence that firms perform poorly before they diversify, suggesting that diversification is seen as a way for companies to grow out of limited opportunities in their current industries – a result which is later confirmed by Hyland and Diltz (2002). The basic implications of those two studies are extended in several directions; most notably, firm focus is not only enhancing firm value but also its returns (for example, Comment and Jarrell, 1995; Desai and Jain, 1999; Megginson, Morgan, and Nail, 2004), the diversification discount varies over time (Servaes, 1996), the discount is dependent on the geographical

area (for example, Lins and Servaes, 1999; Lins and Servaes, 2002), the discount also exists in financial conglomerates (Laeven and Levine, 2007), and finally, dispersion of industry investments within the firm is negatively related to company value (Lamont and Polk, 2002).

Another approach to investigate the value effects of corporate diversification is to look at changes in diversification and their value implications. Similar to the approach of Colak and Whited (2007) and Chapter 6, other studies also use takeovers, divestitures, or spin-offs to draw conclusions on corporate investments and hence, firm value (for example, Daley, Mehrotra, and Sivakumar, 1997; Gertner, Powers, and Scharfstein, 2002; Burch and Nanda, 2003; Ahn and Denis, 2004). Mostly, those studies provide evidence for an increase in investment efficiency after increasing firm focus and hence, for an increase in firm value. For example, Dittmar and Shivdasani (2003) study diversified firms that divest one of their segments and observe a reduction in the diversification discount. For takeovers, studies typically suggest that diversifying takeovers yield to inferior returns for acquirers (for example, Morck, Shleifer, and Vishny, 1990; Maquieira, Megginson, and Nail, 1998; Doukas, Holmén, and Travlos, 2002; Fan and Goyal, 2006; Martynova and Renneboog, 2006). In a long-ranging study, Akbulut and Matsusaka (2010) examine the combined effect for acquirers' and targets' shareholders. Taking both parties into consideration, diversifying takeovers yield similar announcement returns as related takeovers. Interestingly, takeovers of already diversified acquirers have higher announcement returns than those of pre-takeover focused acquirers. Over several investigated time periods, spanning over 57 years in total, the announcement returns of diversifying takeovers are never significantly different from the returns of related takeovers.

Combining takeovers and divestitures, Kaplan and Weisbach (1992) examine the divestitures of initially bought targets. Even though they do not find evidence of a difference in announcement returns between diversifying and focusing takeovers, they show that diversifying acquisitions are later divested in more than half of the cases. Similar conclusions can be drawn on the results from John and Ofek (1995), where sellers gain in operating performance after increasing their focus through an asset sale,[34] and those types of asset sales are related to greater announcement returns. As expected, the capital market seizes

[34]This also holds true the other way around, and firms experience higher diversification discounts when increasing their diversity with asset purchases (Chen and Chen, 2011).

those potential value gains and takes a disciplinary role by implementing management turnovers (Denis, Denis, and Sarin, 1997) or by taking over diversified firms with large discounts, and subsequently breaking those firms up (Berger and Ofek, 1996). Furthermore, the capital market also appreciates the announcement of refocusing programs of diversified firms (Berger and Ofek, 1999).

As aforementioned, recent literature suggests that at least a part of the diversification discount might be caused by endogeneity and measurement error. In particular, Campa and Kedia (2002) observe such effects of endogeneity on both decisions of the acquirer: the initial diversification and the subsequent refocusing. Graham, Lemmon, and Wolf (2002) complete those considerations by looking at the characteristics of targets, answering the question of whether corporate diversification itself or the segments of a diversified firm is value-destroying. They find evidence for the latter, as segments in conglomerates are systematically different to stand-alone firms, and targets in diversifying takeovers are, on average, discounted prior to the acquisition. This finding is consistent with other studies using plant-level data on productivity (for example, Maksimovic and Phillips, 2001; Schoar, 2002) and looking at the target's pre-takeover Tobin's Q (for example, Hasbrouck, 1985; Lang, Stulz, and Walkling, 1989). Because two out of three increases in segments are caused by takeovers with the remaining one-third caused by internal growth (Graham, Lemmon, and Wolf, 2002), those findings substantially question the initial results of Lang and Stulz (1994) as well as Berger and Ofek (1995).

Lamont and Polk (2001) challenge the common view that the diversification discount is solely based on lower cash flow expectations by investigating both the cash flow pattern and the discount rate. Variation of the latter can be explained by *risk, mispricing, taxes, and liquidity* (p. 1694). Separating the impact of differences in cash flows and returns of diversified firms, Lamont and Polk (2001) conclude that *the diversification puzzle is both an expected return phenomenon and an expected cash flow phenomenon* (p. 1717). Mitton and Vorkink (2010) also focus on the discount rate instead of cash flow expectations and argue that a higher discount rate for a diversified firm would compensate its shareholders for a lack of upside potential. Their empirical results are in line with this hypothesis. Finally, Mansi and Reeb (2002) explain the diversification discount with the subsequently described coinsurance effect. Their reasoning uses a framework where the value of a firm's equity is similar to a call option on the firm's assets minus the existing debt claims. In

this framework, they can empirically explain the diversification discount with the reduced risk for shareholders because of the coinsurance effect.

2.5.3 Coinsurance Effect

The second – and more advantageous – view on corporate diversification roots back to Lewellen (1971). He hypothesizes that a merged firm benefits from a coinsurance effect if the pre-takeover firms' cash flows are not perfectly correlated. Consequently, a diversified firm is more attractive to lenders than the combination of the two stand-alone firms before the takeover. In contrast to the effect of diversification on shareholders, which can buy the individual stocks of the pre-takeover stand-alone firms to recreate the diversification level of a merged firm (Levy and Sarnat, 1970), diversification of the debt provider's portfolio (which can be seen as the equivalent to the investor's portfolio in the case of equity) does not have the same effects as diversification of the borrower. According to Lewellen (1971), the lender can only reduce the probability of simultaneous losses in the portfolio by diversification, but the lender is unable to reduce the probability of default for any given loan with diversification. This changes on the level of the borrower because the coinsurance effect causes diversifying borrowers to have a lower joint probability of defaulting on the combined loans. The reason for this is the possibility of covering a segment's debt payments with another segment's excess cash flows. The advantageous point for merged companies now relies on an increased debt capacity (Lewellen, 1971) and hence, on a reduction of the harmful impact that credit constraints can have on long-term investment decisions (Stein, 1997). In contrast, Higgins and Schall (1975) as well as Galai and Masulis (1976) argue that the coinsurance effect might simply cause a transfer of wealth from shareholders to bondholders.

As before with the diversification discount, a rising strand of literature closely examines the resulting consequences of the coinsurance effect. Kim and McConnell (1977) empirically investigate a possible coinsurance effect of diversifying takeovers and provide evidence in line with Lewellen (1971). More specifically, Kim and McConnell (1977) find no significant gains for bondholders around the merger. However, they observe an increase in leverage for the combined firm compared to the two stand-alone firms before the takeover. Without the existence of a coinsurance effect, the latter should result in a loss for bondholders. For higher leverage of diversified firms, Berger and Ofek (1995) as well as

Comment and Jarrell (1995) confirm the findings of Kim and McConnell (1977), yet show an economically rather small effect in the cross-section of firms. Other studies investigating the effects of diversification on bondholders yield mixed or inconclusive results about the presence of a coinsurance effect (for example, Asquith and Kim, 1982; Dennis and McConnell, 1986; Maquieira, Megginson, and Nail, 1998; Billett, King, and Mauer, 2004; Penas and Unal, 2004). Nevertheless, the recent survey of Gatzer, Hoang, and Ruckes (2014) suggests that CFOs of diversified firms value the benefits of the coinsurance effect as the main financial advantages of their diversification.

Although not directly related to the coinsurance effect as introduced by Lewellen (1971), the model of Stulz (1990) provides a similar result regarding the impact of cash flow volatility. He claims that lower cash flow volatility diminishes the problem of overinvestment and underinvestment by management and hence, reduces agency costs and increases firm value.

2.5.4 Implications for Cost of Capital

In particular, the coinsurance effect is expected to directly impact the firm's cost of capital. Because both of the aforementioned costs (credit constraints on long-term investment decisions and deadweight cost of financial distress) can be related to the business cycle (for example, Shleifer and Vishny, 1992; Bernanke and Gertler, 1995; Dimitrov and Tice, 2006; Almeida and Philippon, 2007), the coinsurance effect should reduce the systemic risk and consequently, the cost of capital of the diversified firm. On the other hand, the diversification discount is also expected to distinctly influence the cost of capital (Lamont and Polk, 2001; Mitton and Vorkink, 2010).

Based on the assumption that idiosyncratic risk can be diversified away and that only systematic risk is priced, a strand of literature examines the relation between corporate diversification, takeovers, and systematic risk. Without any differentiation with regard to diversification, Mandelker (1974) provides evidence of a decrease in systematic risk for acquirers around a takeover. Adding the dimension of pre-takeover diversification of acquirers, Joehnk and Nielsen (1974) confirm the results of Mandelker (1974), as they report a decreasing systematic risk for conglomerate and focused acquirers. In addition, their results suggest that this decrease in systematic risk of acquirers might be caused by the lower systematic risk of the targets. The differentiation between focused and diver-

sified acquirers might be viewed with caution at this stage because diversified acquirers tend to have higher leverage than focused acquirers (Melicher and Rush, 1974a). Subrahmanyam and Thomadakis (1980) as well as Montgomery and Singh (1984) propose two more reasons why the level of corporate diversification might impact systematic risk: market power and capital intensity. In the empirical analysis of Montgomery and Singh (1984), they only find evidence for the leverage and market power argument but not for capital intensity.[35] Classifying firms into six categories with regard to diversification, Montgomery and Singh (1984) further show that only the systematic risk for the category of unrelated conglomerates is distinctly above the risk of the market. Comparing conglomerates and focused firms, Melicher and Rush (1974b) also observe higher beta estimates for conglomerate firms than for focused ones. This higher systematic risk for conglomerate firms seems counterintuitive, as theory would expect the opposite (Trautwein, 1990). Chatterjee and Lubatkin (1990) as well as Maquieira, Megginson, and Nail (1998) extend those results and explicitly control for the targets by comparing the post-merger firm to its pre-takeover counterparts. Whereas the former find decreasing betas, the latter show statistically insignificant beta changes.

Splitting the cost of capital into its components, two recent studies focus on the implications of corporate diversification separately on the cost of debt (Aivazian, Qiu, and Rahaman, 2015) and cost of equity (Hann, Ogneva, and Ozbas, 2013).[36] Starting with the cost of debt, Aivazian, Qiu, and Rahaman (2015) focus on bank loans and find that diversified firms pay lower interest rates on their loans than focused firms, while not being exposed to more restrictive contracting terms. They conclude that organizational structure is not irrelevant in imperfect capital markets. This finding is in line with the coinsurance effect causing lower bond yields (Franco, Urcan, and Vasvari, 2013) and a better availability of bank loans for diversified firms (Tong, 2012). For the overall cost of capital and in particular, the cost of equity, Hann, Ogneva, and Ozbas (2013) empirically show the impact of the coinsurance effect on a firm's cost of capital. More precisely, they find that diversified firms have lower cost of capital than focused firms and that firms with less correlated segment cash flows also exhibit lower cost of capital than conglomerates

[35] How capital intensity might influence the firm is empirically shown by Minton and Schrand (1999). They find lower investments for firms with higher cash flow volatility and suggest that those firms forgo investments, as external capital markets are not completely compensating for drops in cash flows.

[36] Even though Hann, Ogneva, and Ozbas (2013) investigate the cost of capital, they mostly implement a company-unspecific proxy for the cost of debt.

with higher correlated segment cash flows. Their results suggest that the coinsurance effect actually lowers systematic risk instead of only influencing idiosyncratic risk – for example, by lowering the aforementioned deadweight cost of financial distress over the business cycle. Finally, it is worth noting that the model of Hann, Ogneva, and Ozbas (2013) is able to include agency costs (usually connected to the diversification discount) and hence, *it is possible to observe both a diversification discount and a coinsurance effect at the same time* (pp. 1964-1965).

Chapter 3

Performance Measurement

3.1 Short-Run Performance

A major part of Chapter 4 and Chapter 5 concentrates on capturing possible abnormal returns as a consequence of the acquisition announcement by using an event study. Event studies as type of analysis became known to most researchers thanks to the pioneering papers of Ball and Brown (1968), Fama et al. (1969), and Brown and Warner (1980). MacKinlay (1997) as well as Binder (1998) provide an appropriate overview of the most important developments in the area of event studies and take on major issues. As a result, several parts of this chapter are based on their surveys.

So, let AR_{it} denote the abnormal return of acquiring firm i at day t. In general, this abnormal return can be interpreted as the difference between the realized return (R_{it}) and the expected return (in other words, the normal return) for this company without the event ($E(R_{it})$):

$$AR_{it} = R_{it} - E(R_{it}) \tag{3.1}$$

The critical point is now how to determine the expected, or normal, return for a given firm at a given day, assuming that the event did not (actually) happen. There are three popular approaches for this estimation; namely, the constant mean return model, the market model, and the Fama and French (1993) three-factor model. I focus on the market model as my default model because it is the most popular approach for this estimation in recent empirical literature (for example, Harford, Humphery-Jenner, and Powell, 2012;

Custódio and Metzger, 2013; Deng, Kang, and Low, 2013; Vermaelen and Xu, 2014). Additionally, I report results of the constant mean return model as well as the Fama and French (1993) three-factor model as part of the robustness tests in Chapter 4.9 and Chapter 5.7.

All approaches differentiate between an estimation period and the actual event window. The former is a time frame from t_0 to t_1 for estimation of all needed coefficients and usually takes place before the acquisition. The latter is the period in which possible abnormal returns are measured and encompasses the time frame from t_2 to t_3. Hence, the announcement date of an acquisition, noted as $t = 0$, is included in the event window. My estimation period starts at $t_0 = -190$, thus 190 days before the actual takeover announcement to 41 days before the announcement, resulting in $t_1 = -41$. As suggested by Andrade, Mitchell, and Stafford (2001) and also common in recent studies (for example, Custódio and Metzger, 2013; Fu, Lin, and Officer, 2013; Vladimirov, 2015), I use a symmetric three-day event window starting at $t_2 = -1$ and ending at $t_3 = +1$. This allows for possible abnormal returns before the actual announcement of the takeover as well as price adjustments after the announcement. The 40-day interval between the end of the estimation period at $t_1 = -41$ and the beginning of the event window at $t_2 = -1$ ensures that my estimations are not biased by any rumors. The relatively large interval between the estimation period and event window is in line with the findings of Schwert (1996) and previous empirical studies (for example, Fee and Thomas, 2004; Chari, Ouimet, and Tesar, 2010; Becher, Mulherin, and Walkling, 2012; Fu, Lin, and Officer, 2013). Figure 3.1 illustratively summarizes the time line for measuring the announcement returns of the acquirer.

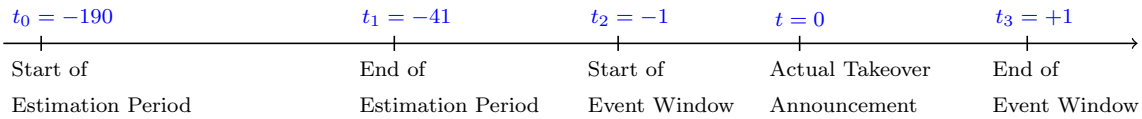

Figure 3.1: Time Line for Measuring Short-Run Abnormal Returns

To correctly measure abnormal returns, it is critical that the used announcement date is appropriate. All of my empirical investigations use the announcement date of the takeover as reported by SDC Platinum. In this context, Fuller, Netter, and Stegemoller (2002) check

the announcement dates in SDC Platinum for a random sample of 500 acquisitions. They find that SDC Platinum is correct in 92.6 percent of the 500 cases and only off by one or at most two days in the remaining 7.4 percent. The accuracy of SDC Platinum after 1984 is also supported by a recent comparison to hand-collected data (Barnes, Harp, and Oler, 2014) and to the Zephyr database (Bollaert and Delanghe, 2015). Nevertheless, Chapter 4.9 and Chapter 5.7 provide cumulative abnormal returns with different estimation periods and event windows to confirm the results based on the chosen default setting.

Next, I introduce the aforementioned three methods for calculating the expected, or normal, return. The constant mean return model assumes a constant return for firm i, denoted as μ_i, and an error term (ζ_{it}) with an expected value of zero and standard deviation of $\sigma_{\zeta_{it}}$. Consequently,

$$R_{it} = \mu_i + \zeta_{it} \tag{3.2}$$

with $E(\zeta_{it}) = 0$ and $var(\zeta_{it}) = \sigma^2_{\zeta_i}$ hold in this model setup. $E(R_{it})$ is equal to the mean return ($\widetilde{\mu_i}$), which is estimated during the estimation period as the average return of the stock:

$$E(R_{it}) = \tilde{\mu_i} \tag{3.3}$$

One big issue when using the constant mean return model is that it disregards overall market movements. This problem is addressed by the market model, which is defined as

$$R_{it} = \alpha_i + \beta_i R_{mt} + \epsilon_{it} \tag{3.4}$$

with $E(\epsilon_{it}) = 0$ and $var(\epsilon_{it}) = \sigma^2_{\epsilon_i}$. $E(R_{it})$ is determined by market-wide movements, captured by an appropriate market index (R_{mt}), and firm-specific characteristics, which enter $\tilde{\alpha_i}$ as well as $\tilde{\beta_i}$:

$$E(R_{it}) = \tilde{\alpha_i} + \tilde{\beta_i} R_{mt} \tag{3.5}$$

Although at first glance it appears similar to the capital asset pricing model, the market model does not make use of a risk-free rate (R_{ft}). Besides the influence of overall market movements, Fama and French (1993) show that additional factors can help explain returns. Hence, I also apply their three-factor model to the estimation process. Aside from the market risk premium ($R_{mt} - R_{ft}$), the model applies a factor regarding the size effect

(SMB_t) and a factor regarding the value effect (HML_t).[1] While the characteristics of the error term (λ_{it}) are still the same, additional factor weights in form of s_i and h_i are necessary. This leads to

$$R_{it} - R_{ft} = \alpha_i + \beta_i(R_{mt} - R_{ft}) + s_i(SMB_t) + h_i(HML_t) + \lambda_{it} \tag{3.6}$$

with $E(\lambda_{it}) = 0$ and $var(\lambda_{it}) = \sigma^2_{\lambda_i}$. For estimating $E(R_{it})$ during the event window, the equation is:

$$E(R_{it}) - R_{ft} = \tilde{\alpha}_i + \tilde{\beta}_i(R_{mt} - R_{ft}) + \tilde{s}_i(SMB_t) + \tilde{h}_i(HML_t) \tag{3.7}$$

The market is approximated by the MSCI World (provided by Datastream) in the market model. For the Fama and French (1993) three-factor model, I use the respective daily factors provided by Kenneth R. French.[2]

After calculating the abnormal returns (AR_{it}) per firm i at day t, I aggregate those abnormal returns in two steps: (i) over the whole event window for one firm; (ii) and subsequently, across companies. To determine the cumulative abnormal returns (CAR_i) per firm i over the event window, beginning at t_2 and ending at t_3:

$$CAR_i = \sum_{t=t_2}^{t_3} AR_{it} \tag{3.8}$$

Next, I calculate the average cumulative abnormal return ($ACAR$) as the average over the cumulative abnormal returns of all N companies in the respective sample:

$$ACAR = \frac{1}{N} \sum_{i=1}^{N} CAR_i \tag{3.9}$$

For significance tests of abnormal returns, I assume that the individual abnormal returns are independent and identically distributed. Based on the error term (ET), the variance of cumulative abnormal returns is:

[1] SMB_t stands for small minus big and is the return difference between small and big firms. HML_t stands for high minus low and is the return difference between high book-to-market and low book-to-market firms.

[2] Data is available under http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html (May 19th, 2015).

$$\sigma^2_{CAR_i} = (t_3 - t_2 + 1)\sigma^2_{ET_i} \tag{3.10}$$

Therefore, the variance for the average cumulative abnormal return is:

$$\sigma^2_{ACAR} = \frac{1}{N^2}\sum_{i=1}^{N}\sigma^2_{CAR_i} \tag{3.11}$$

For robustness, I additionally provide the heteroscedasticity-robust test statistic of Boehmer, Masumeci, and Poulsen (1991), which allows for an increase in variance during the event window and estimates the variance of the average cumulative abnormal return from the cross-section during the event window instead of longitudinal during the estimation period:

$$\sigma^2_{ACAR} = \frac{1}{N^2}\sum_{i=1}^{N}(CAR_i - ACAR)^2 \tag{3.12}$$

3.2 Long-Run Performance

3.2.1 Problems with Long-Run Abnormal Returns

Typically, the abnormal returns over the relatively short event window are very robust with regard to estimated size and statistical significance. However, this does not hold true for abnormal returns in the long run. Fama (1998) discusses the bad model problem as a result of the imperfect determination of expected returns. This imperfectness is negligible over the short event window, but it is critical over longer horizons (Kothari and Warner, 2007). As can be seen in Table 2.2, empirical investigations have very different conclusions – sometimes depending on the applied methodology. The two most commonly used approaches in recent long-term event studies are the BHAR approach and the calendar-time portfolio approach (for example, Betton, Eckbo, and Thorburn, 2008; Bouwman, Fuller, and Nain, 2009; Akbulut, 2013; Fu and Huang, 2016). The former calculates the buy-and-hold abnormal returns an investor would realize by investing in the event firm, compared to a benchmark firm. The latter estimates an alpha of a portfolio consisting of event firms against an asset pricing model.

Before each approach is separately explained, it might be surprising as to why two approaches for long-run event studies coexist, whereas the market model dominates short-

run event studies. This coexistence can be explained by the revealing of shortcomings in both approaches (for example, Barber and Lyon, 1997; Kothari and Warner, 1997; Lyon, Barber, and Tsai, 1999). For instance, Loughran and Ritter (2000) argue that the calendar-time portfolio approach is not well-suited to detect abnormal returns in the context of acquisitions because these events are clustered over time and the calendar-time portfolio approach weights each period equally. In contrast, Mitchell and Stafford (2000) favor the calendar-time portfolio approach, as it accounts for all cross-correlation of events in the portfolio variance. Rosen (2006) summarizes this discussion on the two different approaches as a trade-off between a type I error and a type II error. Whereas the BHAR approach is subject to type I errors, type II errors are relatively common in the calendar-time portfolio approach. To adjust for this trade-off in Chapter 4, I implement long-run abnormal returns for the acquirer based on both approaches.

3.2.2 BHAR Approach

Buy-and-hold abnormal returns for long-run event studies hails from Ritter (1991). The basic idea is to capture the abnormal return an investor would realize over his investment horizon by investing in the average event firm, compared to an appropriate benchmark firm. Because buy-and-hold abnormal returns are sensitive to the underlying investment horizon, I examine the commonly used time frame of three years (for example, Ritter, 1991; Rau and Vermaelen, 1998; Mitchell and Stafford, 2000). More precisely, I calculate these abnormal returns over the three-year period, starting with the month after the takeover's completion date.

The buy-and-hold abnormal return ($BHAR_i$) for an individual event firm i is generally calculated as

$$BHAR_i = \prod_{t=1}^{T}(1 + R_{it}) - \prod_{t=1}^{T}(1 + R_{bt}) \tag{3.13}$$

with R_{it} and R_{bt} being the return in month t of the individual event firm i and of its benchmark firm b, respectively. As aforementioned, the holding period is set to three years and therefore, $T = 36$ holds true in my setting. The average buy-and-hold abnormal return ($\overline{BHAR}$) over N event firms can then be defined as:

$$\overline{BHAR} = \sum_{i=1}^{N}\left(\frac{BHAR_i}{N}\right) \tag{3.14}$$

To avoid a skewness bias, I implement only one appropriate firm as benchmark return, rather than using a portfolio of benchmark firms (Barber and Lyon, 1997). The resulting test statistic is:

$$t_{\overline{BHAR}} = \frac{\overline{BHAR}}{(\sigma_{BHAR_i})/\sqrt{N}} \tag{3.15}$$

As can easily been seen, the crucial point in using the BHAR approach is the assignment of an appropriate benchmark firm. The matching procedure mostly used in this setting accounts for differences in firm size, book-to-market ratio, and sometimes industry (for example, Eckbo, Masulis, and Norli, 2000; Betton, Eckbo, and Thorburn, 2008; Savor and Lu, 2009).[3] In further detail, each event firm is matched against a benchmark firm from the Worldscope universe in the same two-digit SIC code and a range of its market capitalization between 70 percent and 130 percent. Next, I select the firm with the closest book-to-market ratio in this range of market capitalization between 70 percent and 130 percent. All these values are measured at the end of the year prior to the acquisition announcement. Benchmark firms must not be in my sample of acquisitions during the three years prior to the announcement date and until three years after the completion date. If the event firm is delisted before the end of my three-year investment period, I assume no abnormal returns for the remaining time. For cases where the benchmark firm disappears, I use the second best initial match from this point on as benchmark. I refer to the benchmark firms resulting from this matching procedure as market capitalization-adjusted (MA) benchmark firms.

As my sample in Chapter 4 is international, I apply an alternative matching procedure for the buy-and-hold abnormal returns. This alternative matching procedure adjusts for a firm's place of residence rather than its market capitalization. The benchmark firm must be located in the same country and must have the same two-digit SIC code. I choose the matching firm with the closest book-to-market ratio to the event firm with the constraint that the matching firm's book-to-market ratio is in the range of 30 percent around the event firm's book-to-market ratio. All other steps are unchanged compared to the market capitalization-adjusted buy-and-hold abnormal returns. Hereinafter, I refer to this alternative matching procedure as country-adjusted (CA). To eliminate extreme outliers, all returns are winsorized at the bottom and top 0.5 percent.

[3] Adjustments for firm size and book-to-market ratio are justified by the empirical results of Fama and French (1993). The importance of industry association is shown by Fama and French (1997).

3.2.3 Calendar-Time Portfolio Approach

Initially presented by Jaffe (1974) and Mandelker (1974), the calendar-time portfolio approach is highly influenced by Fama (1998) and focuses on the mean portfolio return of event firms. Therefore, the performance of the event firm portfolio is measured relative to an asset pricing model over time. This portfolio of event firms is constructed every month with all event firms of the last three years (which is the same as the three-year holding period applied for the BHAR approach). Again, the three-year period starts the month after the takeover's completion. As suggested by Loughran and Ritter (2000), I use an equally-weighted portfolio of event firms. As asset pricing model, I use the Carhart (1997) four-factor model, resulting in

$$R_{pt} - R_{ft} = \alpha_p + \beta_p(R_{mt} - R_{ft}) + s_p(SMB_t) + h_p(HML_t) + w_p(MOM_t) + \xi_{pt} \quad (3.16)$$

with the return of the event firm portfolio (R_{pt}) in month t, the return of the momentum factor (MOM_t) in month t,[4] the corresponding factor loading (w_p), and the error term (ξ_{pt}) in month t. The monthly global factor returns are again taken from Kenneth R. French.[5]

The performance of the event firm portfolio is now shown by α_p.[6] As mergers tend to be clustered, the aforementioned issue with the calendar-time portfolio approach arises. If the underlying acquisitions are in a period with high takeover activity, the respective event firms are underweighted compared to acquirers in times of lower takeover activity. This is because event firms are equally-weighted in the monthly portfolio, and an ordinary least squares (OLS) setting to estimate alpha weights every month the same. This problem is solved by a weighted least squares (WLS) regression with the number of event firms in the portfolio as monthly weights (Loughran and Ritter, 2000). I report both alphas with the WLS alpha as my default setting because of its higher accuracy in the context of mergers and acquisitions.

[4] MOM_t is the return difference between previously winning and previously losing stocks.

[5] Data is available under http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html (May 19th, 2015). Due to data unavailability, I use the monthly U.S. factors before November 1990. As only one acquirer is located outside of the United States before November 1990, the use of U.S. factors is not expected to be problematic.

[6] The corresponding standard errors are autocorrelation-adjusted for three months following Newey and West (1987).

Chapter 4

Source of Financing in Takeovers

4.1 Research Question

As Chapter 2 shows, the influences of the payment method on abnormal returns of takeovers have gained a great deal of attention, in regards to short-run and long-run performance. Although means of payment in acquisitions sometimes captures valuation effects, an acquirer's payment decision is also strongly related to the underlying financing decision. One example is that of very limited internal cash, which provokes the need of additional external financing – for instance, in form of a bank loan when cash payment is favored. Another possibility is that external financing is accomplished by issuing new stocks, which can simultaneously serve as the payment method. In either case, the underlying financing decision tremendously affects the means of payment in an acquisition.

In contrast to the vast literature on takeover performance dependent on the means of payment, the underlying financing decision has been overlooked in empirical studies of abnormal returns. So far, only Martynova and Renneboog (2009) directly link the payment method and the source of financing in the context of acquisitions. Their results indicate that the previous assumption of cash payment being an adequate approximation of deal leverage is an oversimplification. An illustrative example of this oversimplification is retained earnings, which can be a major source of financing and simultaneously are not considered under the common assumption of cash payment being equal to debt financing.

It is at this precise point that this chapter contributes to empirical research by comprehensively investigating the effects of the source of financing in takeovers from three

different dimensions. First, the chapter examines driving characteristics for the decision of how to finance an acquisition. In comparison to Bharadwaj and Shivdasani (2003) and Martynova and Renneboog (2009), I propose a sequential model where the acquirer determines the proportion of internal funds in a first step, and then decides on the composition with external funds in a second step. Second, I expand the previous short-run results of those two studies to a worldwide sample which, in particular, includes the United States. As Figure 1.1 suggests, this broadening is valuable considering the huge practical relevance of U.S. acquisitions. Furthermore, my study explicitly allows for variation in the payment method and demarcates bank financing. Third, my study provides novel insights into the long-run implications of the source of financing, an area which is completely overlooked so far. There are several cases in which the long-run effects of financing might be interesting for academics as well as practitioners. On the one hand, financing an acquisition with internal cash could underperform if one proposes a possible empire building behavior of managers with free cash flows. On the other hand, using credit financing for a takeover might improve not only the initial target selection, but also the integration process, as banks can help screening in the beginning and closely monitor the later integration progress.

Altogether, my investigation in this part not only contributes to the literature on takeovers, but also helps explain traditional corporate finance issues. If a takeover is seen as an investment project, I empirically show the implications of the marginal financing of those investment projects. For most other investment projects, any breakdown of the underlying source of financing is arbitrary for outsiders. However, during takeovers, information regarding the method of payment and/or associated sources of financing is sometimes released and hence, the present study is also a suitable test for traditional capital structure theories.

4.2 Hypotheses

As the empirical investigation in this chapter sheds light onto three aspects of the source of financing (the initial decision of how to finance a takeover, the announcement effect, and the long-run implications), the hypotheses develop in a similar way.

The first hypothesis is concerned with the initial decision of the acquirer on when to use which source of financing. Based on previous research on the payment method (which assumes a relation to the source of financing), the proportion of cash as means of payment should lower when the proportion of new issue as source of financing rises. Furthermore, several studies suggest that internal financing and cash payment are primarily used in smaller takeovers and additional external financing sources are needed for larger takeovers (for example, Amihud, Lev, and Travlos, 1990; Bharadwaj and Shivdasani, 2003; Chemmanur, Paeglis, and Simonyan, 2009; Martynova and Renneboog, 2009). This is the case when acquirers have insufficient internal resources to finance the target. In contrast, acquirers financing the transaction value with internal funds or paying with cash are expected to have more net cash before the takeover. Last but not least, my investigation should strengthen previous studies with regard to completion time. One reason for the use of cash payment is the faster completion of the takeover – in particular, in the context of a competitive bidding process (for example, Chemmanur, Paeglis, and Simonyan, 2009; Chen, Chou, and Lee, 2011; Offenberg and Pirinsky, 2015).

> Hypothesis 1.1: Several takeover and acquirer characteristics – especially method of payment, relative size of the target, acquirer's pre-takeover level of cash, and completion time – influence the decision on the source of financing.

Investigating the short-run abnormal returns of the acquirer, the expectations are mostly based on the considerations of Chapter 2 and the previous results of Bharadwaj and Shivdasani (2003) as well as Martynova and Renneboog (2009). Accordingly, cash-paid takeovers should have higher abnormal returns around the announcement day than stock-paid takeovers. Reasons for this may be the absence of acquirer's overvaluation or a more precise estimation of the target's value. Furthermore, the pecking order theory suggests that companies should prefer internal funding over new issues. If internal funding is insufficient for the takeover, credit financing is preferred based on possible bank screening in the beginning and ongoing monitoring of the integration process. This reasoning is strengthened by the fact that cash payment is often financed with internal funds or bank loans.

Hypothesis 1.2: In the short run, cash payment is superior to stock payment. As source of financing, new issue underperforms other types of financing – in particular, credit financing by banks.

My third hypothesis covers possible long-run performance deviations over the subsequent three years. If the above reasoning holds true, there is still the discussion of whether or not all of the effect is priced at the announcement. Considering bank financing, the literature suggests a positive signal based on the initial screening as well as the ongoing monitoring. To what extent the latter is correctly priced at the announcement might be questionable. The expected short-run negative performance of financing an acquisition with a new issue might turn around in the long run. When managers are aware of share price decreases after the announcement of a new issue, they might choose such acquisitions carefully, resulting in the possible outperformance of those acquisitions in the long run. In contrast, new issues are often used for stock payments that are usually underperforming in the long run – hence, both effects might cancel each other out. Finally, one should consider internal funds. Following the free cash flow theory, one might expect an underperformance of takeovers financed with internal cash because of possible empire building. Besides internal funds, bank loans are similar to internal cash in terms of unrestricted use by management. Therefore, bank loans might also be used for empire building in some cases. All these outlined remarks would imply that the capital market is unable to correctly price the takeover at the announcement. This is conterminous to arguing that the capital market is not efficient in pricing new information. As most academics expect efficient capital markets, I hypothesize that acquirers do not deviate from the expected performance in the long run and that all information is correctly priced around the announcement of the takeover.

Hypothesis 1.3: In the long run, there is no performance deviation for any kind of financing or for any method of payment.

4.3 Data

My international sample is built on two different databases, namely SDC Platinum for data on takeovers and Datastream/Worldscope for accounting data and share prices. To be included in the initial sample of takeovers, the following criteria must be satisfied:

- Acquirer is listed, but there are no restrictions on the listing status of the target
- Announcement date is between 1985 and 2009[1]
- Acquisition is completed
- Acquirer takes over 100 percent of the target
- Transaction value exceeds one million U.S. Dollar
- Financial acquirers are excluded, identified by the primary SIC code
- Information on the source of funds is published
- Percentage of stocks, cash, and others add up to 100 percent
- Ratio of transaction value to acquirer market capitalization four weeks prior the announcement must be above ten percent and below 120 percent[2]

One issue in the context of long-run abnormal returns is serial acquirers, as this might influence the measured returns. For short-run event studies, this problem is neglectable because the returns are measured over very few days. As the long-run event study considers the subsequent three years, serial acquirers are excluded.[3] After that step, 1,018 takeovers remain – 948 of which are covered by Datastream/Worldscope. All amounts, including returns, are denominated in U.S. Dollar.

[1] SDC Platinum started covering international takeovers in 1985. The cutoff at the end of 2009 is necessary to ensure three years of post-merger performance data.

[2] This restriction assures that the takeover is substantial and has long-run impact on the acquiring firm's performance. The threshold of ten percent is in line with the takeover literature (for example, Joehnk and Nielsen, 1974; Walker, 2000; Moeller, Schlingemann, and Stulz, 2005; Rosen, 2006). The threshold of 120 percent is needed because huge mergers might have different long-run implications. See Chatterjee (2000) or Netter, Stegemoller, and Wintoki (2011) for a separate analysis of huge takeovers.

[3] More precisely, acquirers are deleted if they had either completed another takeover within one year prior to the announcement of the considered transaction or had another acquisition announcement in the three years following the completion of the considered transaction.

4.4 Important Variables

4.4.1 Source of Financing

My focus is on the relation of abnormal returns and sources of financing while taking into account different means of payment. Whereas SDC Platinum provides percentages of cash and stock payments, the information for the sources of financing is less precise. Based on textual information, variables regarding the involved sources of financing are generated. One example for the textual information is: *The transaction was financed by bank borrowings and internally generated funds.*[4]

In the next step, I summarize those variables into three categories: any kind of bank financing (*Credit*), debt or equity issue (*NewIssue*), and internal corporate funds (*InternalFinancing*). All variables are set to zero if the respective source of financing is not involved. If the source of financing is the only source, the value of the variable is set to one. If more than one source of financing is used, I scale the variable under the assumption of equal use of all involved sources of financing.[5]

Additionally, I generate one overall variable (*Financing*) to capture the financing effect completely. This overall variable is created in accordance with my hypotheses as well as theoretical considerations, and has internal corporate funds as base case (value of zero), new issues as negative values, and bank financing as positive values.

4.4.2 Control Variables

Also included in the regression models are several firm-specific and transaction-specific control variables, based on previous empirical findings investigating abnormal returns. The payment method is approximated by the percentage of cash payment (*CashPayment*) involved in the takeover. *DifferentNations* and *DifferentIndustries* are cross-country and cross-industry dummy variables, respectively. I also implement dummy variables for friendly takeovers (*FriendlyTakeover*), multiple involved bidders (*MultipleBidders*), and public targets (*PublicTarget*). *CompletionTime* is calculated as the difference in days between the announcement date and the effective date. For the acquirer, the leverage (*Ac-*

[4] In the corresponding takeover, *Megan Media* bought MJC, announced on April 2nd, 2003.

[5] As this assumption might be critical for my results, I show results of dummy variables for each of those variables as part of the robustness tests in Chapter 4.9. The dummy variable is one if the respective source of financing is used – independent of the total number of sources involved. Additionally, I exclude all takeovers with more than one source of financing as part of the robustness tests.

quirerLeverage) and Tobin's Q (*AcquirerTobinsQ*) in the year before the announcement are included. *RelativeSize* is defined as the transaction value divided by the acquirer's market value four weeks before the takeover. *TransactionValue* and *MarketValue* are the reported transaction value and the acquirer's market value four weeks prior to the takeover announcement, respectively. Both values are shown in million U.S. Dollar and are deflated to the beginning of 1985 for a better comparison. Finally, *NetCash* equals the net cash of the acquirer at the year-end before the announcement, divided by the acquirer's market value for better comparison. As *AcquirerLeverage*, *AcquirerTobinsQ*, and *NetCash* have a few outliers, I winsorize those variables so that the most extreme 0.5 percent of the observations at either end are set to the 0.5 or 99.5 percent values. A summary of the control variables is given in Table 4.1.

Table 4.1: List of Control Variables

Variable	Description
CashPayment[1]	Percentage of cash payment in the takeover
DifferentNations[1]	Cross-country dummy, one if different acquirer and target nations
DifferentIndustries[1]	Cross-industry dummy, one if different industries measured by the first two digits of the SIC code
FriendlyTakeover[1]	Dummy with one if takeover is friendly
MultipleBidders[1]	Dummy with one if more than one bidder is involved
PublicTarget[1]	Dummy for status of target, one if target is listed
CompletionTime[1]	Time difference in days between date announced and date effective
AcquirerLeverage[2,3]	Acquirer's leverage in the year before the takeover announcement
AcquirerTobinsQ[2,3]	Tobin's Q of acquirer the year before the takeover announcement
RelativeSize[1]	Transaction value divided by acquirer market value four weeks prior to the announcement date
TransactionValue[1]	Transaction value of the takeover in million U.S. Dollar, deflated to the beginning of 1985
MarketValue[1]	Market value of the acquirer four weeks before the takeover announcement in million U.S. Dollar, deflated to the beginning of 1985
NetCash[1,2,3]	Acquirer's net cash at year-end before the announcement divided by the acquirer's market value four weeks before the takeover

[1] indicates the SDC Platinum database and [2] indicates the Datastream/Worldscope database. Furthermore, [3] shows a winsorization at the bottom and top 0.5 percent.

4.5 Descriptive Statistics

4.5.1 Variable Overview

To provide some information on my sample, Table 4.2 shows descriptive statistics of the major variables. The first three variables are based on the textual information per takeover and display a preference for credit financing. An average of 57.48 percent of the transaction value is financed by banks, and more than 25 percent of the takeovers use bank loans as the sole source of financing. In contrast, financing a takeover with a new issue is rather rare, with a low mean value of 17.59 percent. However, 116 takeovers are partly financed with a new issue and 115 takeovers are fully financed with a new issue. This is not surprising, considering that new issues are regarded as costly and consequently, acquirers often finance the whole transaction value with the new issue. Around one-fourth of the transaction value is, on average, financed with internally available funds in my sample. The predominance of credit financing is also visible in the average value for *Financing* of 39.89 percent.

Table 4.2: Summary Statistics of Firm-Specific and Takeover-Specific Variables

Variable	Obs.	Mean	Std. Dev.	25^{th} Pctl.	50^{th} Pctl.	75^{th} Pctl.
Credit	948	57.48%	40.40%	0.00%	50.00%	100.00%
NewIssue	948	17.59%	34.10%	0.00%	0.00%	0.00%
InternalFinancing	948	24.92%	33.98%	0.00%	0.00%	50.00%
Financing	948	39.89%	66.60%	0.00%	50.00%	100.00%
CashPayment	948	78.50%	30.11%	61.42%	100.00%	100.00%
DifferentNations	948	0.77	0.42	1.00	1.00	1.00
DifferentIndustries	948	0.39	0.49	0.00	0.00	1.00
FriendlyTakeover	948	0.97	0.18	1.00	1.00	1.00
MultipleBidders	948	0.03	0.16	0.00	0.00	0.00
PublicTarget	948	0.30	0.46	0.00	0.00	1.00
CompletionTime	948	81.34	110.16	24.00	50.00	99.50
AcquirerLeverage[2]	908	31.10%	29.83%	8.38%	27.95%	44.58%
AcquirerTobinsQ[2]	892	1.90	1.10	1.22	1.58	2.19
RelativeSize	948	38.37%	25.42%	17.42%	30.91%	52.57%
TransactionValue[1]	948	511.74	1,896.51	16.51	64.71	260.29
MarketValue[1]	948	1,483.15	4,736.11	54.60	225.37	821.90
NetCash[2]	904	4.36%	22.03%	-1.44%	2.63%	10.39%

[1] indicates values in million U.S. Dollar, deflated to the beginning of 1985. Furthermore, [2] shows a winsorization at the bottom and top 0.5 percent. A detailed explanation of all variables is given in Chapter 4.4.

For the method of payment – mostly used as an approximation of the source of financing in recent research – I observe that takeovers are, on average, paid with a cash proportion of 78.50 percent and the first quartile already has over 60 percent of cash payment. The predominance of cash payment compared to stock payment is in line with other studies (for example, De, Fedenia, and Triantis, 1996; Goergen and Renneboog, 2004; Faccio, McConnell, and Stolin, 2006; Akbulut, 2013). Furthermore, it underlines the high average of credit financing when it is assumed that cash payments are mostly financed with bank debt. In over half the considered takeovers, full cash payment is utilized.

Most takeovers in my sample are cross-border acquisitions, meaning that the target and the acquiring firm are located in different countries. Approximately 39 percent are diversifying takeovers with a target in a different industry. As in the earlier study of Andrade, Mitchell, and Stafford (2001) and the large sample of Betton, Eckbo, and Thorburn (2008), most takeovers are friendly and only involve one bidder. Approximately 30 percent of the targets are listed before the takeover, indicating a high proportion of private targets. This proportion is slightly less than the 37 percent of public targets reported in Betton, Eckbo, and Thorburn (2008). The average (median) time between the announcement and the completion is 81.34 days (50 days); both values are close to the sample of Betton, Eckbo, and Thorburn (2008) for public acquirers. The mean (median) pre-takeover leverage of the acquirer is 31.10 percent (27.95 percent), and the pre-takeover Tobin's Q of the acquirer has a mean (median) value of 1.90 (1.58). For both variables, the variation is within a plausible range. For relative size, most takeovers are in a range between 20 percent and 50 percent. The mean (median) relative size equals 38.37 percent (30.91 percent).[6] The mean (median) transaction value is 511.74 million U.S. Dollar (64.71 million U.S. Dollar) with a very high standard deviation. This indicates that a few very large transactions are included in the sample and is in line with Aktas, De Bodt, and Roll (2013). The same holds true for acquirer size with a mean (median) value of 1.48 billion U.S. Dollar (225.37 million U.S. Dollar). Again, the corresponding standard deviation of 4.74 billion U.S. Dollar is very high.

[6]Note that the minimum and maximum relative size is attributable to the sample selection criteria as outlined in Chapter 4.3.

4.5.2 Characteristics Based on Financing Source

Before turning to the descriptive statistics of the returns, Table 4.3 categorizes several firm-specific and takeover-specific variables separated by the source of financing. The last column shows the differences in mean values between characteristics of takeovers fully financed with one source and takeovers financed without that particular source. The table allows one to draw some basic conclusions about how the source of financing might influence and might be influenced by those variables.

Table 4.3: Average Characteristics Based on Source of Financing

	Source of Financing			
Characteristic	Not Involved	Partly	Fully	Fully-Not Involved
RelativeSize				
Credit	34.31%	37.68%	41.60%	7.29%***
NewIssue	37.29%	46.04%	37.34%	0.05%
InternalFinancing	41.36%	35.82%	29.31%	-12.05%***
NetCash				
Credit	7.30%	5.66%	1.35%	-5.95%***
NewIssue	5.57%	2.84%	-1.50%	-7.07%***
InternalFinancing	0.56%	7.26%	16.81%	16.24%***
AcquirerLeverage				
Credit	28.57%	28.77%	34.73%	6.16%**
NewIssue	29.74%	34.01%	36.57%	6.83%*
InternalFinancing	35.91%	25.16%	21.67%	-14.24%***
CompletionTime				
Credit	87.50	85.42	73.91	-13.59
NewIssue	78.62	103.19	76.21	-2.42
InternalFinancing	75.24	88.70	94.02	18.77
CashPayment				
Credit	73.87%	84.79%	76.29%	2.41%
NewIssue	80.16%	78.55%	68.12%	-12.04%***
InternalFinancing	75.34%	84.11%	80.44%	5.11%*

Average values of the variables *RelativeSize*, *NetCash*, *AcquirerLeverage*, *CompletionTime*, and *CashPayment* are displayed for different involvement of the sources of financing. *, **, and *** indicate a significant difference of the mean values on a ten-, five-, and one-percent level. All mean values are based on more than 100 observations.

There are two clear trends for the relative size of a takeover and the implemented source of financing. First, credit-financed takeovers appear relatively larger than takeovers without any bank involvement. If no credit financing is involved, the average relative size is 34.31 percent. For fully credit-financed takeovers, the average relative size increases to 41.60 percent. The resulting difference of 7.29 percentage points is highly significant.

Second, there is a clear tendency toward smaller relative size with increasing internal funds. I do not observe a trend for the proportion of new issue financing, as the average relative size for takeovers without any new issue financing (37.29 percent) is almost identical to the relative size of takeovers that are fully financed with a new issue (37.34 percent). However, the largest average in relative size is shown for partly new issue-financed takeovers, with 46.06 percent. The results suggest that firms use internal financing for smaller takeovers and that they need additional external sources (credit or new issue) for larger takeovers.

As expected, the source of financing is strongly related to the cash level of the acquirer. Firms are more likely to seek bank financing in the form of loans when their pre-merger level of cash is low. Starting at 7.30 percent without any credit, an acquirer in a fully credit-financed takeover has average net cash of only 1.35 percent. The resulting difference in means of -5.95 percentage points is highly significant. For credit financing, the trends with regard to relative size and net cash are both in line with Bharadwaj and Shivdasani (2003). A similar trend for net cash can also be seen for new issue financing, whereas companies with very low cash reserves might even use the proceeds of a new issue not only for the takeover itself, but also to restructure their capital structure and receive additional cash reserves. For internal financing of takeovers, I observe the expected trend of higher proportions if the firm has more cash. This increase in net cash is very plausible and in line with the findings of Martynova and Renneboog (2009). The resulting difference of 16.24 percentage points between full internal financing for a takeover and a takeover without any internal funds is highly significant. The average net cash of 0.56 percent for acquirers that do not use any internal funds implies that those acquirers do not have access to retained earnings – regardless of their preferences for the source of financing.

Even though the variation for average leverage of the acquirer is rather low if categorized by the source of financing, I observe three significant trends. There is a slight trend toward higher pre-merger leverage for more credit and new issue financing. On the other hand, there is a clear decline in pre-merger leverage when the proportion of internal financing rises. The common rationale is that already highly-levered acquirers need additional external capital more often to accomplish an acquisition. In contrast, low pre-merger leverage is an indication for a conservative capital structure with a sufficient amount of cash reserves. Therefore, less-levered acquirers tend to use their internal funds to purchase the target.

The averages for completion time are more inconclusive, and all three differences in mean values lack statistical significance. It seems that higher credit proportions are associated with faster takeover completion and that more internal financing causes lower execution time. The relatively long completion time of 94.02 days for full internal financing might be related to the acquirers' high net cash for those takeovers. It seems reasonable that those acquirers start saving retained earnings before the actual takeover in order to have sufficient internal funds. If that is the case, those takeovers should have no time pressure and therefore, longer completion time is plausible. Interestingly, partly new issue-financed takeovers have the longest completion time, with an average of 103.19 days. This is in line with the previous results, in which partly new issue financing is related to the largest relative size, assuming that larger relative size accompanies longer execution time.

Last but not least, I consider the connection between source of financing and actual payment method. For credit financing, the mean proportion for takeovers without any credit financing (73.87 percent) is almost equal to the cash proportion with full credit financing (76.29 percent). As a consequence, the resulting difference lacks in statistical significance. For new issue financing, I observe a clear and significant trend, as the proportion of cash payment decreases with a rise of new issue financing. Takeovers without a new issue have an average 80.16 percent cash payment, whereas takeovers with completely new issue financing have an average of 68.12 percent cash payment. The resulting difference of -12.04 percentage points is highly significant. This result is reasonable because issued stocks can be used for stock payment, and therefore, the proportion of cash payment decreases. For internal funds, the results are very similar to credit financing, which is rather unsurprising, as both sources of financing are intuitively related to cash payment.

4.5.3 Return Overview

One decisive characteristic of a successful takeover is a positive return – at the announcement date and in the long run after the completion of the takeover. Initial descriptive insights of those returns can be obtained from Table 4.4.

The takeover announcements are surrounded by positive reactions of the capital markets. The mean (median) value of cumulative abnormal returns is 1.69 percent (1.07 percent). However, the variation is large, and a decent size of the acquirers in my sample

Table 4.4: Summary Statistics of Returns

Return	Obs.	Mean	Std. Dev.	25^{th} Pctl.	50^{th} Pctl.	75^{th} Pctl.
CAR	833	1.69%	8.76%	-2.46%	1.07%	5.11%
$BHAR_{MA}$	866	-14.28%	151.23%	-67.41%	-6.29%	46.65%
$BHAR_{CA}$	814	-4.93%	170.96%	-48.70%	1.36%	59.74%
R_p	319	0.80%	6.85%	-2.77%	0.77%	4.52%

A detailed explanation of all returns is given in Chapter 3. The average cumulative abnormal returns are based on the market model, with an estimation period starting 190 days prior to the announcement and ending 41 days prior to the announcement. The event window is a symmetric three-day window around the announcement.

experiences negative announcement returns. One-quarter of acquirers loses at least 2.46 percent of its respective market capitalization in the three-day window.

The average positive observation in the short run reverses into an average negative implication in the long run. The mean (median) buy-and-hold abnormal return is -14.28 percent and -4.93 percent (-6.29 percent and 1.36 percent), depending on the selection procedure for the benchmark firms. Again, the variation, as shown by the respective standard deviation and the difference between the 25^{th} percentile and 75^{th} percentile, is very large. For the portfolio of event firms, I observe an average (median) return of 0.80 percent (0.77 percent). As this monthly return is without any adjustment for the market, no conclusions regarding the performance can be drawn.

4.6 Choice of Financing Source

The first major contribution of this investigation is a close look at the decision on how to finance a takeover. Whereas Bharadwaj and Shivdasani (2003) use unconnected regressions, basically always explaining the degree of bank involvement, Martynova and Renneboog (2009) use a connected model to explain the source of financing conditioned on the payment method. Based on the above descriptive statistics, which suggest that acquirers use internal financing for smaller takeovers and that they need additional external sources (credit or new issue) for larger takeovers, I proceed with a different approach. I claim that the source of financing is decided in a two-step process as shown in Figure 4.1, where internal financing is preferred over external financing – similar to the conclusions of the pecking order theory. If the acquirer decides to use additional external funds, the exact proportions will be chosen in a second step. Again, this is in line with the descriptive

statistics, as I observe a trend of higher proportions of internal financing if the acquirer has more cash.

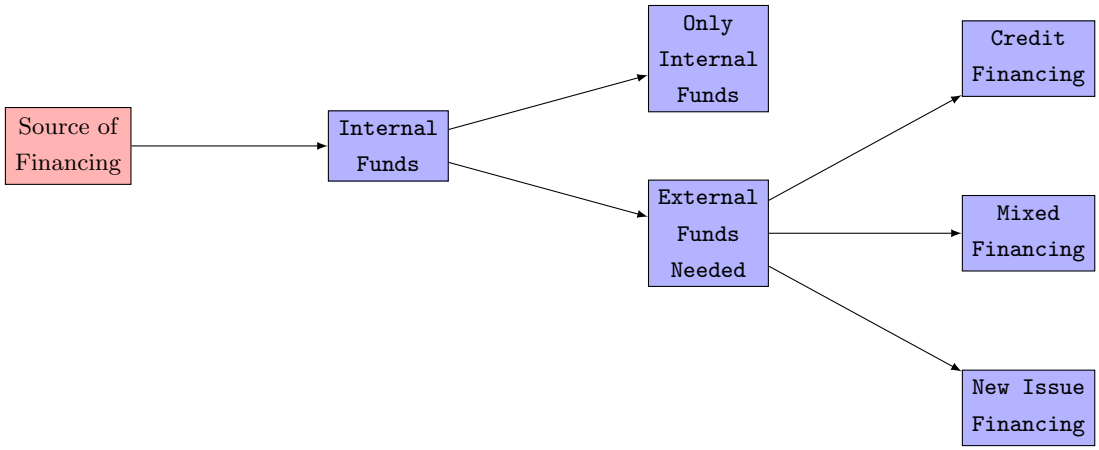

Figure 4.1: Two-Step Decision on Source of Financing

To describe this structure empirically, I use a sequential logit model. The results of this model are shown in Table 4.5. Regression (1) describes the first step of choosing full internal financing or at least some external financing. Regression (2) and Regression (3) of Table 4.5 describe the decision of mixed financing compared to full new issue and full credit financing, respectively. Note that Regression (2) and Regression (3) have 100 fewer observations than Regression (1), as 100 takeovers are fully financed with internal funds and hence, are not included in the second step of the sequential logit model.

Starting with the first step of the decision process in Regression (1), the relative size of the target, the completion time, and the acquirer's cash level significantly explain whether or not acquirers rely solely on internal funds. A (relatively) larger target increases the probability that the acquirer uses some external financing; this result is in line with the findings of Bharadwaj and Shivdasani (2003). Even though the actual completion time of the takeover can only be measured afterwards, longer completion time is associated with a higher probability of full financing with internal funds. This could be explained by the fact that, on average, the realized completion time provides an estimation of the expected completion time before the takeover. Hence, if managers want to close the deal relatively quickly, they tend to use some sort of external funds. As expected and already indicated by the descriptive statistics, a higher pre-takeover level of cash helps acquirers finance the whole acquisition with internal funds; again, this result is similar to the study of

Table 4.5: Sequential Logit Regression for Choosing the Source of Financing

	(1) First Step: Internal vs. External Financing	(2) Second Step: Proportion and Type of External Financing	(3)
Dependent Variable	1 if Fully Internal	1 if Fully New Issue	1 if Fully Credit
CashPayment	-0.248	-1.751***	-0.905***
	(0.3867)	(0.3947)	(0.2792)
RelativeSize	-2.323**	-0.457	0.247
	(1.1026)	(1.0062)	(0.6019)
CompletionTime	0.00215**	-0.00102	-0.00198**
	(0.0010)	(0.0011)	(0.0009)
AcquirerLeverage	-0.552	1.187***	1.028***
	(0.4327)	(0.4188)	(0.3494)
AcquirerTobinsQ	-0.0529	0.248**	0.139*
	(0.1138)	(0.1025)	(0.0799)
ln(MarketValue)	0.206	-0.252	-0.179
	(0.2938)	(0.3714)	(0.2341)
ln(TransactionValue)	-0.448	0.124	0.106
	(0.3012)	(0.3750)	(0.2433)
NetCash	2.985***	-1.605**	-0.929*
	(0.6810)	(0.6284)	(0.5264)
DifferentNations	-0.409	-0.398	0.214
	(0.2542)	(0.2660)	(0.1903)
DifferentIndustries	-0.135	0.0662	0.000325
	(0.2300)	(0.2363)	(0.1631)
FriendlyTakeover	-0.460	0.987	0.733*
	(0.4418)	(0.7793)	(0.3886)
MultipleBidders	0.308	-13.13***	0.225
	(0.6281)	(0.4005)	(0.4433)
PublicTarget	0.499*	-0.460	0.0542
	(0.2814)	(0.3401)	(0.2027)
Observations	883	783	783

Heteroscedasticity-consistent standard errors are in parentheses. *, **, and *** indicate a significant difference from zero on a ten-, five-, and one-percent level. A detailed explanation of all variables is given in Chapter 4.4. For an overview of the model, see Figure 4.1. Regression (1) determines if the acquirer uses external funds at all or relies completely on internal funds. Regression (2) and Regression (3) model the second step, in which the acquirer decides on the proportion of new issue and credit financing, respectively.

Bharadwaj and Shivdasani (2003). It is worth noting that the proportion of cash payment is not significantly associated with the initial decision on the usage of external financing.

Though, this changes for Regression (2) and Regression (3). Higher cash payment makes it less likely that the takeover is fully financed with one source of external funds – no matter if this source is new issue or credit financing. The significance of relative size drops in both regressions of the second step compared to the first step. For completion

time, one can observe negative values in the second step, with one of the two being significant. Again, assuming that the realized completion time is an approximation for the expected one, acquirers tend to rely more on external financing for quicker closing of the deal. An acquirer's pre-takeover leverage and Tobin's Q are both positively related to a higher probability of full external financing. For the former, one might expect that acquirers with high leverage have already consumed all internal resources. As expected, more cash is inversely correlated with more external financing, and those acquirers tend to implement a mix of financing sources instead of one predominant external source. Last but not least, a negative and highly significant coefficient for multiple bidders is observed for Regression (2), but a comparatively small, insignificant, and positive coefficient is shown for Regression (3). One could argue that in the case of competing bids, acquirers depart from new issue financing to save time, as the completion time in Table 4.5 is the highest for partly new issue-financed takeovers.

Overall, Hypothesis 1.1 is mostly confirmed. Whereas the method of payment is significant in the second step, the relative size influences the first step of the financing decision. Completion time plays an important role for both steps, yet remains insignificant for the decision of fully financing a takeover with a new issue. Only the acquirer's pre-takeover level of cash is significant in all three regressions and always points towards larger proportion of internal financing with a higher cash level.

4.7 Short-Run Abnormal Returns

4.7.1 Overview of Short-Run Abnormal Returns

This chapter investigates the short-run abnormal returns around the announcement of the takeover in more detail. Before turning to different regression settings, Table 4.6 shows average cumulative abnormal returns for different categories regarding the source of financing and the payment method. Furthermore, a total row and a total column are provided where all observations of the respective source of financing or payment method are considered. As the sample sizes in several categories are small, I block out categories with fewer than five observations and focus on the total row and total column in my interpretation.

Table 4.6: Average Cumulative Abnormal Returns

	Payment Method			
Source of Financing	Stock Payment	Mixed Payment	Cash Payment	Total
Credit				
Not Involved	-1.62%	0.73%	1.14%**	0.69%
	[-0.32]	[0.59]	[1.98**]	[1.39]
	(8)	(61)	(103)	(224)
Partly		0.74%	2.13%***	1.78%***
		[0.85]	[2.34**]	[2.97***]
		(82)	(172)	(297)
Fully	-2.35%	3.57%***	2.54%***	2.32%***
	[-0.85]	[2.87***]	[4.42***]	[5.17***]
	(11)	(65)	(150)	(312)
NewIssue				
Not Involved	0.00%	2.05%***	2.32%***	2.05%***
	[0.00]	[2.64***]	[4.38***]	[5.67***]
	(13)	(133)	(340)	(625)
Partly		0.64%	0.81%	0.95%*
		[0.51]	[0.93]	[1.41]
		(46)	(41)	(106)
Fully	-5.65%	1.23%	0.96%	0.21%
	[-1.03]	[0.60]	[1.05]	[0.25]
	(6)	(29)	(44)	(102)
InternalFinancing				
Not Involved	-3.51%*	2.32%***	2.12%***	1.72%***
	[-1.32]	[2.54**]	[4.61***]	[4.70***]
	(17)	(119)	(217)	(472)
Partly		1.03%*	2.09%***	1.82%***
		[1.02]	[2.12**]	[2.75***]
		(69)	(157)	(264)
Fully		-0.46%	1.50%**	1.20%**
		[-0.31]	[1.91*]	[1.89*]
		(20)	(51)	(97)
Total	-1.57%	1.62%***	2.03%***	1.69%***
	[-0.62]	[2.54**]	[4.59***]	[5.56***]
	(20)	(208)	(425)	(833)

Average cumulative abnormal returns, Boehmer, Masumeci, and Poulsen (1991) test statistic in squared brackets, and observations in parentheses for two dimensions: source of financing and payment method. Classes with fewer than five observations are removed. *, **, and *** indicate a significance of average cumulative abnormal returns on a ten-, five-, and one-percent level using the respective test statistic. Abnormal returns are calculated as explained in Chapter 3.1, with the market model for a symmetric three-day event window around the announcement date. The estimation period starts 190 days before and ends 41 days prior to the announcement.

For credit-financed acquisitions, one can see higher abnormal returns when the proportion of credit increases. Whereas my sample of takeovers without any credit financing has abnormal returns that are not statistically different from zero, fully credit-financed acquisitions realize the highest abnormal returns of any consolidated group, with 2.32 percent.[7] The preliminary conclusion is that an extension of bank involvement is assigned to an increase in abnormal returns around the announcement.

In contrast to credit financing, new issue financing seems to have negative implications for companies. Highly significant abnormal returns of 2.05 percent for takeovers without new issue financing decrease to insignificant abnormal returns close to zero when the whole acquisition is financed with a new issue.

Table 4.6 is less conclusive for internal financing, and no trend is visible. Nevertheless, it is worth noting that the abnormal returns are higher for internal financing than for new issue financing.

Looking at the payment method, cash payments are superior to stock payments. This does not only hold true for the total row, but also for all displayed categories. Even mixed payments are associated with considerably better abnormal returns than pure stock payments.

Altogether, this univariate setting shows preliminary evidence that cash payment is superior to stock payment and that new issue financing underperforms the other two forms of financing. Additionally, I provide evidence that credit-financed takeovers perform best. One drawback of this univariate analysis could be that the well-known payment effect is causing these abnormal returns instead of the actual financing effect. Hence, to investigate those results further, I turn to multivariate regression settings in the following.

4.7.2 Effects of Credit Financing

Table 4.7 starts with *Credit* as independent variable to capture the potential benefits of bank financing. Whereas Regression (1) has no fixed effects, the other three regressions have different fixed effect settings for effective year, industries, and nations.

[7] The average cumulative abnormal return for fully credit-financed and fully cash-paid takeovers in my sample is 2.54 percent. This value is slightly below the estimation of Bharadwaj and Shivdasani (2003) for their sample of tender offers. Comparable to my results, they find no significant abnormal returns for takeovers without any bank involvement and show an increase in abnormal returns with higher loans. Similarly, Martynova and Renneboog (2009) find an outperformance of debt-financed takeovers.

Table 4.7: OLS Regressions for Credit Financing

	(1)	(2)	(3)	(4)
Dependent Variable		CAR		
Credit	0.0148**	0.0164**	0.0165**	0.0196**
	(0.0073)	(0.0076)	(0.0075)	(0.0079)
CashPayment	0.0282***	0.0316***	0.0280**	0.0282**
	(0.0105)	(0.0108)	(0.0112)	(0.0118)
RelativeSize	-0.00325	-0.0106	-0.00756	-0.0201
	(0.0389)	(0.0403)	(0.0405)	(0.0420)
CompletionTime	-0.0000158	-0.0000118	-0.0000235	0.000000414
	(0.0000)	(0.0000)	(0.0000)	(0.0000)
AcquirerLeverage	-0.00862	-0.0110	-0.0103	-0.0113
	(0.0102)	(0.0101)	(0.0106)	(0.0110)
AcquirerTobinsQ	0.00188	0.00263	0.00427	0.00581*
	(0.0033)	(0.0033)	(0.0032)	(0.0034)
ln(MarketValue)	-0.00978	-0.0120	-0.0113	-0.0133
	(0.0146)	(0.0151)	(0.0153)	(0.0162)
ln(TransactionValue)	0.00760	0.00977	0.00863	0.00924
	(0.0149)	(0.0154)	(0.0156)	(0.0165)
NetCash	-0.00580	-0.00632	-0.00146	-0.0123
	(0.0143)	(0.0145)	(0.0148)	(0.0175)
DifferentNations	-0.00572	-0.00694	-0.00806	-0.0184
	(0.0074)	(0.0077)	(0.0079)	(0.0119)
DifferentIndustries	0.00734	0.00770	0.00358	0.00292
	(0.0060)	(0.0062)	(0.0068)	(0.0071)
FriendlyTakeover	-0.0122	-0.0160	-0.0180	-0.0328
	(0.0426)	(0.0438)	(0.0413)	(0.0428)
MultipleBidders	-0.00315	-0.00963	-0.00692	-0.00507
	(0.0098)	(0.0094)	(0.0098)	(0.0125)
PublicTarget	-0.0264***	-0.0276***	-0.0256***	-0.0219***
	(0.0067)	(0.0073)	(0.0075)	(0.0085)
Constant	0.0299	-0.0516	-0.0225	0.254**
	(0.0530)	(0.0597)	(0.0643)	(0.1265)
Year Fixed Effects	No	Yes	Yes	Yes
Industry Fixed Effects	No	No	Yes	Yes
Nation Fixed Effects	No	No	No	Yes
Observations	784	784	784	784
Adjusted R^2	0.032	0.030	0.034	0.071

Heteroscedasticity-consistent standard errors are in parentheses. *, **, and *** indicate a significant difference from zero on a ten-, five-, and one-percent level. A detailed explanation of all variables is given in Chapter 4.4. Year fixed effects are based on the effective year. Industry fixed effects include acquirer as well as target industry fixed effects, based on the first digit of the respective primary SIC code. Acquirer and target are considered for nation fixed effects. The cumulative abnormal returns are calculated as explained in Chapter 3.1, with a market model for a symmetric three-day event window around the announcement date. The estimation period starts 190 days before and ends 41 days prior to the announcement.

As expected based on the previous univariate setting and the outlined theory, credit financing has a positive effect on the abnormal returns around the announcement in all four regressions. The coefficient is always statistically significant at a five-percent level and ranges between 0.0148 and 0.0196 depending on the fixed effects. This implies that a change from no credit financing to full credit financing yields 1.96 percentage points higher abnormal returns based on Regression (4) – all else being equal. The estimate is also very close to the 1.63 percentage points difference in mean values between no credit financing and full credit financing, as reported in Table 4.6.

The positive effect of credit financing is most likely caused by a bank's monitoring and screening functions. Both help to reduce the information asymmetry between managers and shareholders concerning the takeover. If banks screen the acquisition decision in detail and only provide loans in good cases, credit-financed takeovers will convey a positive sign to the capital market. Furthermore, shareholders might expect the bank to monitor the acquirer after the takeover. A third rationale for the positive effects of credit financing is based on empire building considerations. Debt prevents managers from wasting free cash flows for their personal benefits because loans limit free cash flows by additional interest and future repayment. Even though not directly linked to bank loans as source of financing, using credit instead of new issue financing suggests that the shares are currently not overvalued. Otherwise, the management likely would have issued new shares. The sign of a missing overvaluation could have a positive influence on the current share price.

Besides the variable for credit financing, the payment method and the dummy variable for public targets are highly significant. The former is in line with previous research on the payment effect as outlined in Chapter 2.3. Moreover, the sign is as expected and the coefficient size is economically reasonable. Fully cash-paid takeovers generate around three percentage points higher abnormal returns than acquisitions without any cash payment – all else being equal. The dummy for public targets has a negative coefficient, meaning that public targets underperform private targets or subsidiaries by more than two percentage points – again, all else being equal.

4.7.3 Effects of New Issue Financing

For new issue financing, Table 4.8 displays similar regression settings as Table 4.7 for credit financing, implementing *NewIssue* as an independent variable.

Table 4.8: OLS Regressions for New Issue Financing

	(1)	(2)	(3)	(4)
Dependent Variable	CAR			
NewIssue	-0.0188**	-0.0206**	-0.0196**	-0.0230**
	(0.0091)	(0.0094)	(0.0093)	(0.0099)
CashPayment	0.0267**	0.0301***	0.0270**	0.0276**
	(0.0104)	(0.0107)	(0.0110)	(0.0117)
RelativeSize	-0.00681	-0.0147	-0.0115	-0.0250
	(0.0391)	(0.0406)	(0.0408)	(0.0423)
CompletionTime	-0.0000205	-0.0000164	-0.0000271	0.00000127
	(0.0000)	(0.0000)	(0.0000)	(0.0000)
AcquirerLeverage	-0.00669	-0.00903	-0.00850	-0.00928
	(0.0103)	(0.0101)	(0.0106)	(0.0110)
AcquirerTobinsQ	0.00213	0.00284	0.00439	0.00587*
	(0.0033)	(0.0033)	(0.0032)	(0.0034)
ln(MarketValue)	-0.0126	-0.0151	-0.0143	-0.0171
	(0.0146)	(0.0151)	(0.0153)	(0.0161)
ln(TransactionValue)	0.0107	0.0131	0.0120	0.0134
	(0.0148)	(0.0154)	(0.0156)	(0.0164)
NetCash	-0.0120	-0.0127	-0.00796	-0.0204
	(0.0140)	(0.0141)	(0.0143)	(0.0174)
DifferentNations	-0.00564	-0.00704	-0.00812	-0.0181
	(0.0073)	(0.0076)	(0.0078)	(0.0120)
DifferentIndustries	0.00725	0.00751	0.00369	0.00308
	(0.0060)	(0.0062)	(0.0068)	(0.0071)
FriendlyTakeover	-0.0117	-0.0158	-0.0178	-0.0328
	(0.0426)	(0.0438)	(0.0413)	(0.0428)
MultipleBidders	-0.00313	-0.00881	-0.00583	-0.00397
	(0.0097)	(0.0094)	(0.0098)	(0.0125)
PublicTarget	-0.0277***	-0.0291***	-0.0273***	-0.0242***
	(0.0068)	(0.0074)	(0.0075)	(0.0085)
Constant	0.0456	-0.0309	-0.00519	0.270**
	(0.0542)	(0.0613)	(0.0658)	(0.1284)
Year Fixed Effects	No	Yes	Yes	Yes
Industry Fixed Effects	No	No	Yes	Yes
Nation Fixed Effects	No	No	No	Yes
Observations	784	784	784	784
Adjusted R^2	0.033	0.031	0.035	0.071

Heteroscedasticity-consistent standard errors are in parentheses. *, **, and *** indicate a significant difference from zero on a ten-, five-, and one-percent level. A detailed explanation of all variables is given in Chapter 4.4. Year fixed effects are based on the effective year. Industry fixed effects include acquirer as well as target industry fixed effects, based on the first digit of the respective primary SIC code. Acquirer and target are considered for nation fixed effects. The cumulative abnormal returns are calculated as explained in Chapter 3.1, with a market model for a symmetric three-day event window around the announcement date. The estimation period starts 190 days before and ends 41 days prior to the announcement.

Compared to credit financing, Table 4.8 reveals very different results, as abnormal returns decrease when the proportion of new issue financing increases. With significant estimates on a five-percent level between -0.0230 and -0.0188, the effect is the opposite of credit financing in all four regression settings. Completely financing a takeover with new issues instead of other sources yields to negative abnormal returns of around two percent. Again, the estimates in the regression settings are close to the 1.84 percentage points difference in mean values between no new issue financing and full new issue financing as reported in Table 4.6.

An explanation for this could be an expected overvaluation by shareholders as suggested by the pecking order theory. Therefore, capital markets react with a downward adjustment of the share price, regardless of the actual quality of the takeover. Another possible explanation is that equity issues increase the equity portion controlled by management, and if those managers want to extend their power, this source of financing is strictly preferred. In both cases, those low abnormal returns can be interpreted as indirect costs for shareholders when the source of financing is a new issue.

As seen in the last chapter, the only relevant controls are the variable for cash payment and the dummy for public targets. The signs and coefficient sizes of both variables are very close to the results in Table 4.7.

4.7.4 Credit, New Issue, and Internal Financing

So far, I only consider one source of financing simultaneously in the regressions. This means that the effect of credit financing (new issue financing) in Table 4.7 (Table 4.8) is compared to all other takeovers without that particular source of financing. However, it might be interesting to examine the effects of all three different variables at the same time. As mentioned in Chapter 4.4, I create a new variable (*Financing*) to account for all sources of financing in one variable. This variable is constructed based on the previous results and the intuition that internal financing serves as base case. Therefore, *Financing* has the value of zero if the takeover is fully financed with internally available funds. Because new issue financing had previously negative effects on cumulative abnormal returns, any new issue-financed proportion enters the variable negatively. In contrast, credit financing seems to have a positive influence on cumulative abnormal returns. Hence, credit financing enters positively into *Financing*. Table 4.9 shows the corresponding regression results.

Table 4.9: OLS Regressions for Financing

	(1)	(2)	(3)	(4)
Dependent Variable		CAR		
Financing	0.0102**	0.0113**	0.0110**	0.0130***
	(0.0046)	(0.0047)	(0.0047)	(0.0049)
CashPayment	0.0270***	0.0303***	0.0270**	0.0274**
	(0.0105)	(0.0108)	(0.0111)	(0.0117)
RelativeSize	-0.00580	-0.0134	-0.0103	-0.0235
	(0.0388)	(0.0403)	(0.0405)	(0.0420)
CompletionTime	-0.0000172	-0.0000134	-0.0000248	0.00000109
	(0.0000)	(0.0000)	(0.0000)	(0.0000)
AcquirerLeverage	-0.00778	-0.0101	-0.00953	-0.0104
	(0.0103)	(0.0101)	(0.0106)	(0.0110)
AcquirerTobinsQ	0.00198	0.00273	0.00433	0.00582*
	(0.0033)	(0.0033)	(0.0032)	(0.0034)
ln(MarketValue)	-0.0113	-0.0137	-0.0130	-0.0153
	(0.0145)	(0.0151)	(0.0153)	(0.0161)
ln(TransactionValue)	0.00917	0.0115	0.0104	0.0114
	(0.0148)	(0.0154)	(0.0156)	(0.0164)
NetCash	-0.00854	-0.00925	-0.00451	-0.0161
	(0.0140)	(0.0141)	(0.0144)	(0.0173)
DifferentNations	-0.00599	-0.00726	-0.00837	-0.0183
	(0.0074)	(0.0077)	(0.0079)	(0.0119)
DifferentIndustries	0.00734	0.00770	0.00376	0.00309
	(0.0060)	(0.0062)	(0.0068)	(0.0071)
FriendlyTakeover	-0.0121	-0.0160	-0.0180	-0.0329
	(0.0426)	(0.0438)	(0.0413)	(0.0428)
MultipleBidders	-0.00319	-0.00928	-0.00640	-0.00469
	(0.0098)	(0.0094)	(0.0099)	(0.0126)
PublicTarget	-0.0271***	-0.0285***	-0.0266***	-0.0231***
	(0.0068)	(0.0073)	(0.0075)	(0.0084)
Constant	0.0378	-0.0424	-0.0139	0.266**
	(0.0533)	(0.0599)	(0.0649)	(0.1270)
Year Fixed Effects	No	Yes	Yes	Yes
Industry Fixed Effects	No	No	Yes	Yes
Nation Fixed Effects	No	No	No	Yes
Observations	784	784	784	784
Adjusted R^2	0.034	0.032	0.036	0.073

Heteroscedasticity-consistent standard errors are in parentheses. *, **, and *** indicate a significant difference from zero on a ten-, five-, and one-percent level. A detailed explanation of all variables is given in Chapter 4.4. Year fixed effects are based on the effective year. Industry fixed effects include acquirer as well as target industry fixed effects, based on the first digit of the respective primary SIC code. Acquirer and target are considered for nation fixed effects. The cumulative abnormal returns are calculated as explained in Chapter 3.1, with a market model for a symmetric three-day event window around the announcement date. The estimation period starts 190 days before and ends 41 days prior to the announcement.

As my previous results suggest, the new variable has a positive sign and is statistically significant. Its coefficient is slightly above one percent, which implies a one-percentage point decline in abnormal returns if the takeover is fully financed with a new issue instead of internal funds. Fully financing an acquisition with credit instead of internal funds increases cumulative abnormal returns by one percentage point. Combining those two considerations, a fully credit-financed acquisition outperforms a fully new issue-financed acquisition by slightly more than two percentage points over the three-day window – all else being equal. This effect is huge in economic terms, with an average acquirer's market capitalization four weeks before the takeover announcement of 1.48 billion U.S. Dollar according to Table 4.2. Hence, a change of two percent leads to an almost 30 million U.S. Dollar wealth implication for the average acquirer's shareholders over three days.

For the control variables, cash payment and the dummy for public targets again retain their estimated coefficients as well as their significance. Interestingly, the source of financing exceeds the payment method regarding the significance level in Regression (4), although the point estimate is lower. Summarizing my results so far, cash payment performs better than stock payment. New issue financing underperforms other sources of financing. And last but not least, bank-financed takeovers perform superior to other sources of financing in the short run. Furthermore, the estimated coefficients and the significance levels are very stable over different regression settings. Hypothesis 1.2 is fully confirmed. Besides the source of financing, both the method of payment and a possible listing of the target have steady influences on the cumulative abnormal returns of acquirers.

4.8 Long-Run Abnormal Returns

4.8.1 BHAR Approach

After analyzing the effects on short-run abnormal returns, the third focus of this study is on long-run implications of the source of financing. Furthermore, similar analyses are conducted for the means of payment to allow a comparison to previous results. As in Table 4.6, Table 4.10 and Table 4.11 show the average buy-and-hold abnormal returns of the subsequent three years categorized by the source of financing and the payment method. Whereas Table 4.10 uses the market capitalization-adjusted benchmark firms, Table 4.11 employs the country-adjusted benchmark firms.

Table 4.10: Average Market Capitalization-Adjusted Buy-and-Hold Abnormal Returns

	Payment Method			
Source of Financing	Stock Payment	Mixed Payment	Cash Payment	Total
Credit				
Not Involved	-1.79%	-31.62%	-35.04%**	-26.14%**
	(10)	(59)	(106)	(224)
Partly		-7.39%	-10.47%	-7.14%
		(76)	(170)	(292)
Fully	-87.53%	-12.32%	-7.29%	-12.65%
	(12)	(77)	(170)	(350)
NewIssue				
Not Involved	-83.99%	-16.11%	-14.90%**	-14.26%**
	(13)	(141)	(358)	(658)
Partly		22.59%	-39.34%**	-10.33%
		(39)	(45)	(104)
Fully	9.29%	-62.05%**	8.63%	-18.34%
	(8)	(32)	(43)	(104)
InternalFinancing				
Not Involved	-48.81%	-20.10%	-7.25%	-13.68%*
	(20)	(130)	(238)	(511)
Partly		3.10%	-11.51%	-4.86%
		(64)	(155)	(259)
Fully		-53.40%	-60.84%***	-42.88%**
		(18)	(53)	(96)
Total	-48.56%	-11.47%	-15.10%**	-14.28%***
	(22)	(398)	(446)	(866)

Average buy-and-hold abnormal returns and observations in parentheses for two dimensions: source of financing and payment method. Classes with fewer than five observations are removed. *, **, and *** indicate a significance of average buy-and-hold abnormal returns on a ten-, five-, and one-percent level. Abnormal returns are calculated with the market capitalization-adjusted benchmark firms as described in Chapter 3.2.

The first interesting result of Table 4.10 (Table 4.11) is an average performance of -14.28 percent (-4.93 percent) for the whole sample compared to the market capitalization-adjusted (country-adjusted) benchmark firms. For the market capitalization-adjusted benchmarks, this underperformance is statistically significant; however, the significance disappears in case of the country-adjusted benchmarks.[8] As before, sample sizes in several categories are small, and in my interpretation, I focus on the total row and total column.

[8]Because of the problems with long-run abnormal returns as outlined in Chapter 3.2, I implement a bootstrap method to conduct additional significance tests. With 1,000 repetitions, the significance levels for the underperformance of -14.28 percent (market capitalization-adjusted benchmarks) and for the underperformance of -4.93 percent (country-adjusted benchmarks) are both unchanged.

Table 4.11: Average Country-Adjusted Buy-and-Hold Abnormal Returns

	Payment Method			
Source of Financing	Stock Payment	Mixed Payment	Cash Payment	Total
Credit				
Not Involved	-75.92%***	13.02%	-20.48%	-5.43%
	(8)	(55)	(99)	(204)
Partly		11.57%	-1.02%	-0.45%
		(75)	(163)	(284)
Fully	-30.18%	-35.34%	-4.18%	-8.52%
	(11)	(75)	(149)	(326)
NewIssue				
Not Involved	-30.18%	-14.20%	-1.32%	-2.27%
	(11)	(134)	(326)	(614)
Partly		35.05%	-26.11%*	-4.07%
		(40)	(46)	(105)
Fully	-80.72%**	-18.27%	-30.35%	-23.09%
	(7)	(31)	(39)	(95)
InternalFinancing				
Not Involved	-49.84%	-18.52%	-11.52%	-10.26%
	(18)	(129)	(213)	(480)
Partly		20.23%	0.69%	1.85%
		(60)	(148)	(247)
Fully		6.78%	-9.28%	5.21%
		(16)	(50)	(87)
Total	-49.44%	-0.67%	-6.85%	-4.93%
	(19)	(384)	(411)	(814)

Average buy-and-hold abnormal returns and observations in parentheses for two dimensions: source of financing and payment method. Classes with fewer than five observations are removed. *, **, and *** indicate a significance of average buy-and-hold abnormal returns on a ten-, five-, and one-percent level. Abnormal returns are calculated with the country-adjusted benchmark firms as described in Chapter 3.2.

In Table 4.10, I observe a significant underperformance only for takeovers fully financed with internal funds. For all other sources of financing, the abnormal returns are insignificant and vary between -18.34 percent for takeovers fully financed with new issues and -4.86 percent for takeovers partly financed with internal funds. As expected, stock payment underperforms takeovers with mixed or full cash payment by more than 30 percentage points. However, due to the small sample size, this underperformance of fully stock-paid takeovers is not significant in a statistical manner.

Looking at internal funds in Table 4.11, the major disadvantage of buy-and-hold abnormal returns is obvious. The significant underperformance of -42.88 percent of takeovers fully financed with internal funds compared to the market capitalization-adjusted bench-

mark firms turns into an insignificant outperformance of 5.21 percent compared to the country-adjusted benchmark firms. Hence, the matching of benchmark firms has a crucial influence on the results, and it is questionable which sample of benchmark firms is more appropriate. In general, the country-adjusted analysis in Table 4.11 shows smaller underperformances than in Table 4.10. The effect of superiority of cash payment to stock payment persists, although it is again insignificant. The same can be said for the underperformance of full new issue financing which is in both tables insignificant but distinct with -18.34 percent and -23.09 percent, respectively.

As Table 4.10 and Table 4.11 do not reveal clear tendencies and even allow opposing conclusions, I turn to the more stable calendar-time portfolio approach in the remaining of this chapter.

4.8.2 Calendar-Time Portfolio Approach

The respective portfolios for the calendar-time approach are based on all event firms that completed a takeover in the past 36 months and only include acquirers with one source of financing (credit, new issue, or internal financing) or one payment method (cash or stock). Acquirers with a mixed payment method or more than one source of financing are not included in the respective portfolios.[9] Besides the alphas of the calendar-time portfolio approach, Table 4.12 also provides means of monthly raw returns and excess (above the risk-free rate) returns.

With regard to the source of financing, takeovers that are fully financed with credit or internal funds seem to perform in line with the Carhart (1997) four-factor model.[10] For takeovers financed with new issues, both alphas are negative, and the alpha in the WLS approach is highly significant. This result suggests that the portfolio of acquirers that fully financed their takeover with new issues underperforms the market after controlling for size, value, and momentum effects. Furthermore, the WLS estimate with -1.05 percent per month is also large in an economical sense.[11] This is in line with studies showing an

[9] It is worth noting that over 60 percent of the sample is completely financed with one source of financing.

[10] This result for credit financing is in sharp contrast to the results of Billett, Flannery, and Garfinkel (2006), who find an underperformance after announcing a bank loan.

[11] Note that the variation of event firms in the portfolio is quite large and therefore, the WLS approach is more reliable than values estimated with the OLS approach. For example, the portfolio of event firms that fully paid with cash varies up to 181.

Table 4.12: Long-Run Returns and Alphas for Calendar-Time Portfolio Approach

Characteristic	Mean Return	Mean Excess Return	OLS-Alpha	WLS-Alpha
Credit	0.22%	-0.08%	-0.38%	0.00%
	(303)	(303)	(303)	(303)
NewIssue	0.03%	-0.22%	-0.56%	-1.05%***
	(255)	(255)	(255)	(255)
InternalFinancing	0.56%	0.26%	0.16%	-0.22%
	(295)	(295)	(295)	(295)
CashPayment	0.55%	0.25%	-0.06%	0.01%
	(319)	(319)	(319)	(319)
StockPayment	0.69%	0.48%	0.07%	-0.61%
	(189)	(189)	(189)	(189)

Mean returns of the portfolios, mean excess returns (returns over the risk-free rate) of the portfolios, and alphas for the calendar-time portfolio approach using an OLS approach and a WLS approach are shown. The number of considered months are given in parentheses. *StockPayment* is defined in a similar way as *CashPayment* and represents the percentage of stock payment in the takeover. A detailed explanation of the calendar-time portfolio approach can be found in Chapter 3.2. All portfolios only consider acquirers that fully finance their takeover with one source of financing or only use one payment method. *, **, and *** indicate a significant difference from zero on a ten-, five-, and one-percent level. For the calendar-time portfolio approach, heteroscedasticity-consistent and autocorrelation-adjusted (up to three months) standard errors are implemented.

underperformance after issuing equity (for example, Ritter, 1991; Loughran and Ritter, 1995; Spiess and Affleck-Graves, 1995; Butler et al., 2011).

Interestingly, this does not hold true for takeovers with complete stock payment. Without any market adjustment, those takeovers yield the highest average raw and excess returns. However, this performance declines in the WLS approach to an insignificant alpha of -0.61 percent. One explanation of this sharp contrast between the mean returns and the alpha in the WLS approach could be that stocks as means of payment are systematically used in times of high valuations and hence, are clustered in boom times. In contrast, the performance of fully cash-paying acquirers is close to the expectations of the model with insignificant alphas of -0.06 percent (OLS approach) and 0.01 percent (WLS approach).

Concluding those long-run results, new issue financing and stock payment tend to underperform in the subsequent years. Even though not all estimations result in a statistically significant difference from zero, the underperformance is large in an economical way. For the other sources of financing and cash payment, I mostly observe estimates in line with efficient capital markets where the takeover is fully priced in after the announce-

ment. Consequently, Hypothesis 1.3 is mostly confirmed, with the exception that new issue financing and stock payment tend to underperform.

4.9 Robustness Tests

4.9.1 Short-Run Abnormal Returns

The implications of the underlying financing decision on the abnormal returns around the announcement date seem to be stable in Chapter 4.7 – nevertheless, I test the robustness regarding different time frames, estimation models, and sample restrictions. Furthermore, I change the calculation of *Credit*, *NewIssue*, and *Financing* to prove that the results are not thereby driven.

Table 4.13 displays descriptive statistics for average cumulative abnormal returns, calculated with different estimation settings. First, I use two additional models for the estimation process. Second, I change the estimation period and use a time frame closer to the actual announcement of the takeover. And third, I extend the event window from three days to five days. The results can be interpreted as a check of the validity of Table 4.6.

In total, the descriptive results are as expected. The overall column indicates that the variation with regard to several different settings is rather low, ranging from 1.60 percent to 1.81 percent. Neither shortening the estimation period to 100 days, nor a five-day event window seem to have a major influence on the average cumulative abnormal returns in any of the displayed categories. Furthermore, using a constant mean return or the Fama and French (1993) three-factor model hardly changes the results.

For credit financing, I observe higher abnormal returns with an increase in loans – independent of the estimation procedure. The difference in abnormal returns between no credit financing and fully credit-financed takeovers is relatively constant around 1.7 percentage points. For new issue financing, the previous trend is again confirmed. Higher proportion of new issues as source of financing causes lower abnormal returns around the announcement. Whereas my sample without any new issue financing shows average cumulative abnormal returns between 1.95 percent and 2.21 percent, fully new issue-financed takeovers have abnormal returns close to zero. The trend for internal financing is less clear. Mostly, higher internal financing leads to lower abnormal returns around

Table 4.13: Average Cumulative Abnormal Returns with Different Estimation Settings

		Credit			NewIssue			InternalFinancing		
Model	Overall	Not			Not			Not		
Estimation Period (Event Window)	Mean	Involved	Partly	Fully	Involved	Partly	Fully	Involved	Partly	Fully
Constant Mean Return Model	1.73%	0.87%	1.49%	2.56%	2.08%	1.38%	-0.09%	1.84%	1.58%	1.57%
-190 to -41 (-2 to +2)										
Constant Mean Return Model	1.73%	0.77%	1.82%	2.34%	2.15%	0.87%	0.02%	1.67%	1.90%	1.57%
-190 to -41 (-1 to +1)										
Constant Mean Return Model	1.84%	0.83%	1.80%	2.61%	2.15%	1.80%	0.03%	2.00%	1.73%	1.38%
-120 to -21 (-2 to +2)										
Constant Mean Return Model	1.81%	0.73%	2.01%	2.40%	2.21%	1.22%	0.08%	1.80%	1.97%	1.45%
-120 to -21 (-1 to +1)										
Market Model	1.60%	0.60%	1.43%	2.47%	1.95%	1.09%	-0.06%	1.77%	1.45%	1.13%
-190 to -41 (-2 to +2)										
Market Model	1.69%	0.69%	1.78%	2.32%	2.05%	0.95%	0.21%	1.72%	1.82%	1.20%
-190 to -41 (-1 to +1)										
Market Model	1.68%	0.50%	1.68%	2.53%	1.98%	1.55%	0.05%	1.94%	1.51%	0.85%
-120 to -21 (-2 to +2)										
Market Model	1.76%	0.61%	1.97%	2.39%	2.10%	1.31%	0.23%	1.85%	1.86%	1.06%
-120 to -21 (-1 to +1)										
Three-Factor Model	1.69%	0.68%	1.43%	2.65%	2.06%	1.21%	-0.13%	1.90%	1.43%	1.36%
-190 to -41 (-2 to +2)										
Three-Factor Model	1.73%	0.71%	1.74%	2.44%	2.11%	1.00%	0.13%	1.80%	1.76%	1.29%
-190 to -41 (-1 to +1)										
Three-Factor Model	1.70%	0.44%	1.72%	2.57%	2.01%	1.58%	-0.05%	1.98%	1.46%	0.93%
-120 to -21 (-2 to +2)										
Three-Factor Model	1.77%	0.60%	1.93%	2.46%	2.13%	1.26%	0.17%	1.89%	1.79%	1.12%
-120 to -21 (-1 to +1)										

Average cumulative abnormal returns with different estimation settings are displayed. The estimation period is either 150 days or 100 days long and ends 41 days or 21 days before the announcement. The event window varies between a symmetric five-day and a symmetric three-day event window around the announcement of the takeover. The overall mean column shows the unconditional average cumulative abnormal returns of my sample without any categorization with regard to the source of financing, whereas the subsequent columns restrict the sample according to a takeover's source of financing. A detailed explanation of the three implemented models – namely, the constant mean return model, the market model, and the Fama and French (1993) three-factor model – is given in Chapter 3.1.

the announcement; however, sometimes partly financing a takeover with internal funds leads to higher abnormal returns than not financing the takeover with internal funds at all. Interestingly though, the lowest average cumulative abnormal returns in the last three columns are always observed for fully internally financed takeovers, but even the lowest abnormal return of 0.85 percent is distinctly positive (above the expected return without the announcement). This might indicate that internal funds are, in general, a well-respected source of financing for takeovers and are not connected to a negative market response. However, some takeovers might be caused by incentives of empire building and therefore, managers might have wasted the available cash in takeovers fully financed with internal funds.

Based on those differently calculated abnormal returns, the results of Table 4.7, Table 4.8, and Table 4.9 are tested for robustness in Table 4.14, Table 4.15, and Table 4.16.

For credit financing, the estimated effect is 0.0174 to 0.0217 and statistically significant at least on a five-percent level in all cases. This implies an outperformance of around two percentage points for fully credit-financed takeovers compared to takeovers without any credit financing – all else being equal. Moreover, the effect of cash payment on cumulative abnormal returns varies in the slight range of 0.0276 to 0.0308, also keeping its significance on a five-percent level in all four regressions. Those results are almost identical to the initial results of Table 4.7, with only slightly lower estimates. It is interesting to note that the explanatory power is higher when the dependent variable is calculated with the Fama and French (1993) three-factor model instead of the market model. When comparing Regression (1) and Regression (2) of Table 4.14, the shorter estimation period and the three-day event window yield to a slightly increased explanatory power.

The same can be said for new issue financing. The coefficient is always statistically significant and varies between -0.0266 and -0.0228, very close to the initial coefficients in Table 4.8. As before, the impact of cash payment remains unchanged. In economic terms, full new issue financing lowers the abnormal returns by over two percentage points, compared to a takeover without new issue financing – again, all else being equal.

For the combined financing variable in Table 4.16, once again, the results do not rely on the estimation setting, and the influence of cash payment is unchanged. Note that the method of payment has an estimated coefficient of 0.0272 in Regression (4), which is almost twice as large as the coefficient of the source of financing with 0.0147. However, the

Table 4.14: OLS Regressions with Different Models for Credit Financing

	(1)	(2)	(3)	(4)
Dependent Variable	CAR			
Model	Market Model		Constant Mean Return Model	Three-Factor Model
Estimation Period	-120 to -21	-190 to -41	-190 to -41	-190 to -41
Event Window	-1 to +1	-2 to +2	-1 to +1	-1 to +1
Credit	0.0206***	0.0205**	0.0174**	0.0217***
	(0.0079)	(0.0089)	(0.0080)	(0.0079)
CashPayment	0.0276**	0.0308**	0.0290**	0.0282**
	(0.0116)	(0.0129)	(0.0119)	(0.0118)
RelativeSize	-0.0220	-0.00622	-0.0307	-0.0191
	(0.0414)	(0.0460)	(0.0427)	(0.0420)
CompletionTime	-0.00000888	-0.0000114	0.00000239	0.00000425
	(0.0000)	(0.0000)	(0.0000)	(0.0000)
AcquirerLeverage	-0.0112	-0.00864	-0.0110	-0.0101
	(0.0110)	(0.0102)	(0.0110)	(0.0111)
AcquirerTobinsQ	0.00581*	0.00602	0.00600*	0.00701**
	(0.0035)	(0.0044)	(0.0035)	(0.0033)
ln(MarketValue)	-0.0153	-0.00868	-0.0177	-0.0127
	(0.0160)	(0.0176)	(0.0165)	(0.0163)
ln(TransactionValue)	0.0113	0.00372	0.0133	0.00927
	(0.0163)	(0.0180)	(0.0168)	(0.0166)
NetCash	-0.0117	-0.0167	-0.0156	-0.0126
	(0.0172)	(0.0203)	(0.0177)	(0.0176)
DifferentNations	-0.0176	-0.0163	-0.0151	-0.0186
	(0.0119)	(0.0108)	(0.0122)	(0.0119)
DifferentIndustries	0.00371	0.00262	0.00344	0.00399
	(0.0070)	(0.0077)	(0.0071)	(0.0070)
FriendlyTakeover	-0.0304	-0.0361	-0.0314	-0.0337
	(0.0409)	(0.0460)	(0.0422)	(0.0425)
MultipleBidders	-0.00444	0.00866	0.00254	-0.00609
	(0.0126)	(0.0145)	(0.0125)	(0.0124)
PublicTarget	-0.0208**	-0.0276***	-0.0226***	-0.0233***
	(0.0083)	(0.0089)	(0.0086)	(0.0085)
Constant	0.361***	0.0689	0.229*	0.267**
	(0.1218)	(0.0587)	(0.1255)	(0.1260)
Fixed Effects	Yes	Yes	Yes	Yes
Observations	790	783	784	784
Adjusted R^2	0.067	0.061	0.066	0.089

Heteroscedasticity-consistent standard errors are in parentheses. *, **, and *** indicate a significant difference from zero on a ten-, five-, and one-percent level. A detailed explanation of all variables is given in Chapter 4.4. Fixed effects include year fixed effects (based on the effective year), industry fixed effects (acquirer as well as target industry fixed effects, based on the first digit of the respective primary SIC code), and nation fixed effects (for acquirer and target). Chapter 3.1 explains the implemented models.

Table 4.15: OLS Regressions with Different Models for New Issue Financing

	(1)	(2)	(3)	(4)
Dependent Variable	CAR			
Model	Market Model		Constant Mean Return Model	Three-Factor Model
Estimation Period	-120 to -21	-190 to -41	-190 to -41	-190 to -41
Event Window	-1 to +1	-2 to +2	-1 to +1	-1 to +1
NewIssue	-0.0229**	-0.0228*	-0.0257**	-0.0266***
	(0.0097)	(0.0121)	(0.0100)	(0.0101)
CashPayment	0.0271**	0.0305**	0.0278**	0.0274**
	(0.0115)	(0.0129)	(0.0118)	(0.0117)
RelativeSize	-0.0272	-0.0110	-0.0368	-0.0248
	(0.0417)	(0.0463)	(0.0429)	(0.0422)
CompletionTime	-0.00000799	-0.0000107	0.00000355	0.00000528
	(0.0000)	(0.0000)	(0.0000)	(0.0000)
AcquirerLeverage	-0.00914	-0.00658	-0.00901	-0.00784
	(0.0110)	(0.0102)	(0.0110)	(0.0110)
AcquirerTobinsQ	0.00586*	0.00612	0.00604*	0.00707**
	(0.0035)	(0.0044)	(0.0035)	(0.0033)
ln(MarketValue)	-0.0192	-0.0126	-0.0218	-0.0171
	(0.0159)	(0.0175)	(0.0164)	(0.0162)
ln(TransactionValue)	0.0156	0.00799	0.0178	0.0140
	(0.0162)	(0.0179)	(0.0167)	(0.0165)
NetCash	-0.0199	-0.0250	-0.0239	-0.0218
	(0.0171)	(0.0201)	(0.0176)	(0.0175)
DifferentNations	-0.0173	-0.0159	-0.0149	-0.0183
	(0.0120)	(0.0109)	(0.0123)	(0.0120)
DifferentIndustries	0.00382	0.00278	0.00370	0.00420
	(0.0070)	(0.0077)	(0.0071)	(0.0070)
FriendlyTakeover	-0.0305	-0.0362	-0.0316	-0.0339
	(0.0408)	(0.0460)	(0.0421)	(0.0425)
MultipleBidders	-0.00331	0.00980	0.00353	-0.00487
	(0.0126)	(0.0145)	(0.0125)	(0.0124)
PublicTarget	-0.0232***	-0.0299***	-0.0251***	-0.0260***
	(0.0084)	(0.0089)	(0.0086)	(0.0085)
Constant	0.358***	0.0911	0.251**	0.287**
	(0.1236)	(0.0568)	(0.1272)	(0.1276)
Fixed Effects	Yes	Yes	Yes	Yes
Observations	790	783	784	784
Adjusted R^2	0.066	0.060	0.069	0.089

Heteroscedasticity-consistent standard errors are in parentheses. *, **, and *** indicate a significant difference from zero on a ten-, five-, and one-percent level. A detailed explanation of all variables is given in Chapter 4.4. Fixed effects include year fixed effects (based on the effective year), industry fixed effects (acquirer as well as target industry fixed effects, based on the first digit of the respective primary SIC code), and nation fixed effects (for acquirer and target). Chapter 3.1 explains the implemented models.

Table 4.16: OLS Regressions with Different Models for Financing

	(1)	(2)	(3)	(4)
Dependent Variable	CAR			
Model	Market Model		Constant Mean Return Model	Three-Factor Model
Estimation Period	-120 to -21	-190 to -41	-190 to -41	-190 to -41
Event Window	-1 to +1	-2 to +2	-1 to +1	-1 to +1
Financing	0.0133***	0.0133**	0.0129***	0.0147***
	(0.0048)	(0.0058)	(0.0050)	(0.0049)
CashPayment	0.0268**	0.0302**	0.0279**	0.0272**
	(0.0116)	(0.0129)	(0.0119)	(0.0118)
RelativeSize	-0.0255	-0.00971	-0.0343	-0.0229
	(0.0414)	(0.0460)	(0.0426)	(0.0419)
CompletionTime	-0.00000824	-0.0000108	0.00000315	0.00000503
	(0.0000)	(0.0000)	(0.0000)	(0.0000)
AcquirerLeverage	-0.0103	-0.00773	-0.0103	-0.00916
	(0.0110)	(0.0102)	(0.0110)	(0.0111)
AcquirerTobinsQ	0.00581*	0.00607	0.00600*	0.00702**
	(0.0035)	(0.0044)	(0.0035)	(0.0033)
ln(MarketValue)	-0.0174	-0.0108	-0.0196	-0.0150
	(0.0159)	(0.0175)	(0.0164)	(0.0162)
ln(TransactionValue)	0.0136	0.00602	0.0153	0.0117
	(0.0162)	(0.0179)	(0.0167)	(0.0165)
NetCash	-0.0157	-0.0208	-0.0191	-0.0169
	(0.0170)	(0.0200)	(0.0175)	(0.0173)
DifferentNations	-0.0175	-0.0162	-0.0151	-0.0185
	(0.0119)	(0.0108)	(0.0122)	(0.0119)
DifferentIndustries	0.00385	0.00281	0.00365	0.00420
	(0.0070)	(0.0077)	(0.0071)	(0.0070)
FriendlyTakeover	-0.0305	-0.0362	-0.0316	-0.0339
	(0.0408)	(0.0459)	(0.0421)	(0.0425)
MultipleBidders	-0.00405	0.00907	0.00281	-0.00569
	(0.0127)	(0.0146)	(0.0126)	(0.0125)
PublicTarget	-0.0220***	-0.0288***	-0.0237***	-0.0247***
	(0.0083)	(0.0089)	(0.0086)	(0.0085)
Constant	0.367***	0.0777	0.242*	0.281**
	(0.1227)	(0.0575)	(0.1259)	(0.1263)
Fixed Effects	Yes	Yes	Yes	Yes
Observations	790	783	784	784
Adjusted R^2	0.069	0.062	0.068	0.091

Heteroscedasticity-consistent standard errors are in parentheses. *, **, and *** indicate a significant difference from zero on a ten-, five-, and one-percent level. A detailed explanation of all variables is given in Chapter 4.4. Fixed effects include year fixed effects (based on the effective year), industry fixed effects (acquirer as well as target industry fixed effects, based on the first digit of the respective primary SIC code), and nation fixed effects (for acquirer and target). Chapter 3.1 explains the implemented models.

significance level paints a contradictory picture, as the variable for the source of financing reaches a higher significance than the variable for cash payment. Summarizing these three tables, my results remain extremely stable and are not driven by the estimation model nor by the chosen time frames.

One critical assumption is the proportion of each source of financing if more than one source is reported. So far, I define my variables under the assumption of equally high proportions for every involved source of financing. However, this might be an oversimplification. Even though I cannot obtain the exact proportion, I approach this possible oversimplification in two ways. First, I change the variable definition in Table 4.17 and introduce a dummy variable for *Credit*, *NewIssue*, and *Financing*. The dummy variable is one if the respective source of financing is used – independent of the total amount of sources involved.[12] Second, I exclude takeovers that are financed with more than one source in Regression (1) of Table 4.18.

The regression results for dummy variables in Table 4.17 show slightly smaller estimates in absolute terms than the originally obtained ones. However, the statistical significance remains even for those, very inaccurately defined, variables. Furthermore, the explanatory power is unchanged if dummy variables are used instead of scaled variables.

In Table 4.18, I investigate the influence of several restrictions to the sample. As aforementioned, Regression (1) excludes all acquisitions with more than one source of financing. Besides a different definition of the variables for the sources of financing, this is an alternative way to present robustness of the previous results. Regression (2) only considers takeovers announced after the year 2000 and therefore, allows one to conclude if the financing effect is still existing. Regression (3) focuses on major transactions with a relative size of at least 30 percent. Finally, Regression (4) investigates if this effect is present for private targets.

Over all four regressions, the variable for the financing source retains its expected coefficient and its significance. As seen before in Table 4.17, the definition of the variables for the different source of financing seems to be a minor problem. Limiting the sample to takeovers which are financed by one source as shown in Regression (1) does not change the conclusions. For Regression (2) and Regression (3), the relatively high coefficient and

[12] *Dummy_Financing* uses internal financing as the base case, the dummy variable for new issue financing enters *Dummy_Financing* as negative values, and bank financing enters *Dummy_Financing* as positive values.

Table 4.17: OLS Regressions with Dummy Variables

	(1)	(2)	(3)	(4)
Dependent Variable		CAR		
Dummy_Credit	0.0129*			
	(0.0070)			
Dummy_NewIssue		-0.0146**		
		(0.0068)		
Dummy_Financing			0.00935**	0.0120***
			(0.0043)	(0.0045)
CashPayment	0.0270***	0.0274***	0.0262**	0.0267**
	(0.0104)	(0.0103)	(0.0104)	(0.0117)
RelativeSize	-0.00212	-0.00540	-0.00478	-0.0227
	(0.0391)	(0.0389)	(0.0388)	(0.0420)
CompletionTime	-0.0000175	-0.0000192	-0.0000175	0.00000291
	(0.0000)	(0.0000)	(0.0000)	(0.0000)
AcquirerLeverage	-0.00759	-0.00709	-0.00722	-0.00979
	(0.0103)	(0.0102)	(0.0103)	(0.0110)
AcquirerTobinsQ	0.00200	0.00198	0.00198	0.00575*
	(0.0033)	(0.0033)	(0.0033)	(0.0034)
ln(MarketValue)	-0.00938	-0.0123	-0.0111	-0.0153
	(0.0147)	(0.0146)	(0.0145)	(0.0161)
ln(TransactionValue)	0.00715	0.0105	0.00900	0.0113
	(0.0150)	(0.0148)	(0.0148)	(0.0164)
NetCash	-0.00633	-0.0117	-0.00900	-0.0170
	(0.0142)	(0.0140)	(0.0140)	(0.0173)
DifferentNations	-0.00563	-0.00547	-0.00599	-0.0185
	(0.0074)	(0.0073)	(0.0074)	(0.0119)
DifferentIndustries	0.00753	0.00717	0.00744	0.00326
	(0.0060)	(0.0060)	(0.0060)	(0.0071)
FriendlyTakeover	-0.0108	-0.0122	-0.0115	-0.0322
	(0.0424)	(0.0427)	(0.0425)	(0.0427)
MultipleBidders	-0.00289	-0.00150	-0.00199	-0.00325
	(0.0096)	(0.0100)	(0.0099)	(0.0126)
PublicTarget	-0.0264***	-0.0277***	-0.0273***	-0.0233***
	(0.0068)	(0.0068)	(0.0068)	(0.0085)
Constant	0.0271	0.0448	0.0364	0.270**
	(0.0524)	(0.0544)	(0.0533)	(0.1283)
Fixed Effects	No	No	No	Yes
Observations	784	784	784	784
Adjusted R^2	0.032	0.033	0.034	0.073

Heteroscedasticity-consistent standard errors are in parentheses. *, **, and *** indicate a significant difference from zero on a ten-, five-, and one-percent level. Instead of the scaled variables as introduced in Chapter 4.4, the regressions use dummy variables with one if the source of financing is used. Besides that change, Regression (1), Regression (2), and Regression (3) are similar to Regression (1) of Table 4.7, Regression (1) of Table 4.8, and Regression (1) of Table 4.9, respectively; Regression (4) is similar to Regression (4) of Table 4.9.

Table 4.18: OLS Regressions with Different Restrictions

	(1)	(2)	(3)	(4)
Dependent Variable			CAR	
Restriction	One Source	After 2000	Large Target	Private Target
Financing	0.0112**	0.0164***	0.0228***	0.0118*
	(0.0052)	(0.0055)	(0.0083)	(0.0064)
CashPayment	0.0390***	0.0183	0.0213	0.0179
	(0.0138)	(0.0130)	(0.0185)	(0.0166)
RelativeSize	0.0163	-0.0149	-0.0281	0.00480
	(0.0557)	(0.0517)	(0.1217)	(0.0541)
CompletionTime	0.0000376	-0.00000392	0.0000433	-0.0000283
	(0.0000)	(0.0000)	(0.0001)	(0.0000)
AcquirerLeverage	-0.00251	-0.0125	-0.0113	-0.0127
	(0.0122)	(0.0131)	(0.0161)	(0.0145)
AcquirerTobinsQ	0.00759*	0.00355	0.0151***	0.00670*
	(0.0044)	(0.0038)	(0.0053)	(0.0040)
ln(MarketValue)	-0.000458	-0.0108	0.000969	-0.00916
	(0.0202)	(0.0195)	(0.0755)	(0.0208)
ln(TransactionValue)	-0.000685	0.00624	-0.00194	0.00948
	(0.0200)	(0.0201)	(0.0757)	(0.0218)
NetCash	-0.00784	-0.0151	0.0143	-0.0215
	(0.0202)	(0.0184)	(0.0224)	(0.0202)
DifferentNations	-0.0206	-0.0131	-0.0194	-0.0181
	(0.0168)	(0.0120)	(0.0194)	(0.0151)
DifferentIndustries	0.0134	0.00767	0.0105	0.00140
	(0.0085)	(0.0084)	(0.0125)	(0.0092)
FriendlyTakeover	0.0386	-0.0386	-0.0408	-0.0675
	(0.0247)	(0.0528)	(0.0304)	(0.0811)
MultipleBidders	-0.0137	0.0335*	-0.0199	0.0292
	(0.0159)	(0.0189)	(0.0195)	(0.0353)
PublicTarget	-0.0237**	-0.0218**	-0.0474***	
	(0.0103)	(0.0106)	(0.0134)	
Constant	-0.233**	0.377**	0.456***	0.502***
	(0.1007)	(0.1539)	(0.1383)	(0.1221)
Fixed Effects	Yes	Yes	Yes	Yes
Observations	482	633	390	546
Adjusted R^2	0.134	0.059	0.121	0.058

Heteroscedasticity-consistent standard errors are in parentheses. *, **, and *** indicate a significant difference from zero on a ten-, five-, and one-percent level. All four regressions use the exact same setting as Regression (4) of Table 4.9 with the following restrictions of the sample: Regression (1) focuses on takeovers announced after the year 2000; Regression (2) excludes takeovers with a relative size smaller than 30 percent; Regression (3) focuses on takeovers with one source of financing; Regression (4) excludes takeovers of listed targets.

significance suggest that the source of financing has a greater influence for more recent or larger takeovers – both underline the importance of this investigation for practitioners as well as academics. This is even more remarkable, as the sample size more than halves in Regression (3) compared to the initial regressions. Regression (4) with a focus on private targets suggests that both effects – the source of financing and the means of payment – are more important in cases of public targets. Nevertheless, the financing variable keeps a low level of significance with an estimate in the previous range.

Surprisingly, the variable for cash payment loses its significance in three of the four restricted samples. In particular, the means of payment seems to have only minor implications for takeovers after 2000, large takeovers, and takeovers with private targets – at least, if one controls for the underlying source of financing. It is worth noting that the dummy variable for public targets retains its significance in every regression of the outlined robustness tests. The respective coefficient suggests that acquirers perform about two percentage points to three percentage points worse when they purchase a public target instead of a private target – all else being equal.

4.9.2 Long-Run Abnormal Returns

The second part of robustness tests is concerned with long-run abnormal returns. As the previous results are not as stable as the short-run abnormal returns, I have already outlined three different calculation methods in Chapter 4.8. Based on those results, the calendar-time portfolio approach seems to be a more appropriate measure for long-run abnormal returns and is also less volatile. However, the reliance of the results depends on the underlying asset pricing model. In a global setting, previous studies argue that the factor calculation should be as precise as possible for the tested sample and one overall global model might be inappropriate (for example, Griffin, 2002; Hou, Karolyi, and Kho, 2011; Fama and French, 2012; Hanauer and Linhart, 2015). The calendar-time portfolio approach in Table 4.12 uses my global sample and the corresponding global factors provided by Kenneth R. French. To present robustness, Table 4.19 restricts my sample to U.S. acquirers and implements the U.S. factors of Kenneth R. French.

For mean (excess) returns, the results for the different financing sources are basically unchanged. A notable difference, however, exists for the portfolio of fully stock-paid acquisitions. I observe a statistically significant mean (excess) return of 2.39 percent (2.17

Table 4.19: Long-Run U.S. Returns and U.S. Alphas for Calendar-Time Portfolio Approach

Characteristic	Mean Return	Mean Excess Return	OLS-Alpha	WLS-Alpha
Credit	0.21%	-0.09%	-0.70%	-0.12%
	(302)	(302)	(302)	(302)
NewIssue	-0.59%	-0.84%	-1.43%***	-1.92%***
	(247)	(247)	(247)	(247)
InternalFinancing	0.65%	0.35%	-0.19%	-0.69%*
	(294)	(294)	(294)	(294)
CashPayment	0.74%*	0.44%	-0.22%	-0.27%
	(317)	(317)	(317)	(317)
StockPayment	2.39%**	2.17%**	1.60%	1.67%
	(170)	(170)	(170)	(170)

Mean returns of the portfolios, mean excess returns (returns over the risk-free rate) of the portfolios, and alphas for the calendar-time portfolio approach using an OLS approach and a WLS approach are shown. The sample is restricted to U.S. acquirers. The number of considered months are given in parentheses. *StockPayment* is defined in a similar way as *CashPayment* and represents the percentage of stock payment in the takeover. A detailed explanation of the calendar-time portfolio approach can be found in Chapter 3.2. All portfolios only consider acquirers that fully finance their takeover with one source of financing or only use one payment method. *, **, and *** indicate a significant difference from zero on a ten-, five-, and one-percent level. For the calendar-time portfolio approach, heteroscedasticity-consistent and autocorrelation-adjusted (up to three months) standard errors are implemented.

percent), indicating that those acquirers perform very well without any adjustment for risk. This result turns insignificant once a risk adjustment is implemented. However, the focus on U.S. firms reveals that stock payment is not underperforming cash payment in this long-run setting. For the source of financing in the calendar-time portfolio approach, the implications are basically similar to the international sample. Nevertheless, one remarkable change occurs for new issue-financed takeovers. The international alphas of -0.56 percent (OLS approach) and -1.05 percent (WLS approach) in Table 4.12 deteriorate to -1.43 percent (OLS approach) and -1.92 percent (WLS approach) for U.S. acquirers. Both alphas are highly significant and have a huge economical impact on acquirers, as this estimate presents a monthly underperformance.

4.10 Limitations

The empirical investigation contributes to the scarce literature on the source of financing in takeovers. So far, only Bharadwaj and Shivdasani (2003) and Martynova and Renneboog (2009) have focused on that topic. However, a comprehensive strand of literature on the

means of payment in takeovers exists. Connecting both, only Martynova and Renneboog (2009) analyze the source of financing and simultaneously consider the payment method. My study extends their investigation in three dimensions. First, it sheds light on the acquirer's decision on how to finance the takeover. Second, it is the first to include the United States and exploits a worldwide sample. Third, it examines not only the short-run, but also the long-run performance of the acquirer based on the source of financing.

However, my study faces some limitations similar to those of Martynova and Renneboog (2009). The available information on the source of financing is rather vague in SDC Platinum. I construct my variables based on textual information on the source of financing – a detailed breakdown per takeover is unavailable. Even though the short-run results seem to be stable with regard to that problem and the corresponding assumption, the vague information prevents several tests. For instance, it would be interesting to solely look at the predominant source of financing instead of all sources.[13]

For the long-run results, my study is confronted with the usual problem of measuring long-run abnormal returns. As a consequence, I implement the two most commonly used approaches. Nevertheless, the long-run results are less conclusive than the short-run results. It seems that new issue financing is underperforming the market in the subsequent three years. For credit financing and internal funds, the acquirers perform as expected. It is worth noting that the calendar-time portfolio approach reduces the sample to acquirers that only use one source of financing. An implication for all takeovers based on the calendar-time portfolio approach might be critical.

As the sample size in my main regressions is below 800 takeovers, it is necessary to summarize some sources of financing, which leads to a loss of information. For example, I combine all kinds of bank loans (revolver, line of credit, bridge loan, among others) into the category of credit financing. This might be an oversimplification, as different sources of financing could have different implications. It is possible that regular lines of credit (which are available to the acquirer independently of the takeover) have less relevance to explain the beneficial signaling and monitoring of banks than syndicated loans for one particular takeover. In a next step, it would also be interesting to look at characteristics of the source

[13]Note that the calendar-time portfolio approach in Table 4.12 and Table 4.19 uses portfolios where the acquirer has only one source of financing. Therefore, this informational problem is non-existent for the calendar-time portfolio approach.

of financing and their implications for the success of a takeover. Both shortcomings are addressed in the following Chapter 5.

Last but not least, it is critical to state that there might be some endogeneity. Neither the takeover decision itself nor the target or the source of financing are exogenous. Therefore, it is possible that certain characteristics of takeovers with regard to the source of financing or the means of payment do not underperform themselves but are endogenously given for worse transactions.

4.11 Summary

Over the last decade, finding a theoretical explanation for merger waves has been a field given much attention. Moreover, several empirical studies have examined short-run and long-run returns of acquirers. Since the underlying financial decisions of takeovers are supposed to be of major importance, research has been focused on means of payment as an approximation of the underlying financial decisions. This approximation is necessary due to the poor data availability of takeover financing. Assuming that companies have only very limited amounts of cash, every cash payment has to be financed with debt. On the other hand, own shares as payment method suggest equity financing of the takeover.

So far, only Bharadwaj and Shivdasani (2003) and Martynova and Renneboog (2009) directly look at the sources of financing for mergers and acquisitions. The former focus on a sample of 115 cash tender offers and therefore, have a small sample of very specific acquisitions without any variation in the means of payment. Only Martynova and Renneboog (2009) simultaneously investigate the financial sources and means of payment. The study is limited to a hand-collected sample of European firms and examines short-run announcement effects. Using an international sample with information on the implemented sources of financing, I try to extend this literature.

The present study sheds light on three different aspects. First, I analyze the initial decision on how to actually finance a takeover. Second, I examine short-run abnormal returns of acquirers and look at the influence of different sources of financing on those announcement returns. Third, I investigate this relation for long-run abnormal returns.

The initial financial decision is driven by the acquirer's pre-takeover cash level and leverage, the relative size of the target, the method of payment, and considerations regarding the completion time as well as possible bidding competition.

For short-run abnormal returns, companies have the best announcement returns for bank-financed takeovers. Financing acquisitions with a new issue underperforms other sources of financing. Those results are robust regarding the estimation model and its settings, the definition of my financing variables, and different sample restrictions. In line with previous research, cash-paid takeovers have better returns around the announcement day than stock-paid acquisitions. Economically, the payment effect is 2.74 percentage points for full cash payment in comparison to full stock payment. The financing effect is 2.60 percentage points in size if a company switches from full new issue financing of a takeover to a completely credit-financed takeover – all else being equal for both effects.[14] Overall, the economic effect and the statistical significance of both – the payment method and the source of financing – is similar in the short run.

For long-run abnormal returns, this picture is not as clear as in the short run. Serious problems with estimating abnormal returns in the long run give rise to a lack in statistical significance, even for relatively large estimated coefficients. Furthermore, the matching criteria for benchmark firms seems to have some influence on the results. In general, most of my analyses support the view that the capital market accurately prices the influence of the takeover at the announcement. One exception thereof is new issue financing, which significantly underperforms the Carhart (1997) four-factor model. For credit financing and internal funds, I do not observe a systematic performance deviation in the Carhart (1997) four-factor model. Regarding the means of payment, my results suggest that acquirers of cash-paid takeovers seem to outperform acquirers of stock-paid takeovers in the years following the takeovers based on the BHAR approach. In the United States, however, the calendar-time portfolio approach suggests an inverse performance.

[14] The estimates are based on Regression (4) of Table 4.9.

Chapter 5

Evidence from Bank Financing

Large parts of this chapter are based on Fischer (2015)

5.1 Research Question

Whereas the last chapter investigates all different sources of financing, this chapter focuses on the special case of bank (or credit) financing. The basic idea for this empirical investigation is to circumvent the problem of data unavailability on the proportional breakdown of the financing sources by matching acquisition-related, reported syndicated loans to the appropriate takeover.[1] The regular assumption in recent academic literature of cash payment being equal to debt financing becomes redundant in this setting. As a result of this matching procedure, I receive an estimated proportional breakdown of the source of financing (bank loan or internal funds) and the means of payment (stock or cash) under the suitable assumption that acquirers with a syndicated loan do not use other kinds of external financing for the takeover.[2] Because debt and equity issues are usually very large in size, estimating the proportional breakdown for new issue-financed takeovers is hardly achievable. This is different for bank-financed takeovers, as an appropriate matching of loans to takeovers is feasible.

[1] As the syndicated loans in my sample are all kinds of bank loans (such as revolving credit facilities, term loans, or bridge loans), I use syndicated loans and bank loans synonymously in my empirical study.

[2] The assumption of no other external source of financing implies that the proportional breakdown of the source of financing is complete and only consists of the matched loan(s) and internal funds. This seems reasonable as the average loan proportion in my sample is 84.00 percent as shown in Table 5.2. Additionally, in a recent study, Colla, Ippolito, and Li (2013) find that 85 percent of firms have one predominant debt source, and Houston and James (1996) confirm the importance of bank loans as debt source.

The previous studies of Bharadwaj and Shivdasani (2003) as well as Martynova and Renneboog (2009) differ significantly from my study for several reasons. With regard to the actual breakdown of the source of financing in takeovers, only the former study has appropriate information for a sample of 115 cash tender offers. However, the fact that Bharadwaj and Shivdasani (2003) exclusively investigate cash tender offers prevents variation in the payment method and therefore, renders it impossible to investigate both effects – the payment effect and the financing effect – at the same time. In contrast, Martynova and Renneboog (2009) have variation in the payment method but are unable to investigate the acquirer's cumulative abnormal returns with scaled variables for the source of financing. As a consequence, they mostly apply dummy variables for individual combinations of financing source and payment method in their regressions, or they separate regressions by means of payment. It is also worth noting that Martynova and Renneboog (2009) implement a category for debt financing but do not separately demarcate bank financing. Hence, both previous studies are unable to examine the payment effect and the financing effect at the same time.

Added together, this chapter contributes to previous research in two ways, as it simultaneously investigates both effects on cumulative abnormal returns of acquirers and shows how characteristics of bank loans are related to the success of an investment project. Both steps help shed light on the discussion for the outperformance of cash payments around the announcement. Academic literature has detected and verified this outperformance of cash payment, but the underlying economic rationale is still up for discussion. More recently, researchers have suggested that cash payment could be equal to debt financing and consequently, the payment effect might actually be a financing effect. Those researchers reason that any cash payment in an acquisition usually requires some form of debt, as most acquirers have very limited cash reserves. Furthermore, stock payment suggests that the acquisition is financed with some kind of equity. My data allows me to actually verify this assumption, or to confirm the results of Martynova and Renneboog (2009), which suggest that the assumption of other researchers is an oversimplification.

From a corporate governance perspective, my investigation not only helps filter out the economic rationale behind the more positive market reaction to cash-paid takeovers than to stock-paid ones, but also allows one to examine the influence of debt characteristics on the success of a takeover under the assumption that the announcement effect is an

appropriate approximation for this success. From a corporate finance perspective, I add to the understanding of project financing. For most investment projects, any breakdown of the underlying source of financing is arbitrary for company outsiders. However, matching reported syndicated loans to the appropriate takeover yields insights to the actual sources of financing and therefore, the setting indirectly tests traditional capital structure theories.

5.2 Hypotheses

Bruner (2002) as well as Eckbo (2009) summarize plenty of empirical studies with regard to the effects of the takeover announcement. Both studies come to similar conclusions as Chapter 2.3, as the overall perception of the announcement is rather negative for acquirers' shareholders. However, my sample in this chapter solely consists of at least partly bank-financed takeovers as a result of the subsequently described matching process. The outlined theory in Chapter 2 suggests that such a sample might have different (and more positive) properties for several reasons.

First, the pecking order theory predicts that debt is the preferred source of financing when internal sources are insufficient. For investors, using debt instead of a new equity issue implies that shares are currently not overvalued, as otherwise the firm would try to benefit from this overvaluation and choose a new equity issue as source of financing. Second, debt ties future free cash flows and therefore, additional debt prevents empire building as suggested by the free cash flow theory.[3] Third, by financing with bank loans, the firm signals that future cash flows are sufficient to realize an additional tax shield. Fourth, following theories of financial intermediation, banks can produce valuable information for outside investors and reduce information asymmetries because they might know more about a firm's prospectus. In the context of takeovers, banks are supposed to initially screen the project and commit to ongoing monitoring. As a bank's screening process should identify bad takeovers, outside investors might expect that banks only spend money on valuable acquisitions. In addition, the ongoing execution of the takeover will be closely monitored by the bank; deviations from the planned integration process should occur less

[3]One possible shortcoming of this reasoning is a potential waste of cash by managers as part of the free cash flow theory. The empirical studies of Chapter 2.2 verify some negative relation between the acquirer's cash level and post-acquisition returns. As financial slack includes unused borrowing capability (for example, Myers, 1984; Myers and Majluf, 1984; Hadlock and James, 2002), managers might use bank debt (similar to internal funds) for empire building purposes.

frequently. Based on this reasoning, one expects that the presence of a bank loan should signal a favorable investment opportunity for the acquirer.

> Hypothesis 2.1: Bank-financed mergers and acquisitions are associated with positive abnormal returns for acquirers' stockholders.

In addition to testing the overall performance for a sample of bank-financed acquisitions, the setting allows one to shed light on the payment effect in takeovers. The implemented approach of matched syndicated loans to the appropriate takeover allows one to calculate the actual deal leverage as the ratio of used syndicated loan(s) to takeover's transaction value. Under the assumption that the reported loan(s) are the sole source of debt, the common assumption in the literature regarding cash payment as being a good approximation of debt financing can be tested. As aforementioned, the rationale behind this is that firms only have access to a very limited amount of cash at a given point in time. Unless the acquirer saves free cash flows long before the actual takeover, there will be insufficient liquid assets available for cash payment. One obvious way to overcome this dilemma of cash payment and not enough cash resources is to raise new debt and use these proceeds for cash settlement. Assuming that firms do not issue additional new debt when a new bank loan is involved, the resulting deal leverage represents a valid approximation of the debt fraction in financing the takeover. Consequently, one would expect a relation between percentage of cash payment and deal leverage. At the same time, stock as means of payment strongly suggests equity financing and hence, the proportion of stock payment should decrease when deal leverage increases.

> Hypothesis 2.2: There is a positive correlation between cash as means of payment and the loan proportion in a takeover.

However, if the assumption of cash payment as being a good approximation for debt financing (used by previous researchers) is correct, the payment effect should lose its explanatory power when one explicitly controls for the actual source of financing. It is worth noting that Chapter 2.3 provides strong evidence for a superiority of cash payment compared to stock payment for public targets, but this effect seems to be missing for private targets. In the case that Hypothesis 2.2 is true and the payment method retains its significance, there must exist other underlying rationales for the performance difference

between stock and cash payments – besides the sole approximation for the source of financing.

Hypothesis 2.3: The payment effect lacks in explanatory power when one explicitly controls for the financial structure of the takeover.

Even though, on average, positive abnormal returns (as suggested by Hypothesis 2.1) would emphasize a bank's monitoring purpose, it might be interesting to look deeper into the details. The previous results of Bharadwaj and Shivdasani (2003) suggest that higher deal leverage is associated with larger abnormal returns. Extending their sample from fully cash-paid takeovers to all sorts of payment, I expect their findings to stay valid. The underlying economic rationale is that higher deal leverage implies higher risk for the lending bank – this should increase the bank's involvement, and therefore, increased monitoring and screening is expected.

Hypothesis 2.4: Higher deal leverage is a signal for a more successful takeover.

Besides mere deal leverage, other characteristics of the syndicated loan(s) also suggest that the bank bears higher risks and has an incentive to screen and monitor more carefully. More specifically, I expect higher spreads (because the bank wants to be compensated for those higher risks),[4] longer maturity (because the insecurity rises with longer horizons), lower coverage of the interest payments (and hence, higher risk of default for the company), and no recent banking relationship between the arranger and the borrower (and therefore, no historical information possessed by the bank) to be indicators for higher risk. If higher deal leverage is associated with increasing abnormal returns and the underlying rationale is higher bank involvement due to greater risks for the bank, the mentioned loan characteristics should also be associated with higher abnormal returns.

Hypothesis 2.5: Higher risks for the lending banks are linked to higher abnormal returns.

[4]The model of Berlin and Loeys (1988) explicitly investigates monitoring by banks and suggests that a higher loan spread reflects the monitoring costs.

5.3 Data

As the source of financing for a takeover is not disclosed, I make use of an indirect procedure. One way to receive information on the source of financing is to examine one prevalent source of debt and assume it is the only debt involved. Doing so, I match reported syndicated loans to the appropriate takeover. The main advantage of focusing on those bank loans rather than bond issues is that it allows the calculation of an appropriate deal leverage. Because most bond issues are extraordinarily large, estimating a reliable percentage of debt used in an acquisition is impossible. The same could be said for new share issues as an indication of equity financing. Additionally, looking at syndicated loans allows one to investigate the influence of the corresponding loan characteristics because banks might screen and monitor their loans. Even though the setting of syndicated loans seems appropriate and interesting, it naturally involves the shortcoming that it might not allow one to draw conclusions regarding all takeovers.

The data used for this chapter has been obtained from SDC Platinum (for information on acquisitions and syndicated loans) and Datastream/Worldscope (for information on the acquirers with regard to book and market values). For the initial sample of takeovers, I restrict the sample in SDC Platinum to the following conditions:

- Transaction value is released
- Date announced and date effective are between January 1985 and December 2014
- Neither acquirer nor target is a financial firm[5]
- Acquirer bought at least 50 percent of the target in that transaction
- Acquirer is covered by Datastream/Worldscope
- Acquirer has only one takeover in ten days[6]

[5]This restriction is common in recent studies (for example, Erel, Liao, and Weisbach, 2012; Ferris, Jayaraman, and Sabherwal, 2013; Nadolska and Barkema, 2013; Bena and Li, 2014) and necessary in this study, as financial firms might have systematically different access to debt, or their debt might have systematically different characteristics. Also, debt utilization in takeovers might be different – a demonstrative example is leveraged buyouts of private equity firms. Financial firms are excluded based on their primary SIC code.

[6]This restriction ensures a high matching quality of bank loans to the appropriate takeover. In the case that an acquirer has several takeovers in a few days, it is impossible to calculate the correct deal leverage per takeover with the available data.

For data on syndicated loans, I start with all syndicated loans in SDC Platinum that have an acquisition-related purpose. As a consequence from the restriction to acquisition-related loans, the typical uses of the proceeds according to SDC Platinum are *Future Acquisitions* or *Acquisition Financing*. Based on those two data sets, I match the borrower of the syndicated loans to the acquirers if any of the loan dates (announcement, signing, or closing) is within three days of the takeover's announcement or effective date. Even though the restrictive three-day matching window ensures great accuracy regarding the assigned takeover, it reduces the sample size in comparison to a longer matching window. Besides information on the borrower, SDC Platinum's loan section provides details on lending banks, loan amounts as well as conditions, and costs in form of a base rate plus margin.

To give an illustrative example of the observations in my sample: *Ladbroke Group PLC* announced on February 8th, 1999, that it would acquire *Stakis PLC* for a transaction value of 1.82 billion U.S. Dollar. On the same day, *Ladbroke Group PLC* also announced (and signed) a syndicated loan with the sole purpose of acquisition financing. The respective loan amount was 571 million U.S. Dollar; therefore, the proportion of bank financing in this takeovers is slightly above 31 percent.

I end up with a final sample of 950 takeovers with an assigned syndicated loan and sufficient data on the acquirer. This sample of 950 takeovers is distinctly larger than the corresponding samples of Bharadwaj and Shivdasani (2003) as well as Martynova and Renneboog (2009), with 115 observations and 312 (at least partly debt-financed) observations, respectively. All amounts, including returns, are denominated in U.S. Dollar.

5.4 Important Variables

To empirically test the outlined hypotheses of Chapter 5.2, I calculate several loan-based variables. The proportional deal leverage (*DealLeverage*) is defined as the ratio of totalized amount of assigned syndicated loans (*LoanAmount*) to the transaction value of the takeover (*TransactionValue*) and is capped at 100 percent.[7] This scaled variable is ex-

[7] According to Bharadwaj and Shivdasani (2003), there are two reasons why the amount of bank loan(s) might exceed the acquisition amount. First, bank loans are frequently used for several purposes and not only for one transaction. Second, bank loans can already be existing agreements or lines of credit, which might be larger than the actual amount needed. As shown in Regression (3) of Table 5.8, the results are robust regarding this cap.

pected to be an appropriate approximation of actual debt used to finance the takeover. As SDC Platinum sometimes reports several tranches and different loans for the same borrower on the same day, I aggregate the information on spread (*Spread*) and years to maturity (*Maturity*). If the information is disclosed, the years to maturity and the spread (measured in percentage points over a base rate) are calculated as the weighted average by the tranche's amount to ensure that larger tranches have a higher influence on the two measures.

Based on the weighted spread and the current level of interest rates, I calculate the expected upcoming yearly interest payment for the loan.[8] In a next step, I divide the pre-takeover EBIT of the acquirer (measured in the year before the announcement) by this interest payment to end up with the interest coverage (*Coverage*). The interest coverage is set to zero if the pre-takeover EBIT is negative.

One last loan-based variable is meant to approximate for the previous relationship between the bank and the borrower/acquirer. I use a dummy variable for the recent relationship (*RecentRelationship*) if the lead arranger has previously (in the last two years) lent another syndicated loan to the borrower. As this variable is only meaningful and a good approximation of the previous relationship if the role of the lead arranger is not split by several banks in the syndicate, I restrict the sample in this context to loans and takeovers with exactly one lead arranger.[9] For comparison, I exclude cases where the acquirer has not previously been active in the syndicated loan market. Therefore, the dummy variable equals zero if the acquirer had a previous loan (in the last two years) with one lead arranger other than the current lead arranger.

Also included in the empirical analyses are acquirer-specific and takeover-specific control variables, which are based on previous results investigating influences on abnormal returns. As these control variables are very similar to the controls of Chapter 4, I do not outline them again and directly refer to Table 5.1. For my empirical investigation in this chapter, the most important of those control variables is *CashPayment*, defined as

[8] The current interest level is approximated by the interest rate on government bonds. The corresponding data is provided by Kenneth R. French and available under http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html (May 19th, 2015). I exclude a few cases with base rates other than LIBOR to ensure comparability.

[9] Note that the sample to generate this variable includes all syndicated loans reported by SDC Platinum and is not restricted to acquisition-related loans. The only restriction is that the acquirer has one previous loan with one lead arranger.

the cash proportion as means of payment in the takeover. This variable is expected to capture the payment effect (as opposed to the financing effect, which should be captured by *DealLeverage*) in takeovers.

Table 5.1: List of Control Variables

Variable	Description
CashPayment[1]	Percentage of cash payment in the takeover
DifferentNations[1]	Cross-country dummy, one if different acquirer and target nations
DifferentIndustries[1]	Cross-industry dummy, one if different industries measured by the first two digits of the SIC code
FriendlyTakeover[1]	Dummy with one if takeover is friendly
MultipleBidders[1]	Dummy with one if more than one bidder is involved
PublicTarget[1]	Dummy for status of target, one if target is listed
CompletionTime[1]	Time difference in days between date announced and date effective
AcquirerLeverage[2,3]	Acquirer's leverage in the year before the takeover announcement
AcquirerTobinsQ[2,3]	Tobin's Q of acquirer the year before the takeover announcement
RelativeSize[1,2]	Transaction value divided by acquirer market value four weeks prior to the announcement date
TransactionValue[1]	Transaction value of the takeover in million U.S. Dollar
MarketValue[2]	Market value of the acquirer four weeks before the takeover announcement in million U.S. Dollar
NetCash[2,3]	Acquirer's net cash at year-end before the announcement divided by the acquirer's market value four weeks before the takeover
FreeCashFlow[2,3]	Free cash flow of acquirer in the year before the announcement in proportion to the market value of the acquirer

[1] indicates the SDC Platinum database and [2] indicates the Datastream/Worldscope database. Furthermore, [3] shows a winsorization at the bottom and top 0.5 percent.

5.5 Descriptive Statistics

5.5.1 Variable Overview

An overview of the variables in my sample is presented in Table 5.2. The average amount provided by banks is 1.15 billion U.S. Dollar and is influenced by a few very large loans. The middle 50 percent of loans ranges between 193 million U.S. Dollar and 1.18 billion U.S. Dollar and hence presents a better picture of the most often used size of a loan for takeover purposes. Those values are very similar to the results of Bharadwaj and Shivdasani (2003).

They report an average (median) loan amount of 1.25 billion U.S. Dollar (350 million U.S. Dollar) for their sample. One interesting figure is deal leverage as ratio of bank loan to transaction value of the acquisition. This measure averages at 84.00 percent with a relatively small standard deviation. Although the average of deal leverage appears high at a first glance, note that the sample does not include any takeover without a bank loan as a consequence of the matching procedure. Furthermore, the average percentage of cash payment is 78.98 percent, and based on the previous assumption of cash payment being equal to debt financing, the values for deal leverage seem reasonable. This also seems valid if compared to Bharadwaj and Shivdasani (2003). Their sample includes cash tender offers without any bank financing; nevertheless, they find that banks finance the entire takeover in half of their takeovers. It also underlines the assumption that acquirers are not using other external sources of financing besides the matched syndicated loans.

Table 5.2: Summary Statistics of Firm-Specific and Takeover-Specific Variables

Variable	Obs.	Mean	Std. Dev.	25^{th} Pctl.	50^{th} Pctl.	75^{th} Pctl.
LoanAmount[1]	950	1,146.78	2,262.45	193.07	433.79	1,175.00
DealLeverage	950	84.00%	23.45%	71.05%	100.00%	100.00%
Maturity	833	4.01	1.88	2.80	4.60	5.00
Spread	724	2.10%	1.33%	1.12%	2.00%	2.75%
Coverage	672	11.94	41.80	1.29	3.04	7.93
RecentRelationship	118	0.46	0.50	0.00	0.00	1.00
CashPayment	747	78.98%	30.51%	63.23%	100.00%	100.00%
DifferentNations	950	0.71	0.46	0.00	1.00	1.00
DifferentIndustries	950	0.31	0.46	0.00	0.00	1.00
FriendlyTakeover	950	0.97	0.16	1.00	1.00	1.00
MultipleBidders	950	0.02	0.15	0.00	0.00	0.00
PublicTarget	950	0.30	0.46	0.00	0.00	1.00
CompletionTime	950	80.16	78.50	35.00	58.50	105.00
AcquirerLeverage[2]	930	35.12%	25.34%	15.60%	34.48%	50.07%
AcquirerTobinsQ[2]	930	1.93	1.09	1.29	1.63	2.19
TransactionValue[1]	950	1,470.09	4,308.73	152.33	393.50	1,250.00
MarketValue[1]	950	4,052.92	1,1347.69	417.51	990.26	3,072.17
NetCash[2]	901	4.66%	13.11%	-0.42%	2.75%	9.41%
FreeCashFlow[2]	912	9.48%	9.86%	4.19%	7.44%	12.68%

[1] indicates values in million U.S. Dollar. Furthermore, [2] shows a winsorization at the bottom and top 0.5 percent. *Maturity* is given in years and *CompletionTime* is given in days. A detailed explanation of all variables is given in Chapter 5.4, and most variables are also explained in Chapter 4.4.

For most of the loans, the final maturity in years and a spread in percentage points over a defined base rate (mostly LIBOR) is reported. The maturity is typically three to

five years, and the spread varies evenly around two percentage points.[10] A large variation can be seen for the interest coverage. Whereas half of the borrowers have a pre-takeover EBIT that covers the expected interest payments just three times, the average of 11.94 and the corresponding standard deviation of 41.80 are very high – indicating that some acquirers easily cover the related interests. Approximately half of the acquirers appears to have an ongoing banking relationship with the lending bank. However, this variable is only calculated for a small fraction of the sample, as it is hardly meaningful in cases of more than one lead arranger. For cash as means of payment, I observe relatively high values. More than half of the takeovers is completely cash-paid. This is unsurprising when considering that my sample only consists of bank-financed takeovers.

Regarding other takeover-related variables, most takeovers are considered to be cross-country takeovers within the same industry. Hardly any variation exists for the attitude of the takeover and the competition among bidders, as almost all of the takeovers have a friendly attitude and only one bidder.[11] As in Chapter 4, only 30 percent of the targets are listed before the takeover. The completion time for the acquisition is approximately two to three months with a large variation as indicated by the corresponding standard deviation. For the acquirer, the average pre-merger leverage and Tobin's Q are 35.12 percent and 1.93, respectively. With regard to size of the takeover, the mean value of 1.47 billion U.S. Dollar is largely influenced by a few huge acquisitions. The middle 50 percent ranges between 152 million U.S. Dollar and 1.25 billion U.S. Dollar. A similar result to the transaction value is also shown for the acquirer's market capitalization before the takeover. The average of 4.05 billion U.S. Dollar is influenced by a few large acquirers.

To control for the ability to finance a takeover with internal funds, the level of net cash and the free cash flow in the year before the announcement are calculated relative to the size of the acquirer. The pre-takeover net cash averages at 4.66 percent and varies approximately five percentage points in both directions for half of the acquirers. A similar variation can be observed for the acquirer's pre-takeover free cash flow with a mean value of 9.48 percent.

[10] For comparison, Chava and Roberts (2008) report an average (median) maturity of 3.91 years (3 years) and an average (median) spread of 2.19 percentage points (2.00 percentage points) for U.S. firms.

[11] For comparison, Bharadwaj and Shivdasani (2003) show that 4.88 percent of the partially bank-financed takeovers and 15.00 percent of the entirely bank-financed takeovers have multiple bidders. They also confirm the low proportion of hostile takeovers, with 4.88 percent for partially bank-financed takeovers and 12.50 percent for entirely bank-financed takeovers.

5.5.2 Return Overview

As the chapter's main focus is on the influence of deal characteristics – in particular, the source of financing – on the success of the takeover, Table 5.3 provides empirical evidence on average cumulative abnormal returns, categorized in two dimensions by cash payment and deal leverage, as well as in total.[12] The only negative average cumulative abnormal return is in the category of low cash payment and simultaneously low deal leverage; however, this value lacks in significance when controlling for the event-introduced variance of returns as proposed by Boehmer, Masumeci, and Poulsen (1991). Low deal leverage is also not associated with significant abnormal returns for higher proportions of cash payment. For takeovers with more than 50 percent bank financing, all resulting abnormal returns are positive and significant – regardless of the proportion of cash payment and the used standard errors. Nevertheless, there is a weak trend of higher abnormal returns if the deal leverage increases.

Table 5.3: Average Cumulative Abnormal Returns

	DealLeverage			
CashPayment	Maximum of 50%	50% to 100%	Exactly 100%	Total
Maximum of 50%	-1.52%**	2.32%***	3.03%***	1.03%**
	[-0.95]	[1.71*]	[1.94*]	[1.13]
	(54)	(40)	(43)	(137)
50% to 100%	0.66%	4.35%***	4.01%***	3.80%***
	[0.23]	[3.01***]	[5.69***]	[5.18***]
	(22)	(85)	(109)	(216)
Exactly 100%	1.25%	2.35%***	2.55%***	2.42%***
	[0.60]	[2.88***]	[5.65***]	[6.04***]
	(19)	(128)	(247)	(394)
Total	0.36%	2.97%***	3.03%***	2.69%***
	[0.34]	[5.18***]	[8.75***]	[9.06***]
	(114)	(311)	(525)	(950)

Average cumulative abnormal returns, Boehmer, Masumeci, and Poulsen (1991) test statistic in squared brackets, and observations in parentheses for two dimensions: deal leverage and payment method. *, **, and *** indicate a significance of average cumulative abnormal returns on a ten-, five-, and one-percent level using the respective test statistic. Abnormal returns are calculated as explained in Chapter 3.1, with the market model for a symmetric three-day event window around the announcement date. The estimation period starts 190 days before and ends 41 days prior to the announcement.

[12] Note that the total row has more observations than the sum of the respective column because the total row includes observations with an undisclosed method of payment. As Table 5.2 shows, the payment method is only available for 747 out of 950 takeovers.

Takeovers with low levels of cash payment have weaker announcement returns than takeovers that are mostly paid for in cash; however, fully cash-paid takeovers do not have the highest abnormal returns. For comparison, the average cumulative abnormal return for fully stock-paid takeovers is an insignificant 0.66 percent. It is worth noting that the high proportion of private targets (70 percent as shown in Table 5.2) might overlay the often-found payment effect in this univariate setting, as fully cash-paid takeovers have lower average cumulative abnormal returns than takeovers with a majority of cash payment. The next chapter investigates this in further detail by applying a multivariate setting.

Independent of the payment method, the results suggest positive abnormal announcement returns of bank-financed takeovers with a highly significant average cumulative abnormal return of 2.69 percent for the whole sample, which confirms Hypothesis 2.1.[13] Overall, those findings are in line with the theoretical expectations outlined in Chapter 2 for a sample consisting exclusively of bank-financed takeovers.

5.6 Regression Results

5.6.1 Link between Payment Method and Source of Financing

In several previous studies, debt financing has been approximated with the help of cash as method of payment. Assuming that the calculated deal leverage based on the assigned bank loan(s) represents the true percentage of debt used in the acquisition, this approximation can be validated. The highly significant correlation coefficient of cash as means of payment and deal leverage is 0.39 and supports Hypothesis 2.2. On the one hand, this means that the proportion of cash payment at least partly approximates for the actual deal leverage and the assumption of previous researchers is justified. On the other hand, there seems to be much variation for the deal leverage left when assuming that the proportion of cash payment is an exact approximation.

Table 5.4 provides some insights if it indeed does prove to be a problem for further empirical studies. Regression (1) considers a regression setting based on the full sample.

[13] Remarkably, the 2.69 percent of average cumulative abnormal returns in this sample is close to the results of Bharadwaj and Shivdasani (2003). Their analysis shows an average cumulative abnormal return of -0.27 percent for partially bank-financed takeovers (41 out of 115 successful cash tender offers) and 4.00 percent for acquisitions entirely financed with bank debt (40 out of 115 successful cash tender offers) over the symmetric three-day event window. The result is also in line with Martynova and Renneboog (2009) who find an underperformance of internal financing when compared to debt-financed takeovers.

Even though the estimated coefficient of *CashPayment* is positive (as expected), it lacks statistical significance. This is in line with previous studies that differentiate between public and private targets. Those studies find insignificant returns for cash-paid takeovers and significant negative returns for stock-paid ones when the target is public. For private targets, the studies reveal positive abnormal returns for both methods of payment. Therefore, the positive effect of cash payment might only exist among public targets, and the payment effect might be unable to explain the cumulative abnormal returns for private targets.

Regression (2) and Regression (3) only investigate takeovers with private and public targets, respectively. Those regressions confirm the previous research on the effect of cash payment. Whereas cash payment has no significant effect on the cumulative abnormal returns when buying a private target in Regression (2), the effect is not only significant but also huge in economic terms when buying a public target in Regression (3). Assuming that all other influencing variables on the cumulative abnormal returns of a public target stay constant, going from no cash payment to full cash payment increases the cumulative abnormal returns by 4.30 percentage points.

Based on that finding, Regression (4) directly tests whether the previously reported positive effect of cash payment is caused by the payment method or just by its correlation to the proportion of debt financing. Therefore, Regression (4) separates the actual payment effect from the financing effect. The results strongly suggest that previous findings on the payment effect might be caused by the correlation to the source of financing. When controlling for the applied leverage of the takeover, the payment effect is rendered insignificant.[14] Furthermore, the source of financing is significant and also has huge economic implications. Increasing deal leverage by 50 percentage points yields cumulative abnormal returns that are 3.015 percentage points higher – assuming that all other variables remain

[14] As the high and significant correlation between *DealLeverage* and *CashPayment* might raise concerns about multicollinearity, I calculate the variance inflation factor in Regression (4) of Table 5.4 and later, in Regression (2) of Table 5.5. The maximum (mean) variance inflation factor in Regression (4) of Table 5.4 is 1.63 (1.31). For Regression (2) of Table 5.5, the maximum (mean) variance inflation factor is 1.62 (1.24). Additionally, I calculate the condition number of *DealLeverage* and *CashPayment* for the sample in Regression (4) of Table 5.4 and the sample in Regression (2) of Table 5.5. According to Belsley, Kuh, and Welsch (2004), the condition number helps to detect multicollinearity, and a condition number above 30 indicates moderate to strong relations. The condition number for the two variables in the sample of Regression (4) of Table 5.4 is 7.18 and in the sample of Regression (2) of Table 5.5, the condition number is 8.42. Therefore, both measures – the variance inflation factor and the condition number – suggest that my regression results do not face multicollinearity issues.

Table 5.4: OLS Regressions for Payment Effect

	(1)	(2)	(3)	(4)
Dependent Variable		CAR		
Restriction	None	Private Targets	Public Targets	Public Targets
DealLeverage				0.0603**
				(0.0258)
CashPayment	0.00860	-0.0204	0.0430**	0.0226
	(0.0143)	(0.0210)	(0.0208)	(0.0223)
AcquirerLeverage	0.0252*	0.0206	0.0510**	0.0407*
	(0.0141)	(0.0184)	(0.0228)	(0.0232)
AcquirerTobinsQ	-0.00215	0.00359	-0.00966	-0.00796
	(0.0043)	(0.0041)	(0.0089)	(0.0089)
RelativeSize	0.0186**	0.0343*	0.00524*	0.00592*
	(0.0091)	(0.0183)	(0.0031)	(0.0033)
ln(TransactionValue)	-0.00489*	-0.000467	-0.0112**	-0.00746
	(0.0029)	(0.0036)	(0.0050)	(0.0047)
NetCash	0.0445	0.0368	0.00321	0.0190
	(0.0300)	(0.0360)	(0.0476)	(0.0477)
FreeCashFlow	-0.0594	-0.0555	-0.0614	-0.0661
	(0.0391)	(0.0477)	(0.0572)	(0.0583)
ln(CompletionTime)	0.00140	-0.00347	0.0145	0.0143
	(0.0040)	(0.0043)	(0.0111)	(0.0110)
DifferentNations	-0.00706	0.00610	-0.0215	-0.0216
	(0.0083)	(0.0096)	(0.0159)	(0.0156)
DifferentIndustries	-0.00817	-0.00403	-0.0160	-0.0181
	(0.0077)	(0.0098)	(0.0128)	(0.0129)
FriendlyTakeover	0.0261	0.0101	0.0282	0.0290
	(0.0242)	(0.0300)	(0.0257)	(0.0247)
MultipleBidders	-0.0166	-0.0766***	0.00385	0.00328
	(0.0177)	(0.0161)	(0.0229)	(0.0233)
PublicTarget	-0.0282***			
	(0.0082)			
Constant	0.0243	0.0277	-0.0164	-0.0748
	(0.0339)	(0.0426)	(0.0662)	(0.0671)
Observations	658	416	242	242
Adjusted R^2	0.058	0.078	0.048	0.065

Heteroscedasticity-consistent standard errors are in parentheses. *, **, and *** indicate a significant difference from zero on a ten-, five-, and one-percent level. A detailed explanation of all variables is given in Chapter 5.4. The cumulative abnormal returns are calculated as explained in Chapter 3.1, with a market model for a symmetric three-day event window around the announcement date. The estimation period starts 190 days before and ends 41 days prior to the announcement.

constant. Those results directly support Hypothesis 2.3 and Hypothesis 2.4. Interestingly, the explanatory power also increases from 0.048 in Regression (3) to 0.065 in Regression (4). This underlines that the actual source of financing is important in explaining the abnormal returns during the announcement of a takeover.

5.6.2 Influence of Bank Financing on Abnormal Returns

To further investigate this finding and extend Hypothesis 2.4 to all targets, Table 5.5 shows four different regression settings – this time, for private and public targets. As the payment method is not disclosed for all takeovers and therefore, results in a drop in observations, Regression (1) and Regression (3) waive this control variable. To account for industry-, year-, and country-related effects, Regression (3) and Regression (4) include a set of fixed effects. Besides the acquirer's nation and industry, the target's nation and industry, as well as the effective year, are also considered thereby.

In all four regressions of Table 5.5, deal leverage has a positive and significant coefficient. Although the estimated coefficient is lower than in Regression (4) of Table 5.4, it is still large regarding its economic implication and is very stable between 0.0324 and 0.0418. On average, increasing deal leverage by 50 percentage points results in additional returns of approximately two percent. As already seen in Table 5.4, the payment effect does not help to describe the observed cumulative abnormal returns once the actual source of financing is included. Not only is the coefficient insignificant and distinctly smaller than in Regression (3) of Table 5.4, but also, the negative sign is contrary to the expectation. Overall, the results of Table 5.5 strongly support Hypothesis 2.4, even if the sample is no longer restricted to public targets.

Besides the variable for the source of financing, several other variables always have a significant impact on the cumulative abnormal returns. First, the relative size of the target compared to the acquirer has significant and stable coefficients between 0.0107 and 0.0190. This is consistent with the findings of Schlingemann (2004). However, one has to keep in mind that the economic effect of relative size is rather low when interpreting this coefficient. Increasing the relative size from the first quartile of the sample (relative size of 20 percent) to the second quartile of the sample (relative size of 40 percent) is equal to doubling the size of the target. However, the cumulative abnormal returns only increase by approximately 0.3 percentage points – assuming that other variables stay constant.

Table 5.5: OLS Regressions for Deal Leverage

	(1)	(2)	(3)	(4)
Dependent Variable		CAR		
DealLeverage	0.0324**	0.0403**	0.0346**	0.0418**
	(0.0150)	(0.0179)	(0.0160)	(0.0196)
CashPayment		-0.00253		-0.00672
		(0.0148)		(0.0158)
AcquirerLeverage	0.0194	0.0200	0.00976	0.0120
	(0.0125)	(0.0141)	(0.0137)	(0.0163)
AcquirerTobinsQ	-0.000913	-0.00165	-0.00131	-0.00165
	(0.0038)	(0.0042)	(0.0037)	(0.0041)
RelativeSize	0.0181**	0.0190**	0.0111**	0.0107**
	(0.0084)	(0.0093)	(0.0044)	(0.0044)
ln(TransactionValue)	-0.00432*	-0.00303	-0.00560*	-0.00404
	(0.0025)	(0.0029)	(0.0029)	(0.0033)
NetCash	0.0485*	0.0504*	0.00916	0.0220
	(0.0259)	(0.0298)	(0.0277)	(0.0337)
FreeCashFlow	-0.0777**	-0.0652*	-0.0776**	-0.0830*
	(0.0348)	(0.0394)	(0.0356)	(0.0430)
ln(CompletionTime)	0.00106	0.00187	0.00390	0.00497
	(0.0034)	(0.0040)	(0.0038)	(0.0043)
DifferentNations	-0.0108	-0.00643	-0.0229**	-0.0186*
	(0.0070)	(0.0082)	(0.0089)	(0.0111)
DifferentIndustries	-0.00773	-0.00922	-0.0133*	-0.0143
	(0.0068)	(0.0078)	(0.0078)	(0.0092)
FriendlyTakeover	0.0105	0.0263	-0.00185	0.0128
	(0.0218)	(0.0243)	(0.0203)	(0.0217)
MultipleBidders	-0.00450	-0.0169	0.00154	-0.0169
	(0.0235)	(0.0185)	(0.0241)	(0.0203)
PublicTarget	-0.0217***	-0.0287***	-0.0216**	-0.0253***
	(0.0076)	(0.0082)	(0.0088)	(0.0096)
Constant	0.0178	-0.0131	0.0455	0.000434
	(0.0311)	(0.0360)	(0.0499)	(0.0564)
Year Fixed Effects	No	No	Yes	Yes
Industry Fixed Effects	No	No	Yes	Yes
Nation Fixed Effects	No	No	Yes	Yes
Observations	827	658	827	658
Adjusted R^2	0.051	0.065	0.125	0.119

Heteroscedasticity-consistent standard errors are in parentheses. *, **, and *** indicate a significant difference from zero on a ten-, five-, and one-percent level. A detailed explanation of all variables is given in Chapter 5.4. Year fixed effects are based on the announcement year. Industry fixed effects include acquirer as well as target industry fixed effects, based on the first digit of the respective primary SIC code. Acquirer and target are considered in nation fixed effects. The cumulative abnormal returns are calculated as explained in Chapter 3.1, with a market model for a symmetric three-day event window around the announcement date. The estimation period starts 190 days before and ends 41 days prior to the announcement.

Second, the dummy variable for public targets is highly significant, very constant, and has an approximate impact on the cumulative abnormal returns of 2.5 percent. This implies that buying a public target instead of a private target decreases the abnormal returns by 2.5 percentage points – again, assuming that the other influences stay the same. Third, the control variable for the acquirer's pre-takeover free cash flows has significant negative estimates. This is in line with previous research and the expectations of the free cash flow theory, as higher free cash flows yield to poorer acquisition choices.

Table 5.5 suggests that higher deal leverage is associated with higher cumulative abnormal returns. As deal leverage is an appropriate approximation for bank involvement, higher deal leverage also suggests an increased risk for the involved bank(s). Therefore, the results provide empirical evidence for Hypothesis 2.5, and higher risk for the lending bank signals a more successful takeover.

5.6.3 Influence of Loan Characteristics on Abnormal Returns

Because the proportion of deal leverage is just one way of approximating for a higher risk for the involved bank(s), Table 5.6 presents regression results for four more measures that are supposed to approximate for bank risk. Regression (1) considers the maturity of the loan. Longer maturity is usually riskier for the bank, as the uncertainty increases and therefore, a positive coefficient is expected and actually obtained. The economic implications of this coefficient seem reasonable, as extending the loan maturity from 2.80 years (first quartile) to 4.60 (second quartile) yields approximately 0.62 percentage points higher cumulative abnormal returns – all else being equal.

Regression (2) of Table 5.6 uses the disclosed spread in percentage points as approximation for the riskiness of a loan. Higher spreads are equal to higher compensation for the affiliated risk. Again in line with the theoretical expectation, the coefficient is significant and positive. In economic size, the results are very similar to maturity in Regression (1). An increased spread from 1.13 percent (first quartile) to 2.00 percent (second quartile) results in an increase of 0.49 percentage points for the cumulative abnormal returns – again, all else being equal.

As banks are debt providers in this context, one could argue that banks are not really interested in beneficial takeovers, but rather in repayment of the loan and payment of

Table 5.6: OLS Regressions for Loan Characteristics

	(1)	(2)	(3)	(4)
Dependent Variable		CAR		
ln(Maturity)	0.0125**			
	(0.0056)			
Spread		0.568*		
		(0.3093)		
Coverage			-0.000107**	
			(0.0001)	
RecentRelationship				-0.0561**
				(0.0211)
CashPayment	0.00402	0.0112	0.0156	0.0156
	(0.0150)	(0.0153)	(0.0148)	(0.0388)
AcquirerLeverage	0.0158	0.00928	0.0206	0.0466
	(0.0157)	(0.0165)	(0.0160)	(0.0392)
AcquirerTobinsQ	-0.000954	0.00276	0.00445	-0.0166
	(0.0043)	(0.0044)	(0.0039)	(0.0215)
RelativeSize	0.0220*	0.0216*	0.0217*	0.0514
	(0.0113)	(0.0123)	(0.0122)	(0.0407)
ln(TransactionValue)	-0.00363	-0.00231	-0.00164	0.00181
	(0.0033)	(0.0035)	(0.0033)	(0.0090)
NetCash	0.0434	0.0337	0.0464	0.0756
	(0.0314)	(0.0355)	(0.0337)	(0.0938)
FreeCashFlow	-0.0510	-0.0482	-0.0401	-0.0481
	(0.0398)	(0.0523)	(0.0507)	(0.0797)
ln(CompletionTime)	-0.00106	0.00248	0.000895	-0.0163
	(0.0040)	(0.0049)	(0.0048)	(0.0145)
DifferentNations	-0.0128	-0.00988	-0.00948	-0.0689**
	(0.0092)	(0.0104)	(0.0102)	(0.0262)
DifferentIndustries	-0.00912	-0.0117	-0.0106	0.00349
	(0.0085)	(0.0096)	(0.0094)	(0.0237)
FriendlyTakeover	0.0285	0.0381	0.0389	0.0627
	(0.0253)	(0.0333)	(0.0312)	(0.0646)
MultipleBidders	-0.0188	-0.0222	-0.0231	-0.0183
	(0.0184)	(0.0174)	(0.0176)	(0.0420)
PublicTarget	-0.0292***	-0.0352***	-0.0363***	-0.0258
	(0.0091)	(0.0094)	(0.0094)	(0.0234)
Constant	0.0134	-0.0198	-0.0186	0.0882
	(0.0363)	(0.0440)	(0.0396)	(0.0954)
Observations	585	506	509	72
Adjusted R^2	0.076	0.077	0.081	0.200

Heteroscedasticity-consistent standard errors are in parentheses. *, **, and *** indicate a significant difference from zero on a ten-, five-, and one-percent level. A detailed explanation of all variables is given in Chapter 5.4. The cumulative abnormal returns are calculated as explained in Chapter 3.1, with a market model for a symmetric three-day event window around the announcement date. The estimation period starts 190 days before and ends 41 days prior to the announcement.

the related interests.[15] However, the reasoning that banks should investigate takeovers more closely when the risk is higher is still valid. Therefore, a negative significant coefficient for the interest coverage is expected in Regression (3), as lower interest coverage implies a higher risk of default and for the bank, writing down the loan. Regression (3) provides empirical evidence that lower interest coverage (and hence, a riskier loan from the perspective of a bank) has a positive influence on the expected cumulative abnormal returns.

Last but not least, Regression (4) of Table 5.6 considers the existence of a recent relationship between the lead arranger and the borrowing acquirer. If there is an ongoing banking relationship, the bank should possess historical and confidential information. In those cases, an additional loan for a takeover should be associated with less risk. Following the aforementioned reasoning of a higher value of bank involvement in riskier takeovers, a negative coefficient for the dummy variable of a recent banking relationship is expected. This is empirically confirmed in Regression (4) of Table 5.6 with a significant coefficient of -0.0561 for the dummy variable.

In total, the results of Table 5.6 strongly support Hypothesis 2.5. Higher risk for the lending bank is related to greater monitoring and screening. As a consequence, those takeovers that imply high risk for the bank are associated with higher abnormal returns. This does not only hold true for an approximation with the proportion of leverage for the takeover, but also with other loan characteristics that indicate the riskiness of the loan. Before summarizing all outcomes of this investigation, several robustness tests are performed in the following.

5.7 Robustness Tests

In all event studies, estimating the expected (or normal) return and thereby an abnormal return is crucial, as the cumulative abnormal return approximates the success of the takeover. Two central assumptions are the correct model type for determining abnormal returns during the event window and selecting an appropriate period for estimating coefficients (estimation period) as well as measuring abnormal returns (event window). All

[15] An example can be an unattractive diversifying takeover. Even though the takeover might be disadvantageous for shareholders of the acquirer, it could enhance the debt value, as the cash flows have a lower variance (are more stable).

previous calculations are based on the market model with an estimation period starting at $t_0 = -190$ and ending at $t_1 = -41$, resulting in a time frame of 150 days and a symmetric three-day event window. Table 5.7 shows regressions similar to Regression (2) of Table 5.5 but uses different settings for the dependent variable with regard to the model and the time frames.

More precisely, Regression (1) applies the market model with a shortened 100-day estimation period, starting at $t_0 = -120$ and ending at $t_1 = -21$. Regression (2) also makes use of the market model and extends the symmetric event window from three days to five days. The previous conclusions are unaffected by either modification of the window length, as both regressions are very similar to Regression (2) of Table 5.5. The influence of deal leverage has basically unchanged coefficients and keeps its significance in both cases. However, the variable drops from a five-percent significance level to a ten-percent level in Regression (2). This might be caused by the less accurate estimation of cumulative abnormal returns, as a longer event window might diminish the announcement effect.

Regression (3) and Regression (4) of Table 5.7 apply the original window lengths with an estimation period of 150 days and a symmetric three-day event window, but the model is changed to a constant mean return model in Regression (3) and the Fama and French (1993) three-factor model in Regression (4). As before, the results are unaffected by those changes in the estimation procedure. Comparing the three models, the constant mean return model is the most inaccurate, as it does not account for the overall market movement during the event window. Similar to an extension of the event window in Regression (2) of Table 5.7, this increase in inaccuracy might explain the drop in significance of the variable for deal leverage in Regression (3).

Other than the variable for deal leverage, the relative size, the net cash level of the acquirer, and the dummy variable for public targets have significant estimates in more than one case. The direction and estimates are as expected based on Regression (2) of Table 5.5. Altogether, none of the modifications with regard to the model type or window length has a considerable influence on the qualitative results.

In Table 5.6, I argue that the chosen loan characteristics are a signal for a riskier loan from a bank's point of view. The resulting estimates and significances are in line with the signaling and monitoring task of banks. More precisely, I expect banks to carefully screen the initial loan request and monitor the ongoing integration of the target if they

Table 5.7: OLS Regressions with Different Models

	(1)	(2)	(3)	(4)
Dependent Variable	CAR			
Model	Market Model		Constant Mean Return Model	Three-Factor Model
Estimation Period	-120 to -21	-190 to -41	-190 to -41	-190 to -41
Event Window	-1 to +1	-2 to +2	-1 to +1	-1 to +1
DealLeverage	0.0407**	0.0331*	0.0347*	0.0395**
	(0.0179)	(0.0195)	(0.0185)	(0.0176)
CashPayment	-0.00346	0.00345	0.00192	0.0000224
	(0.0149)	(0.0151)	(0.0156)	(0.0150)
AcquirerLeverage	0.0210	0.0285*	0.0191	0.0192
	(0.0139)	(0.0150)	(0.0147)	(0.0140)
AcquirerTobinsQ	-0.00111	-0.000519	-0.00191	-0.00177
	(0.0041)	(0.0040)	(0.0043)	(0.0040)
RelativeSize	0.0191**	0.0204***	0.0190**	0.0189**
	(0.0092)	(0.0074)	(0.0093)	(0.0094)
ln(TransactionValue)	-0.00281	-0.00349	-0.00313	-0.00236
	(0.0029)	(0.0030)	(0.0029)	(0.0029)
NetCash	0.0594**	0.0366	0.0440	0.0522*
	(0.0299)	(0.0316)	(0.0312)	(0.0297)
FreeCashFlow	-0.0599	-0.0562	-0.0658	-0.0787**
	(0.0399)	(0.0377)	(0.0413)	(0.0396)
ln(CompletionTime)	0.00148	0.00313	0.00143	0.000540
	(0.0040)	(0.0044)	(0.0041)	(0.0040)
DifferentNations	-0.00618	-0.00939	-0.00664	-0.00807
	(0.0083)	(0.0083)	(0.0085)	(0.0082)
DifferentIndustries	-0.0104	-0.00791	-0.00586	-0.00813
	(0.0078)	(0.0083)	(0.0081)	(0.0078)
FriendlyTakeover	0.0270	0.0211	0.0287	0.0242
	(0.0245)	(0.0211)	(0.0249)	(0.0249)
MultipleBidders	-0.0181	-0.0165	-0.0118	-0.0188
	(0.0186)	(0.0171)	(0.0188)	(0.0183)
PublicTarget	-0.0285***	-0.0337***	-0.0278***	-0.0288***
	(0.0082)	(0.0088)	(0.0085)	(0.0082)
Constant	-0.0152	-0.0108	-0.0122	-0.00911
	(0.0364)	(0.0358)	(0.0375)	(0.0367)
Observations	658	655	658	658
Adjusted R^2	0.066	0.069	0.056	0.067

Heteroscedasticity-consistent standard errors are in parentheses. *, **, and *** indicate a significant difference from zero on a ten-, five-, and one-percent level. A detailed explanation of all variables is given in Chapter 5.4. Chapter 3.1 explains the implemented models.

provide a loan. However, one could argue that banks are associated with higher abnormal returns when they have inside information and therefore, have a better understanding of the economic value of the takeover. The latter would imply different directions for the variables of interest in Table 5.6, as the risk with inside information should be lower. To test this reasoning and separate both effects, I use the observations of acquirers with a previous banking relationship (*RecentRelationship* = 1). For those acquirers, I calculate the time difference in days since their last loan from that particular bank (*LastLoan*). A longer time difference can be interpreted as an increase in risk for the lending bank, and a shorter time difference can be interpreted as more inside information. Furthermore, note that the setting is not biased by differences in recent relationships. Regression (1) of Table 5.8 shows the corresponding regression results.

The estimated coefficient of the newly introduced variable (*LastLoan*) has a positive sign and is significant on a five-percent level. This means that better (inside) information – as one would expect for shorter time differences between loans – does not explain the higher abnormal returns. In contrast, longer time differences between loans and therefore, higher risk for the lending bank (as the relationship to the acquirer is less recent), signal more successful takeovers. It is important to note that the sample of Regression (1) is relatively small and as a consequence, the variable for competition among bidders is omitted because of perfect multicollinearity.

As this chapter uses a setting of bank involvement in the context of takeovers, a closely-related strand of literature concerning the influence of investment banks on the performance of acquirers is considered (for example, Rau, 2000; Bao and Edmans, 2011; Golubov, Petmezas, and Travlos, 2012). Even though the influence of the composition of the syndicate or single banks is outside of the contribution for this empirical investigation, the previous literature on investment banks raises the question if the quality of syndicates influences the announcement returns. This is strongly related to the results of Regression (4) of Table 5.6, as the quality of the lead arranger is expected to positively influence the quality of the screening and monitoring process. Therefore, one would expect that high-quality lead arrangers with extensive experience in the context of acquisition-related loans have a more appropriate judging on the takeover. The consequence would be higher cumulative abnormal returns. To empirically test this question, I basically follow the approaches of Fang (2005) as well as Golubov, Petmezas, and Travlos (2012) and generate a

Table 5.8: OLS Regressions with Additional Settings

	(1)	(2)	(3)	(4)
Dependent Variable	CAR			
Restriction	Recent Relationship	Regression (4) of Table 5.6	Deal Leverage Below 100%	Loan Outside Event Window
ln(LastLoan)	0.0137**			
	(0.0054)			
EliteBank		0.0437*		
		(0.0261)		
DealLeverage			0.0555**	0.0552***
			(0.0271)	(0.0201)
CashPayment	-0.0456	0.0424	-0.00219	-0.00897
	(0.0373)	(0.0356)	(0.0221)	(0.0166)
AcquirerLeverage	0.0640	0.0511	0.0244	0.0000604
	(0.0553)	(0.0415)	(0.0261)	(0.0184)
AcquirerTobinsQ	0.0281**	-0.0142	0.00210	0.00162
	(0.0119)	(0.0180)	(0.0061)	(0.0052)
RelativeSize	0.0151	0.0696	0.0266*	0.0241*
	(0.0290)	(0.0439)	(0.0153)	(0.0126)
ln(TransactionValue)	0.00378	0.00512	0.00104	-0.00213
	(0.0112)	(0.0103)	(0.0042)	(0.0036)
NetCash	-0.0217	0.0606	0.0500	0.0435
	(0.0756)	(0.0987)	(0.0421)	(0.0363)
FreeCashFlow	-0.0761	-0.0307	-0.0292	-0.0765
	(0.0766)	(0.0819)	(0.0626)	(0.0514)
ln(CompletionTime)	-0.00813	-0.0169	-0.000963	0.00180
	(0.0191)	(0.0158)	(0.0072)	(0.0053)
DifferentNations	-0.0607*	-0.0567**	-0.0136	-0.00167
	(0.0301)	(0.0271)	(0.0126)	(0.0106)
DifferentIndustries	0.0336	0.0101	-0.0138	-0.0101
	(0.0321)	(0.0264)	(0.0144)	(0.0090)
FriendlyTakeover	-0.0174	0.0399	0.0205	0.0466
	(0.0288)	(0.0517)	(0.0404)	(0.0346)
MultipleBidders		0.0000922	-0.0107	-0.0166
		(0.0499)	(0.0225)	(0.0255)
PublicTarget	-0.0228	-0.0436*	-0.0501***	-0.0359***
	(0.0260)	(0.0256)	(0.0128)	(0.0101)
Constant	-0.0323	0.0118	-0.0333	-0.0491
	(0.0996)	(0.0871)	(0.0591)	(0.0450)
Observations	44	72	317	497
Adjusted R^2	0.119	0.158	0.102	0.080

Heteroscedasticity-consistent standard errors are in parentheses. *, **, and *** indicate a significant difference from zero on a ten-, five-, and one-percent level. Regression (3) focuses on takeovers that are not completely financed with loans. Regression (4) excludes loan announcements inside the event window. Most variables are explained in Chapter 5.4. The cumulative abnormal returns are calculated as explained in Chapter 3.1, with a market model for a symmetric three-day event window around the announcement date. The estimation period starts 190 days before and ends 41 days prior to the announcement.

dummy variable (*EliteBank*) for the top-tier lead arrangers. As the market for advisory by investment banks and the market for acquisition-related syndicated loans are quite different, I classify the top-tier banks on the basis of market share data in the category of acquisition-related syndicated loans.[16] I use a threshold of four percent market share to differentiate between top-tier and other lending banks – this threshold is similar to the market share of the last top-tier investment bank in the study of Fang (2005). As a result, the dummy variable considers *JP Morgan*, *Bank of America Merrill Lynch*, *Citi*, *RBS*, *Barclays*, and *Deutsche Bank* as top-tier lead arrangers. Regression (2) of Table 5.8 displays the results of this setting. Note that the sample is restricted to the 72 observations of Regression (4) of Table 5.6. Around 35 percent of the considered syndicated loans are led by a top-tier arranger. The estimated coefficient is significant on a ten-percent level and has a reasonable economic size. Having a top-tier lead arranger increases the cumulative abnormal returns by approximately 4.37 percentage points – assuming that all other variables remain constant.

The key variable in this chapter is *DealLeverage*, which is (by definition) capped at 100 percent. It is possible that truncating the key variable is critical for the results. Furthermore, the previous conclusions on a positive correlation between cumulative abnormal returns and deal leverage might be misleading if only fully bank-financed takeovers outperform and bank financing has no explanatory power for partly loan-financed takeovers. To rule out these two issues, Regression (3) of Table 5.8 excludes all observations with a deal leverage of 100 percent and is otherwise similar to Regression (2) of Table 5.5. This exclusion does not change the previous results. The estimated coefficient is with 0.0555 slightly higher than the 0.0403 as reported in Regression (2) of Table 5.5. The significance remains unchanged at a five-percent level. Therefore, the positive correlation of deal leverage and cumulative abnormal returns also holds true for partly bank-financed takeovers.

One last issue I investigate in the setting of at least partly bank-financed takeovers is a possible overlap of the announcements for the takeover and the loan. As a consequence, my results could be driven by the positive reaction to the loan announcement instead of the takeover announcement. As my matching procedure assigns a syndicated loan if one

[16] More precisely, I download the league table for acquisition-related syndicated loans between 1985 and 2014 from SDC Platinum.

of the loan dates (including the announcement date of the loan) is within three days of the announcement (or effective) date of the takeover, it is possible that the loan and the takeover are announced within the event window. In case most of my loans are announced shortly before or after the takeover, the measured abnormal returns could show the capital market's positive reaction to the loan instead of the positive reaction to the bank-financed takeover. Furthermore, higher deal leverage implies a larger (and more decisive) loan if the size of the acquirer remains constant. This would explain higher cumulative abnormal returns with higher deal leverage in case the capital market responds to the announcement of the loan instead of the announcement of the takeover. Hence, I recalculate Regression (2) of Table 5.5 while excluding all observations where the loan announcement is within the event window. The corresponding results are shown in Regression (4) of Table 5.8. Even though the sample is slightly smaller, deal leverage gains significance, and the estimated coefficient remains very close to the original setting. I conclude that my results are actually driven by bank-financed takeovers and not simply by the loan announcement.

5.8 Limitations

The results of this chapter have major implications for empirical research in the areas of project financing, capital structure, and most importantly, investigations of the payment effect in takeovers. Even though the study provides a first valuable look inside the proportional breakdown for the source of financing and its relation to the payment method, it has at least three shortcomings that leave room for further investigations.

First, I use a special setting of takeovers that are at least partly financed with a syndicated loan. Those takeovers are only a small fraction of the universe, and it would be interesting to extend my results to a sample of takeovers with several different sources of financing. However, collecting the proportional breakdown for the sources of financing might be costly and very time-consuming. As seen in Chapter 4, an assumed breakdown over all different sources of financing does not seem to be sufficiently precise to render the payment effect insignificant.

Second, my study (as most other studies which investigate announcement returns of takeovers) does not allow for any conclusions about causality. There are most likely some endogeneity concerns with regard to at least two topics. On the one hand, there might

be a selection issue about which takeovers are more likely to be bank-financed and how large the proportion of bank financing is.[17] Furthermore, potential acquirers that are unable to obtain the requested bank loan might forgo the acquisition or use other types of financing and hence, are excluded from my sample. On the other hand, the takeover characteristics (partly known by the bank before granting the loan) might influence the loan characteristics.

Third, theory suggests that banks might be helpful, as they initially screen the takeover and subsequently monitor the integration of the target. However, my study only measures the announcement returns. Similar investigations about the connection of payment method and bank involvement are necessary for the long run, as the capital market might be unable to correctly estimate the benefits of the bank's ongoing monitoring. This is partly addressed in Chapter 4, with credit financing as one category for the source of financing.

5.9 Summary

Starting with a unique sample of at least partly bank-financed acquisitions, this chapter is able to provide valuable insights for the ongoing discussion about the economic rationale behind the payment effect in takeovers. Even though there are several theoretical considerations regarding the underlying sources of financing in a takeover as outlined in Chapter 2, empirical research on this topic is very scarce. A main reason for this is the unavailability of information on the source of financing. Assuming that a buying company can finance the acquisition with internal sources, bank loans, bond issues, or stock issues, I focus on reported syndicated loans. This allows me to calculate the appropriate deal leverage under the assumption that no other source of external financing is involved and the remaining transaction value is financed with internal funds. As new equity and bond issues are typically very large in size, this is not possible in investigating bond and stock issues instead of bank loans. The assumption in the academic literature of cash payment being equal to debt financing becomes redundant in my setting. This creates a valuable first impression about the actual influence of financing decisions and interdependency of financing sources and the method of payment for takeovers. More precisely, my setting in

[17] The endogeneity in the context of financing a takeover is treated in Vladimirov (2015).

this chapter allows me to disentangle the effects of financing and payment in the special case of bank-financed takeovers.

In a first step, this chapter confirms the previous results of Bharadwaj and Shivdasani (2003) that bank-financed takeovers are, on average, associated with positive announcement returns for acquirers' shareholders of over two percent. Furthermore, the chapter investigates if the method of payment is a good approximation for the underlying financing decision. The results suggest that the payment method is just an incomplete estimator of the underlying financing decision. Although the percentage of cash payment is strongly correlated to the source of financing (in my case, the proportion of bank financing), large variation still remains. Using a multivariate setting, the chapter distinguishes the influence of the payment effect and the financing effect on cumulative abnormal returns. The analyses suggest that only the source of financing has explanatory power. In fact, the previously shown payment effect loses its significance when one explicitly controls for the actual financing effect. Therefore, the well-known outperformance of cash payment around the announcement might actually just be an outperformance of bank financing in takeovers. Consequently, the theoretical considerations regarding the economic explanation of this outperformance should focus on the source of financing instead of the method of payment.

In a next step, this chapter analyzes the success of an investment project (in my case, a takeover) based on the loan characteristics. The setting is well-suited, as abnormal returns – and therefore, the success of the investment project – are properly measurable. Overall, the results of this chapter show that high bank involvement is a signal for a successful takeover. This is in line with the screening and monitoring function of banks and is in this chapter confirmed by results based on loan characteristics. For riskier loans (measured by higher deal leverage, higher loan cost, longer maturity, lower interest coverage, or no previous banking relationship), the abnormal returns for the announcement of the takeover are higher. Robustness tests suggest that the effect is not caused by the inside information that banks possess. This is further underlined by the superior performance of takeovers financed with loans from top-tier banks. Both robustness tests indicate that the screening and ongoing monitoring benefit acquirers' shareholders.

Chapter 6

Disentangling Coinsurance Effect and Diversification Discount

Large parts of this chapter are based on Bielstein, Fischer, and Kaserer (2015)

6.1 Research Question

In this last empirical part, we investigate the changes in the cost of capital introduced by takeovers. More precisely, we focus on the takeover-introduced change in diversification and hence, the study directly contributes to the long-lasting academic debate on the wealth effects of corporate diversification. This empirical research helps reconcile two opposing views – namely the coinsurance effect and the diversification discount. To date, there is still no consensus on if or under what conditions diversification is beneficial or detrimental to shareholders.

On the one hand, researchers emphasize the bright side of internal capital markets. By creating a coinsurance effect, corporate diversification is able to reduce the harmful impact of credit constraints on long-term investment decisions of stand-alone firms. Furthermore, the non-perfectly correlated cash flows of different segments can also reduce the dead-weight cost of bankruptcy. On the other hand, previous studies highlight the dark side of internal capital markets causing the well-documented diversification discount. From a theoretical perspective, the diversification discount roots in agency problems caused by poorly governed internal capital markets.

Using a traditional framework in which the stock price is equal to the value of the discounted future cash flows, the contrast of the two views becomes apparent. Assuming the same expected cash flow patterns for diversified and stand-alone firms, the coinsurance effect implies a lower discount rate, whereas the diversification discount would imply a higher discount rate for diversified firms. Even after recognizing possible caveats of previous studies, Stein (2003) suggests that the diversification discount may not be completely eliminated. Hence, two contradicting expectations with regard to the influence of corporate diversification on the respective cost of capital exist.

To reconcile those opposing views, the present chapter makes use of acquisitions in which the acquirer buys 100 percent of the target. This allows one to investigate how the combined firm's post-merger cost of capital differs from the expected cost of capital if one considers a hypothetical firm of the pre-merger (stand-alone) acquirer and target. Thereby, we avoid matching diversified firms to stand-alone companies, which mitigates endogeneity concerns. This setting further allows us to isolate the effect of a change in diversification on the cost of capital. The main channel of how diversification (or in our setting: a change in diversification) can have opposite effects on the cost of capital is through internal capital markets. Gertner, Scharfstein, and Stein (1994) suggest that the degree of diversification can be regarded as the optimal outcome of trading off the advantages of internal capital markets against the advantages of external resource allocation. We exploit the fact that in order to put a presumably optimal diversification structure in place, a company must become active in the market for corporate control.

As aforementioned in Chapter 2.5, the idea of comparing the same firm before and after corporate events to examine the change in diversification is not completely new in the empirical literature. However, we are the first to use this setting to show opposing effects of corporate diversification on the cost of capital, as we allow for the influence of both the coinsurance effect and the diversification discount. In contrast, Daley, Mehrotra, and Sivakumar (1997), Gertner, Powers, and Scharfstein (2002), Burch and Nanda (2003), and Ahn and Denis (2004) focus on the diversification discount by investigating capital allocation, investment efficiency, and operating performance in the context of spin-offs. Overall, their results indicate that the use of corporate events to examine changes in corporate diversification is valuable to researchers.

6.2 Hypotheses

There are two views on the effects of diversification, and even though the existence of a diversification discount is challenged because of measurement problems, previous studies propose that the diversification discount was merely overstated but not entirely caused by those problems (for example, Glaser and Müller, 2010; Custódio, 2014; Rudolph and Schwetzler, 2014). Following this literature, we expect to find both previously reported effects. As we are investigating the cost of capital, the coinsurance effect is supposed to lower the cost of capital, whereas the diversification discount is supposed to lead to higher cost of capital.

> Hypothesis 3.1: Both effects – the coinsurance effect and the diversification discount – influence the cost of capital in acquisitions. Whereas the coinsurance effect has a negative influence and therefore, lowers the cost of capital, the diversification discount has a positive influence and therefore, yields a higher cost of capital.

Finding both effects will help shed light on the debate of the benefits of diversification and under what conditions shareholders can realize those benefits. Theoretically, an investor can decide to hold a portfolio of stand-alone firms or an equivalent diversified company. In perfect capital markets, those two alternatives mainly differ because of the existence of internal capital markets for the diversified company. Hence, it follows that the channel for beneficial and detrimental effects should be internal capital markets.

For acquirers that have a lot of experience in managing internal capital markets at the announcement of the acquisition, we expect better and more effective corporate governance with regard to managing those internal capital markets. Furthermore, those acquirers have already built a track record on how to efficiently handle internal capital markets. In contrast, if companies are lacking experience in managing internal capital markets, it is more likely that the market is not convinced about their ability to implement such mechanisms. Therefore, the coinsurance effect should outweigh the diversification discount for acquirers with experience in managing internal capital markets, and the additional diversification of the takeover should have mostly beneficial effects. However, for inexperienced acquirers, the diversification discount will dominate, and the takeover-introduced diversification has negative implications.

Hypothesis 3.2: Based on the acquirer's experience of managing internal capital markets, the coinsurance effect or the diversification discount dominates the impact on the cost of capital.

Besides to pure experience, the quality of internal capital markets is also expected to influence the degree of how beneficial the change in diversification is. For a company that has proven to have adequate control mechanisms in place, mitigating the agency costs associated with internal capital markets, the potential benefits of a diversifying acquisition (coinsurance effect) will receive a higher weight than the potential disadvantages associated with it (diversification discount). For acquirers with poorly governed internal capital markets, the opposite holds true.

Hypothesis 3.3: Internal capital market frictions are critical for changes in diversification. Low quality in an acquirer's internal capital market causes the diversification discount to outweigh the beneficial coinsurance effect. However, this reverses for high-quality internal capital markets.

6.3 Data

6.3.1 Takeovers

We start with an initial sample of acquisitions from SDC Platinum and apply the following restrictions:

- Acquirer and target are both listed companies in the United States
- Announcement and effective dates are between 1990 and 2011
- Acquirer takes over 100 percent of the target
- Neither acquirer nor target is a financial firm based on the primary SIC code
- Acquirer and target are covered by Datastream/Worldscope

Two of these restrictions are unusual compared to other studies: the requirement for listed targets and the complete takeover of the target into the acquirer (contrary to al-

lowing the acquirer to only buy a majority in the target).[1] However, both restrictions are mandatory for our setting. The former ensures having sufficient data for the estimation of the target's pre-merger cost of capital. The latter is needed to receive a merged firm after the takeover is completed. Otherwise, the dependent variable of our investigation, which is introduced later, is not applicable. All amounts, including returns, are denominated in U.S. Dollar.

6.3.2 Cost of Equity

In order to eliminate noise coming from pure stock price reactions, we measure the value impact of the transaction by using an ex-ante measure for the cost of equity. Specifically, we apply the implied cost of equity instead of past returns to estimate the expected cost of equity, as the former offers at least three distinctive advantages.

First, past returns contain a large amount of statistical noise, which may make inference difficult in a regression setting (Elton, 1999). The implied cost of equity, in contrast, displays much lower volatility and it is positively related to risk (Pástor, Sinha, and Swaminathan, 2008). This is also in line with the findings of Fernandez (2015) and Fernandez and Bermejo (2015). Both studies show that estimated betas from the capital asset pricing model are unstable over time and are not a good predictor of future realized returns.[2] Second, the implied cost of equity is conditional on the information available to investors at each point in time (Claus and Thomas, 2001) and should therefore mirror an investor's risk perception for a company (Jäckel and Mühlhäuser, 2011). Third, the implied cost of equity has been successfully implemented in a number of other studies, which supports its usefulness as a proxy for expected returns (for example, Hail and Leuz, 2006; Pástor, Sinha, and Swaminathan, 2008; Chava and Purnanandam, 2010; Hann, Ogneva, and Ozbas, 2013).

[1] Devos, Kadapakkam, and Krishnamurthy (2009) implement the same restriction, as they also use forecasts. Graham, Lemmon, and Wolf (2002) need those restrictions, as they investigate the diversification discount by looking at acquisitions.

[2] Note that Hackbarth and Morellec (2008) model the completion of a takeover as a call option for the acquirer, and one of their model's main conclusions is that the beta might change even before the takeover. Additionally, their empirical investigation shows a large variation in the beta values around the deal announcement. In Fischer, Hanauer, and Heigermoser (2016), the explanatory power of the Carhart (1997) four-factor model is hardly above the one of the capital asset pricing model, suggesting that more advanced models on past returns do not solve the outlined issues.

In general, the implied cost of equity can be understood as the discount rate that equates expected future cash flows with the share price at a respective point in time. In the literature, several ways of calculating this figure can be found. In order to ensure that our results are not driven by a particular approach, we use the median implied cost of equity of four different methods: Claus and Thomas (2001), Gebhardt, Lee, and Swaminathan (2001), Easton (2004), and Ohlson and Juettner-Nauroth (2005). The last two methods are based on an abnormal earnings-growth model, and the first two are derived from a residual income model.[3] Inputs for estimating the implied cost of equity include accounting data from Datastream/Worldscope[4] and analysts' forecasts from I/B/E/S.

When computing the implied cost of equity, it is important to ensure that there is no look-ahead bias. The implied cost of equity measurement before the takeover is straightforward. The time of measurement is the month-end before the announcement date of the acquisition. The accounting data used refers to the preceding fiscal year-end. The implied cost of equity measurement after the takeover is somewhat more complicated to calculate. After the effective date, we need to wait until the following fiscal year-end so that the takeover is reflected in the accounting data. We assume that it takes four months until the respective company's annual report is released to the public. This means that we use the fiscal year-end (post-acquisition) plus four months as our implied cost of equity measurement point in time. For an overview of this time line, see Figure 6.1.

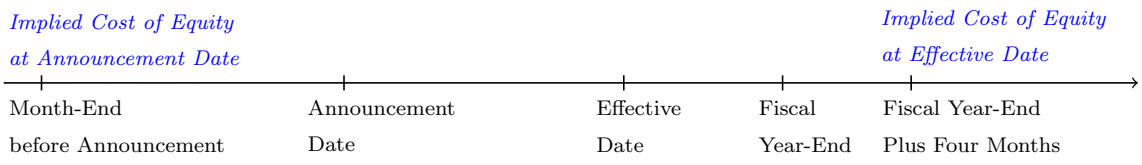

Figure 6.1: Time Line of Takeover and Variable Measurement

One issue might be that takeovers are clustered and that this clustering might be systematically correlated with the interest rate and/or discount rate level in the market.

[3] For more details on the implied cost of equity measures, see the original articles. A summary of these methods can also be found in Jäckel and Mühlhäuser (2011).

[4] Although most studies for the U.S. market use data from Compustat/CRSP, Rudolph and Schwetzler (2014) successfully use Datastream/Worldscope data in their study on corporate diversification, and Ulbricht and Weiner (2005) find no significant difference between the two databases for U.S. data. It is worth noting that an updated version of Bielstein, Fischer, and Kaserer (2015) finds similar results with Compustat/CRSP data.

To account for this potential bias, we initially calculate the median (over the four different methods) implied cost of equity for each company in the sample if sufficient data is available. For each period, we then calculate the market implied cost of equity as the value-weighted implied cost of equity over all available U.S. companies. Finally, we subtract this market implied cost of equity from each sample firm's implied cost of equity. As a result, only the relative cost of equity, and not the absolute value, is considered.

Based on the criteria for the takeovers and the data requirements for the implied cost of equity, we obtain a sample of 805 takeovers. For those takeovers, we have the implied cost of equity for the acquirer before the acquisition, the target before the acquisition, and the merged firm afterwards.

6.3.3 Rating-Based Cost of Debt

The literature has shown that corporate diversification affects both the cost of equity and cost of debt (for example, Kim and McConnell, 1977; Mansi and Reeb, 2002; Franco, Urcan, and Vasvari, 2013; Aivazian, Qiu, and Rahaman, 2015). Furthermore, the takeover itself might also influence corporate debt (for example, Eger, 1983; John, 1986; Walker, 1994; Furfine and Rosen, 2011). Therefore, it is important to control for the cost of debt in our analyses. As the coverage of currently traded corporate bonds is rather low, in particular for our targets, we use debt ratings of the target, acquirer, and the merged company as our main measure for the cost of debt. Past research has shown a clear correlation of credit ratings and credit spreads (for example, Billingsley et al., 1985; Hsueh and Kidwell, 1988; Altman, 1989; Perraudin and Taylor, 2004), which renders ratings an appropriate approximation of the cost of debt.[5] The ratings are obtained from the Mergent Corporate Bond Securities Database (Mergent), which provides ratings from Standard and Poor's, Moody's, Fitch, and Duff and Phelps.

The assignment of ratings works as follows. For every target, we match the most up-to-date rating of any of the four rating agencies at the announcement date of the takeover. For acquirers, we match two ratings at different points in time: first, the most up-to-date rating at the announcement date – similar to the targets; second, the most up-to-date

[5]Furthermore, our matching approach circumvents several problems with individual bonds, such as illiquidity of single corporate bonds (Bao, Pan, and Wang, 2011), rating shopping of companies (Bolton, Freixas, and Shapiro, 2012; Bongaerts, Cremers, and Goetzmann, 2012), or tax (Elton et al., 2001) and coupon (Elton et al., 2004) influences on the price.

rating of any of the four rating agencies at the date when we calculate the implied cost of equity after the takeover is completed. This selected point in time has two advantages over the use of the completion date, as reported by SDC Platinum. First, it gives the rating agencies a sufficient amount of time to reconsider the current rating since the risk might have changed due to the takeover. Second, timewise, we are consistent because our cost of equity and cost of debt after the takeover are calculated at the same day.

Unfortunately, the Mergent database does not provide ratings for all companies in our sample for the dates required. To circumvent this problem, we use a matching approach in cases of a missing rating where we assign a rating based on the rating of another (rated) company. For all companies in the Mergent database, we calculate the leverage ratio at the date the respective company received its rating. As our sample firms are all based in the United States, we only consider U.S. matching firms. Furthermore, the following criteria are used to find matching firms:

- Identical one-digit SIC code
- Matching firm's rating is no more than three years old
- Leverage ratio is within 40 percentage points of the sample firm's leverage ratio[6]

If there are several matching firms for one sample firm, we prefer smaller differences in the leverage ratios, and then in the rating dates. We are able to obtain or match three ratings – one each for the target and acquiring firm before the takeover, and one for the merged firm after the takeover – for 499 of our 805 takeovers.[7]

To describe those ratings from now on, we forgo intermediate ratings (denoted by + and −) and only use the Standard and Poor's classification scheme. Other ratings are converted into this scheme.[8] Based on these ratings, we use the following bond indices to approximate the cost of debt:

- Barclays U.S. Aggregate Corporate Aaa for companies with an AAA rating

[6]Leverage is defined in Table 6.1. Total debt for the rated firms in the Mergent database is taken from the last fiscal year-end prior to the reported rating date. The leverage ratio of our sample firm is calculated at the point in time when we need a rating. We acknowledge that leverage is not the only determinant for a firm's rating; however, Molina (2005) shows a strong influence of leverage on the corresponding rating.

[7]Note that our sample for the main regressions has 483 observations, as we are unable to obtain all needed independent variables for 16 takeovers. Other empirical studies with high data requirements also tend to have relatively small samples (for example, Grinstein and Hribar, 2004; Boone and Mulherin, 2007; Goyal and Zhang, 2015).

[8]For example, Moody's Caa is renamed to CCC.

- Barclays U.S. Aggregate Corporate Aa for companies with an AA rating
- Barclays U.S. Aggregate Corporate A for companies with an A rating
- Barclays U.S. Aggregate Corporate Baa for companies with a BBB rating
- Barclays U.S. High Yield Ba for companies with a BB rating
- Barclays U.S. High Yield B for companies with a B rating
- Barclays U.S. High Yield Caa for companies with a CCC rating

The final cost of debt is the yield of the respective bond index at the announcement date and at the date when we assign our implied cost of equity estimate after the completion of the takeover. Note that our cost of debt is an ex-ante cost of debt, in line with our use of implied cost of equity. In order to control for the general development of corporate bond interest rates, we subtract the current yield of the Barclays U.S. Aggregate bond index from the obtained yields. The data for all bond indices is retrieved from Datastream.

6.3.4 Loan-Based Cost of Debt

Hann, Ogneva, and Ozbas (2013) use the Barclays Capital Aggregate bond index to approximate for the cost of debt for every company in their sample. We argue that our rating-based cost of debt approach is a better approximation of the expected cost of debt because it explicitly accounts for the default risk of a certain company. Nevertheless, we follow the robustness test of Hann, Ogneva, and Ozbas (2013) and implement a second measure for the cost of debt, namely the spreads of reported syndicated loans, as part of our robustness tests. The data on those syndicated loans is retrieved from SDC Platinum.

More precisely, we match the latest syndicated loan before the announcement date of the takeover to the acquirer and to the target. For the merged firm, we use the first syndicated loan after the calculation of the post-merger cost of equity. Similar to the cost of equity and the rating-based approach for the cost of debt, we use a relative measure instead of absolute values. In this case, we use the initial spread over the base rate as relative cost of debt. If there is more than one loan or tranche reported on the same day, we equally weight all reported spreads to obtain the relevant measure for the cost of debt.

6.4 Important Variables

6.4.1 Expected and Realized Cost of Capital

To examine the impact of diversification on the cost of capital, we need a suitable measure for the change in diversification and the change in cost of capital as consequence of the takeover. Whereas the variable for the takeover-introduced change in diversification is subsequently introduced, we start with the calculation of the takeover-introduced change in the cost of capital. As aforementioned, the basic idea of this measure is to compare the realized cost of capital after the merger with the expected cost of capital a hypothetical firm of pre-merger acquirer and pre-merger target would have.

To calculate our expected cost of capital, we first compute the cost of capital (CC) at the announcement date for the target (T) and the acquirer (A). Based on the implied cost of equity as an approximation of the cost of equity (CE), our rating-based cost of debt (CD), and the leverage ratio ($Leverage$) at the announcement date, the cost of capital can be defined as:

$$CC_A = Leverage_A \times CD_A + (1 - Leverage_A) \times CE_A \tag{6.1}$$

$$CC_T = Leverage_T \times CD_T + (1 - Leverage_T) \times CE_T \tag{6.2}$$

Note that the subscripts T and A refer to the respective company at the announcement date, whereas the subscript M refers to the merged firm after the takeover. Moreover, it should be noted that following Hann, Ogneva, and Ozbas (2013), we use a pre-tax cost of capital measure.

In a second step, we weight the target's and acquirer's cost of capital before the acquisition with their respective firm values to obtain the expected cost of capital ($ExpectedCC_M$) after the acquisition:[9]

$$ExpectedCC_M = \frac{FirmValue_T \times CC_T}{FirmValue_T + FirmValue_A} + \frac{FirmValue_A \times CC_A}{FirmValue_T + FirmValue_A} \tag{6.3}$$

[9] Weighting the acquirer's and target's cost of capital before the merger is similar to the methodology of Graham, Lemmon, and Wolf (2002); however, they use an excess value measure instead of the cost of capital.

The expected cost of capital can be interpreted as the cost of capital a hypothetically merged firm of target and acquirer would have based on their respective pre-merger cost of capital. This expected cost of capital is now compared to the actually realized cost of capital for the merged firm. The realized cost of capital ($RealizedCC_M$) is calculated in the same way as the cost of capital at the announcement date. This means that we weight the cost of equity (CE_M) and our rating-based cost of debt (CD_M) with the leverage ratio ($Leverage_M$) of the merged firm:

$$RealizedCC_M = Leverage_M \times CD_M + (1 - Leverage_M) \times CE_M \tag{6.4}$$

Our dependent variable ($Deviation_{CC}$) for the empirical investigation is the deviation of the realized cost of capital ($RealizedCC_M$) from the expected cost of capital ($ExpectedCC_M$):

$$Deviation_{CC} = RealizedCC_M - ExpectedCC_M \tag{6.5}$$

This measure can be interpreted as the takeover-introduced change in the cost of capital, as it compares the merged firm's cost of capital to a hypothetical firm's cost of capital that consists of the pre-merger acquirer and target. Similar to the outlined approach, which uses the rating-based cost of debt, we calculate the cost of capital using the loan-based cost of debt. Unless otherwise stated, our results are based on the rating-based measure for the cost of debt.

Similar calculations can be carried out for the cost of equity, using the respective market value of equity as weighting. All main results of this chapter remain qualitatively unchanged if only the cost of equity is considered instead of the cost of capital.

6.4.2 Diversification

The second important variable to examine the impact of diversification on the cost of capital is a suitable measure for the change in diversification as consequence of the takeover. To receive this measure, we take two steps. First, we calculate the acquirer's level of concentration before the takeover and the level of concentration for the merged firm after

the takeover. Second, the difference between those two concentration levels is interpreted as the takeover-introduced diversification.

The acquirer's level of concentration before the takeover ($Concentration_A$) and the merged firm's level of concentration ($Concentration_M$) are defined as the ratio of segment sales in the largest segment to total sales of the respective firm:[10]

$$Concentration_A = \frac{LargestSegment_A}{TotalSales_A} \tag{6.6}$$

$$Concentration_M = \frac{LargestSegment_M}{TotalSales_M} \tag{6.7}$$

This definition has the advantage that we can construct a measure for the takeover-introduced diversification (*Diversification*) based on these concentration measures:

$$Diversification = Concentration_A - Concentration_M \tag{6.8}$$

The takeover-introduced diversification can be interpreted as the change in the acquirer's concentration due to the takeover. For negative values of *Diversification*, the acquirer focuses more on the largest segment after the takeover than before. For positive values of *Diversification*, the takeover is diversifying and the merged firm is less focused.[11] Note that *Diversification* refers to the diversification effects of the takeover and $Concentration_A$ ($Concentration_M$) refers to the acquirer's pre-merger (merged firm's) level of concentration.

6.4.3 Internal Capital Market Inexperience

From a theoretical perspective, the channel for different effects of diversification is supposed to be internal capital markets. Hence, experience in managing internal capital markets should influence whether additional diversification is positive (lowering the cost

[10] We acknowledge that the firm's management has some discretion over the classification of segments. However, the rules set forth by the applicable accounting standards limit this discretion. And even if some firms misclassify segments, this would only introduce more noise into the regressions and weaken the results. For a more general discussion about segment data, see Martin and Sayrak (2003). As aforementioned, the results can be reproduced with Compustat/CRSP data.

[11] Even though several studies use the SIC code to define diversification (for example, Chen and Chen, 2011; Hoechle et al., 2012; Tong, 2012), we argue that our sales-based measure is more precise than such a dummy variable.

of capital due to the coinsurance effect) or negative (raising the cost of capital due to the diversification discount).

To measure experience with internal capital markets, we use the pre-merger acquirer's concentration ($Concentration_A$) as approximation. The measure shows the previous experience, as a high level of pre-merger acquirer's concentration indicates that the internal capital markets before the takeover are unincisive. In contrast, if an acquirer is already diversified before the takeover, one would expect that this acquirer has at least some experience in managing internal capital markets. To ease interpretation of the variable, we use inexperience with internal capital markets instead of experience with capital markets as the respective term for this variable because higher levels equal less experience.

6.4.4 Internal Capital Market Friction

Besides experience itself, quality of the internal capital market should also have an influence on the (dis-)advantageousness of additional diversification. We expect that acquirers with a track record of managing internal capital markets sufficiently can benefit from the coinsurance effect. If the acquirer already has trouble with the management of the pre-merger internal capital market, we expect that the capital market will not give the firm credit for managing the internal capital market afterwards. Therefore, the diversification discount should apply.

To measure the quality of the pre-merger acquirer's internal capital market, we create a measure loosely based on Shin and Stulz (1998). For easier interpretation in our empirical investigations, we define and scale the variable similarly to the inexperience with internal capital markets as just introduced and call it internal capital market friction ($ICMF_A$). $ICMF_A$ close to one means that the acquirer hardly has experience with internal capital markets or that its internal capital market is inefficient. This is exactly what we expect for a highly concentrated acquirer ($Concentration_A$ is close to one). $ICMF_A$ close to zero indicates an efficient internal capital market. As this variable is only meaningful for acquirers with more than one segment, we set it to one if the acquirer is fully concentrated before the takeover.

Based on the segment investment opportunities (SIO), which are measured as the lagged segment sales growth rate, and the standardized segment investments (SI), which are measured as segment capital expenditure divided by segment assets, $ICMF_A$ is defined

as:

$$ICMF_A = \begin{cases} 0.5 - (Correlation(SIO, SI)/2) & \text{if } Concentration_A < 1 \\ 1 & \text{if } Concentration_A = 1 \end{cases} \tag{6.9}$$

6.4.5 Control Variables

Two preliminary remarks are necessary to present our control variables. Figures referring to after the merger are calculated at the time when the implied cost of equity was calculated. Further, to incorporate ratings in our regressions, we build a numeric variable based on the character ratings following other empirical studies (for example, Amato and Furfine, 2004; Güttler and Wahrenburg, 2007; Bannier and Hirsch, 2010; Bongaerts, Cremers, and Goetzmann, 2012): AAA is assigned to one, AA is assigned to two, and so on until CCC (the lowest rating in our sample), which is assigned to seven. An overview of our control variables, which account for other main factors influencing the financing costs, can be found in Table 6.1.

Table 6.1: List of Control Variables

Variable	Description
Rating[1]	Numeric rating; AAA = 1, AA = 2, and so on
RatingChange[1]	Numeric merged firm's rating minus numeric acquirer's rating
RatingDifference[1]	Numeric acquirer's rating minus numeric target's rating
LeverageChange[2]	Merged firm's actual leverage ratio minus leverage ratio of a hypothetically combined firm of acquirer and target (weighted by their firm values)
RelativeSize[2]	Target's market value of equity divided by acquirer's market value of equity
Leverage[2]	Book value of debt divided by the sum of book value of debt and market value of equity
MarketToBook[2,3]	Market-to-book value

[1] indicates the Mergent database and [2] indicates the Datastream/Worldscope database. Furthermore, [3] shows a winsorization at the bottom and top 0.5 percent.

$Rating_A$ is the numeric value of the acquirer's rating before the takeover. *RatingChange* is computed as the numeric merged firm's rating after the takeover minus the numeric acquirer's rating before the takeover. *RatingDifference* is the numeric acquirer's rating before the takeover minus the numeric target's rating before the takeover. *LeverageChange* is measured as the merged firm's leverage ratio after the merger minus the leverage ratio of a hypothetically combined firm before the merger, where the target's and acquirer's

leverage ratios are weighted by their respective firm values. *RelativeSize* is defined as the target's market value of equity divided by the acquirer's market value of equity before the takeover. $Leverage_A$ and $Leverage_T$ are defined as the book value of debt divided by the sum of book value of debt and market value of equity before the takeover for the acquirer and the target, respectively. Finally, $MarketToBook_A$ and $MarketToBook_T$ are the market-to-book values before the takeover of the acquirer and the target, respectively. We winsorize the market-to-book values so that the most extreme 0.5 percent of the observations at either end are set to the 0.5 or 99.5 percent values.

6.5 Descriptive Statistics

6.5.1 Variable Overview

To start with our empirical results, we present descriptive statistics of the most relevant variables in Table 6.2 before we focus on the cost of capital and the effects of diversification. The approximately 800 takeovers in our sample are, on average, diversifying by 2.30 percent, thus indicating that the average takeover decreases the proportion of the largest segment to total sales. The quartiles demonstrate that we have an equal distribution with focusing takeovers, takeovers which do not change the importance of the largest segment, and diversifying takeovers. The average pre-merger acquirer has 70.65 percent of its revenue in the largest segment. It is interesting to note that the 75^{th} percentile of $Concentration_A$ is 100 percent, indicating that we have a sufficient amount of pre-merger fully concentrated acquirers. For our measure of internal capital market friction, the sample is halved because of the high data requirements. $ICMF_A$ averages at 77.78 percent, and over half the acquirers have a pre-merger friction of 100 percent. This is partly caused by the fact that all fully focused acquirers have an $ICMF_A$ value of 100 percent by definition. Compared to $Concentration_A$, the descriptive statistics for $ICMF_A$ show slightly higher values. However, both measures have similar distributions, which is not surprising because both measures are intended to measure the quality of internal capital markets.

Before the merger, the acquirer and the target have mean leverage ratios of around 14.5 percent. After the completed takeover, the merged company has an average leverage of over 20 percent. Consequently, *LeverageChange* shows an average of 5.55 percentage points. This increase in leverage for the merged firm is in line Lewellen (1971) and empirical

Table 6.2: Summary Statistics of Firm-Specific and Takeover-Specific Variables

Variable	Obs.	Mean	Std. Dev.	25^{th} Pctl.	50^{th} Pctl.	75^{th} Pctl.
Diversification	789	2.30%	16.28%	-2.56%	0.00%	4.94%
$\text{Concentration}_{\text{A}}$	793	70.65%	24.19%	50.65%	68.90%	100.00%
ICMF_{A}	378	77.78%	36.14%	65.00%	100.00%	100.00%
$\text{Leverage}_{\text{A}}$	797	14.53%	14.81%	2.21%	9.99%	21.82%
$\text{Leverage}_{\text{T}}$	795	14.44%	17.08%	0.13%	7.50%	24.05%
$\text{Leverage}_{\text{M}}$	795	20.40%	18.64%	5.35%	15.25%	31.60%
LeverageChange	785	5.55%	12.35%	-0.87%	1.80%	9.35%
$\text{MarketValue}_{\text{A}}$[1]	798	23,181.94	47,442.34	1,519.00	4,296.75	19,571.88
$\text{MarketValue}_{\text{T}}$[1]	801	2,083.11	5,691.35	212.75	564.26	1,573.61
$\text{MarketValue}_{\text{M}}$[1]	798	26,459.62	55,594.51	1,819.79	5,327.83	21,041.24
TransactionValue[1]	804	2,633.08	6,876.84	282.02	744.31	1,967.30
RelativeSize	794	32.86%	60.74%	4.27%	14.67%	45.00%
$\text{MarketToBook}_{\text{A}}$[2]	796	3.68	3.81	1.70	2.60	4.26
$\text{MarketToBook}_{\text{T}}$[2]	801	5.05	8.81	1.92	2.93	4.80
$\text{MarketToBook}_{\text{M}}$[2]	795	3.47	3.45	1.68	2.55	4.06

[1] indicates values in million U.S. Dollar. Furthermore, [2] shows a winsorization at the bottom and top 0.5 percent. A detailed explanation of all variables is given in Chapter 6.4.

evidence (for example, Kim and McConnell, 1977; Bruner, 1988; Ghosh and Jain, 2000; Welch, 2004). The underlying rationale is that the post-merger firm has better debt conditions when the two pre-merger firms do not possess perfectly correlated cash flows. Therefore, the acquirer might have incentives to increase the leverage ratio of the combined firm after the takeover. Furthermore, the acquirer has to finance the takeover and might use additional debt to do so. In contrast to Berger and Ofek (1995) and Comment and Jarrell (1995), this increase in leverage is economically significant, as the median acquirer raises its leverage by more than 50 percent.

As expected, acquirers are significantly bigger than targets, with the average target being around one-tenth of the acquirer's market value of equity. The high standard deviation and the distinctly lower median compared to the mean show that the average acquirer's and target's market values of equity are influenced by a few large companies. Note that the transaction value is larger than the target's market value of equity before the takeover is announced. This indicates the well-known takeover premium an acquirer has to pay for control of the target.

At a first glance, the relative size of targets might be surprising, as it averages 32.86 percent. However, the high data requirements (in particular, the requirement for analyst

coverage of targets to derive our cost of capital) leads to larger targets. The distribution indicates that most of the targets have a decent relative size in the range of five percent to 45 percent. Whereas several recent studies explicitly try to obtain large variation in takeovers and relinquish data restrictions (for example, Netter, Stegemoller, and Wintoki, 2011; Aktas, De Bodt, and Roll, 2013; Ahern and Harford, 2014; Ahern, Daminelli, and Fracassi, 2015), the fact that our sample is biased towards larger relative takeovers can be seen as desirable in this investigation. Our goal is to measure the change in cost of capital caused by the merger – for relatively small targets, this effect might be neglectable in the first place.

Last but not least, Table 6.2 shows market-to-book values. We observe a lower market-to-book value for the post-merged firm than for the pre-merger acquirer, even though the pre-merger target has, on average, a relatively high market-to-book value. This could be caused by accounting differences between the pre-merger firms and the post-merger company, or it could be an indication for the diversification discount.

6.5.2 Ratings

Compared to Hann, Ogneva, and Ozbas (2013), we implement a more detailed measure for the cost of debt, and Table 6.3 presents the corresponding descriptive statistics for our ratings.

Table 6.3: Overview of Rating Observations

Observations	Rating_A	Rating_T	Rating_M
AAA	22	6	21
AA	73	41	61
A	199	156	175
BBB	197	159	231
BB	80	97	105
B	89	100	107
CCC	10	12	16
Mean	3.82	4.13	4.01
Median	BBB	BBB	BBB

The calculation of ratings is explained in Chapter 6.4.

Although the median rating is BBB (which equals a numerical rating of four) in all three cases, we observe a lot of variety over firms. Interestingly, the rating for the merged firm tends to be worse than the previous rating of the acquirer. For AAA, AA, and A

ratings, the number of observations decreases, whereas we observe an increase for BBB and lower ratings. This could be a byproduct of the increased leverage as displayed in Table 6.2. Table 6.3 also shows that ratings of targets (slightly worse than BBB) are, on average, worse than the ones of acquirers (slightly better than BBB). Unsurprisingly, the merged firm has an average rating which is between the two pre-merger averages. Those results imply an average negative value for *RatingDifference* and consequently, an average positive value for *RatingChange*.

This finding is further strengthened by the results of Table 6.4. As we use a mixture of direct ratings and matched ratings, one might be concerned about their appropriateness. However, Table 6.4 suggests that the rating changes are valid and reasonable. For a better rating of the pre-merger acquirer compared to the target, we see a high number of downgrades for the post-merger firm. In contrast, better rating of the pre-merger target compared to the acquirer results in an unchanged or upgraded rating for the post-merger firm. It seems likely that relatively small targets have less impact on the rating of the acquirer and therefore, the rating stays unchanged. Interestingly, we observe a large proportion of downgrades if both pre-merger firms have an equal rating.

Table 6.4: Overview of Rating Changes

	Acquirer Afterwards		
Number of Cases	Downgrade	Same Rating	Upgrade
Better Acquirer Rating before	79	123	13
Same Rating before	43	88	18
Better Target Rating before	19	78	38

The calculation of ratings is explained in Chapter 6.4.

6.5.3 Cost of Capital

Our main variables of interest are the cost of capital, the takeover's diversification, and the quality of an acquirer's internal capital market. As Table 6.2 shows descriptive statistics for the latter two subjects, Table 6.5 displays those for the cost of capital.

Even though the relative measurement as outlined in Chapter 6.4 prevents the economic cycle from influencing our results, Table 6.5 starts with the absolute values to ease interpretation. The average acquirer pays 8.66 percent as cost of capital with a low stan-

Table 6.5: Summary Statistics of Cost of Capital

Variable	Obs.	Mean	Std. Dev.	25^{th} Pctl.	50^{th} Pctl.	75^{th} Pctl.
Absolute Values						
CC_A	663	8.66%	1.91%	7.47%	8.41%	9.53%
CC_T	569	10.09%	3.63%	8.15%	9.49%	11.13%
$ExpectedCC_M$	502	8.91%	1.81%	7.77%	8.65%	9.80%
$RealizedCC_M$	709	9.20%	1.97%	7.94%	8.97%	10.09%
$Deviation_{CC}$	492	0.44%	2.00%	-0.60%	0.40%	1.37%
Relative Values						
CC_A	663	0.72%	2.07%	-0.57%	0.30%	1.51%
CC_T	569	2.22%	3.60%	0.12%	1.66%	3.52%
$ExpectedCC_M$	502	1.02%	1.99%	-0.28%	0.68%	1.83%
$RealizedCC_M$	709	1.36%	2.20%	-0.06%	0.97%	2.41%
$Deviation_{CC}$	492	0.61%	2.21%	-0.50%	0.59%	1.58%

Absolute Values are the cost of capital without any adjustment for the current market level of interest rates. *Relative Values* are the cost of capital as explained in Chapter 6.4.

dard deviation and a middle 50 percent range from 7.47 percent to 9.53 percent. For targets, the absolute cost of capital and the corresponding deviation are slightly higher.

Based on those two values, we calculate the expected cost of capital that a synthetic firm of acquirer and target would have. By default, that synthetic firm would pay a cost of capital between the two independent firms. For our sample, that measure averages at 8.91 percent, again with low deviation from the mean value. Interestingly, the (actual) realized cost of capital for the merged firm averages slightly higher with 9.20 percent. Consequently, $Deviation_{CC}$ has a mean value of 0.44 percent. There are several possible explanations for the higher cost of capital for the merged firm compared to a synthetic firm based on the two pre-merger firms. As seen in Table 6.2, the post-merger leverage is, on average, 5.55 percentage points higher than the pre-merger leverage of acquirer and target. This results in a slight downward trend regarding the ratings of the merged firm as shown in Table 6.3 and Table 6.4. However, the higher post-merger cost of capital could also be driven by the diversification discount. Looking at the distribution for $Deviation_{CC}$, we observe a wide range which includes a sufficient amount of observations with lower and higher post-merger cost of capital.

As aforementioned, we focus on the relative cost of capital to prevent an influence of overall market conditions. On average, acquirers pay 0.72 percentage points more for capital than the market, which is lower than the target's 2.22 percentage points. This could be caused by the larger average size of acquirers; by their, on average, better rating,

which implies lower risk; or by benefits of the coinsurance effect if we assume that larger companies are more likely to be diversified. For both pre-merger firms, we observe a lot of variation in the cost of capital with regard to the market level. In particular for acquirers, a decent part of our sample possesses cost of capital under the market level.

After the takeover is completed, the merged company has, on average, a cost of capital that is 1.36 percentage points higher than the market level. The cost of capital of the merged firm falls again between the pre-merger cost of capital of the target and acquirer. Similar to the results with absolute values, the expected cost of capital of the merged firm is lower than the actually realized cost of capital. The average difference of 0.61 percentage points shows that the merged company pays more than we would expect when looking at the two pre-merger stand-alone firms. Overall, $Deviation_{CC}$ based on the relative values is close to $Deviation_{CC}$ based on absolute values regarding the mean value and the corresponding distribution. As $Deviation_{CC}$ based on relative values is our main dependent variable in the regression setting, it is notable that a decent amount of observations are negative.

6.5.4 Coinsurance Effect and Diversification Discount

To shed light onto the coexistence of a coinsurance effect and a diversification discount in our setting of cost of capital and internal capital markets, Table 6.6 descriptively provides some evidence for the coinsurance effect, whereas Figure 6.2 illustratively shows the diversification discount.

In Table 6.6, mean values and number of observations of two differently calculated unlevered betas are shown.[12] For both calculation methods, we see a clear declining trend of beta values with an increase in acquirer's diversification. Hence, it follows that the expected asset return of the acquiring firm is lower when the level of diversification is higher before the actual takeover. As aforementioned, the level of this pre-merger concentration for the acquirer can be interpreted as the acquirer's pre-merger inexperience with handling internal capital markets. Consequently, Table 6.6 provides some evidence for the existence of the coinsurance effect in our sample and confirms the corresponding part of Hypothesis

[12]The advantage of unlevered betas compared to descriptive statistics of cost of capital is that diversified acquirers might systematically have higher leverage in place than stand-alone firms.

3.1. However, one has to keep in mind that Table 6.6 only displays descriptive statistics without controlling for other firm characteristics.

Table 6.6: Unlevered Betas Based on Acquirer's Concentration

Method for Beta Calculation	(1)		(2)	
	Mean	Obs.	Mean	Obs.
Fully Concentrated	1.06	201	1.09	199
Low Diversification	0.97	132	1.00	130
Medium Diversification	0.95	248	0.95	247
High Diversification	0.89	154	0.91	154
Very High Diversification	0.73	27	0.75	27

The table shows mean values and number of observations for unlevered beta estimates, categorized by the acquirer's (pre-takeover) concentration. Fully concentrated acquirers have one segment before the takeover. Low diversification includes acquirers with more than one segment, but the largest segment has more than 75 percent of total revenues. Medium, high, and very high diversification are defined as acquirers with $0.5 < Concentration_A \leq 0.75$, $0.3 < Concentration_A \leq 0.5$, and $Concentration_A \leq 0.3$, respectively. The first method is calculated over 52 weeks (ending six weeks before the announcement of the takeover) if more than 45 valid weekly returns are available. The second method is calculated over 40 weeks (ending six weeks before the announcement of the takeover) if more than 35 valid weekly returns are available. The gap of six weeks ensures that the beta estimates are not influenced by rumors. The market return is approximated by the market factor retrieved from Kenneth R. French, available under http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html (May 19th, 2015). All shown betas are unlevered according to Hamada (1972) with an assumed tax rate of 40 percent.

We expect the diversification discount to have a contrasting effect on the cost of capital. However, to find both effects at the same time in our regressions, we want to begin with an illustration that the diversification discount actually exists in our sample. Related calculations are presented in Figure 6.2.

Differentiating between fully concentrated acquirers and diversified acquirers, Figure 6.2 shows the average sales multiple as well as the average market-to-book ratio for those two groups of acquirers. Both multiples indicate a higher valuation of fully concentrated acquirers. This difference is particularly large for the sales multiple and minor but existing for the market-to-book ratio. The conclusion from this figure is that focused acquirers in our sample have higher market valuations than diversified acquirers. Assuming similar cash flow patterns for both types of acquirers, this means that the cost of capital is lower for the former and confirms the second part of Hypothesis 3.1. Overall, Figure 6.2 is in line with previous research on the diversification discount. Nevertheless, we acknowledge that this figure does not account for previously highlighted problems or industry affiliation, and is therefore only meant as an illustrative presentation of the diversification discount.

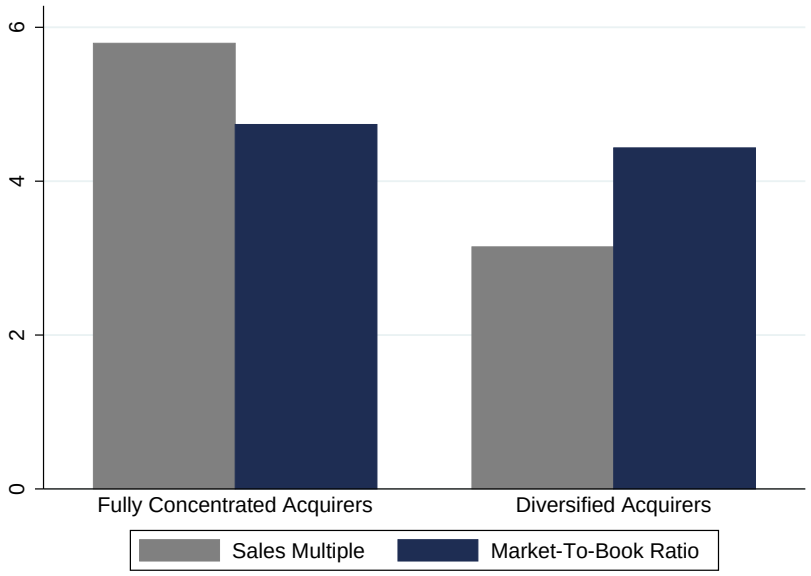

Figure 6.2: Evidence on Diversification Discount

The bars show mean values of the respective groups. Diversified (fully concentrated) acquirers have more than one (only one) segment before the takeover. Sales multiple is defined as revenue divided by firm value. To be consistent with Table 6.6 and to prevent an influence of rumors, the market value of equity is measured six weeks before the actual announcement of the takeover.

In Table 6.7, similar analyses are conducted based on the acquirer's internal capital market friction. Even though we lose half of the sample because of high data requirements, the table reveals two interesting insights.

First, an acquirer with a better internal capital market has higher cost of capital. This holds true for absolute as well as relative values for the cost of capital. Although it might be surprising at first glance, note that the table does not control for the capital structure. Second, the realized cost of capital compared to the expected cost of capital ($Deviation_{CC}$) offers a clear trend of lower cost of capital for better internal capital markets, besides the fact that those acquirers (and their corresponding targets) have the highest pre-merger cost of capital. Again, this holds true for absolute and relative values. Starting with an average of 1.01 percentage points over market level for the worst internal capital market manifestation, acquirers with below median frictions are able to realize a cost of capital that is 0.08 percentage points below the market level. This difference of 1.09 percentage points for the cost of capital is also of economic relevance. Using the average cost of capital for acquirers of 8.66 percent as shown in Table 6.5, the 1.09 percentage points are equal to savings of 12.6 percent for the cost of capital.

Table 6.7: Cost of Capital Based on Acquirer's Internal Capital Market Friction

			$ICMF_A$			
	Entire Friction		Above Median		Below Median	
Variable	Mean	Obs.	Mean	Obs.	Mean	Obs.
Absolute Values						
CC_A	8.63%	197	8.45%	55	8.99%	42
CC_T	10.40%	176	9.52%	46	10.51%	40
$ExpectedCC_M$	8.86%	149	8.45%	44	9.29%	35
$RealizedCC_M$	9.52%	217	8.89%	54	8.96%	43
$Deviation_{CC}$	0.84%	146	0.31%	43	-0.14%	34
Relative Values						
CC_A	0.69%	197	0.57%	55	1.08%	42
CC_T	2.50%	176	1.84%	46	2.74%	40
$ExpectedCC_M$	0.98%	149	0.64%	44	1.28%	35
$RealizedCC_M$	1.74%	217	1.33%	54	1.08%	43
$Deviation_{CC}$	1.01%	146	0.61%	43	-0.08%	34

The table shows mean values and number of observations, categorized by the acquirer's (pre-takeover) internal capital market friction. Entire friction refers to acquirers with $ICMF_A = 1$. The median value is based on all acquirers with $ICMF_A < 1$ and therefore splits the remaining sample in two groups. *Absolute Values* are the cost of capital without any adjustment for the current market level of interest rates. *Relative Values* are the cost of capital as explained in Chapter 6.4.

Finally, Table 6.8 provides descriptive statistics of the cost of capital with regard to the takeover-introduced change in diversification. As before, the conclusions are identical for the absolute and relative values and therefore, we only outline the results for the relative cost of capital. For the acquirer's pre-merger cost of capital, we observe a slightly positive trend for an increase in takeover-introduced diversification. This holds also true for the target's pre-merger cost of capital.

An explanation could be that previously diversified acquirers do not intend to further diversify in takeovers and are therefore categorized in the group of focusing takeovers. In contrast, pre-merger fully concentrated acquirers might be disproportionately involved in diversifying takeovers.[13] A similar reasoning might be true for the selected targets. Whereas focused acquirers might be interested in a focused target outside of their segment, already diversified acquirers might engage in takeovers with already diversified targets more often.

[13]Note that our measure of diversification does not allow a fully concentrated acquirer to concentrate any further. If the post-merger acquirer is still fully concentrated, we classify the respective takeover as neutral regarding the level of takeover-introduced diversification.

Table 6.8: Cost of Capital Based on Takeover-Introduced Diversification

	Diversification					
	Focusing Takeover		Neutral Takeover		Diversifying Takeover	
Variable	Mean	Obs.	Mean	Obs.	Mean	Obs.
Absolute Values						
CC_A	8.59%	234	8.61%	120	8.67%	298
CC_T	9.97%	201	10.14%	102	10.15%	255
$ExpectedCC_M$	8.80%	178	8.72%	86	9.00%	228
$RealizedCC_M$	9.03%	253	9.37%	133	9.25%	311
$Deviation_{CC}$	0.47%	175	0.62%	85	0.38%	223
Relative Values						
CC_A	0.69%	234	0.71%	120	0.72%	298
CC_T	2.05%	201	2.26%	102	2.31%	255
$ExpectedCC_M$	0.90%	178	0.86%	86	1.13%	228
$RealizedCC_M$	1.19%	253	1.53%	133	1.43%	311
$Deviation_{CC}$	0.63%	175	0.75%	85	0.55%	223

The table shows mean values and number of observations, categorized by the takeover-introduced change in acquirer's diversification as outlined in Chapter 6.4. All takeovers with $Diversification < 0$ are considered to be focusing, takeovers with $Diversification = 0$ are considered to be neutral, and takeovers with $Diversification > 0$ are considered to be diversifying. *Absolute Values* are the cost of capital without any adjustment for the current market level of interest rates. *Relative Values* are the cost of capital as explained in Chapter 6.4.

Looking at $Deviation_{CC}$, we observe the largest increase in cost of capital for neutral takeovers with an average of 0.75 percentage points over the market level. For focusing and diversifying takeovers, this value averages at 0.63 percentage points and 0.55 percentage points, respectively. Based on the aforementioned literature, these results are hardly surprising, as the coinsurance effect and the diversification discount are expected to influence the cost of capital in opposite directions. To investigate this further, we turn to regressions in the following.

6.6 Regression Results

6.6.1 Internal Capital Market Inexperience

To separate both effects – the coinsurance effect and the diversification discount – the regression setting has to allow *Diversification* to have a negative influence on the cost of capital as result of the coinsurance effect and simultaneously, a positive influence on the cost of capital as a result of the diversification discount. As theory suggests that the relevant difference between stand-alone firms and conglomerates is an internal capital

market in the latter, the impact of takeover-introduced change in diversification is expected to appear through this channel. Therefore, we condition this change in diversification on the previous experience of the acquirer with an internal capital market in Table 6.9.

The dependent variable in all four regressions of Table 6.9 is $Deviation_{CC}$ – the difference in the cost of capital between the actually merged firm and a hypothetically combined firm of the pre-merger acquirer and target. All regressions include the same control variables, and the regressions only differ in the usage of fixed effects. Whereas Regression (1) does not include fixed effects, Regression (2) has effective year fixed effects, Regression (3) has industry fixed effects for the acquirer as well as the target, and Regression (4) has both types of fixed effects. For the two main variables of interest, namely *Diversification* and *Interaction*, Table 6.9 reveals highly significant coefficients. In accordance with the theoretical expectations and our descriptive results, we observe a positive and a negative effect of the takeover-introduced diversification at the same time.

On the one hand, *Diversification* is always highly significant and has a negative sign. This means that higher takeover-introduced diversification lowers the relative cost of capital that the post-merger firm has to pay, compared to a synthetic firm consisting of the pre-merger acquirer and target. Hence, the coefficient of *Diversification* expresses the coinsurance effect. On the other hand, *Interaction* is highly significant and has a positive sign, indicating that diversification also increases the cost of capital – in particular, for high levels of pre-merger concentration. This is evidence for the diversification discount.

Combining these two offsetting effects, the net effect of takeover-introduced diversification on the cost of capital depends on the pre-merger level of concentration (or inexperience) of the acquirer. Because the estimates for *Interaction* are only slightly higher in absolute terms than the estimates for *Diversification*, the decrease caused by the latter variable (equal to the coinsurance effect) is only offset by the interaction term (equal to the diversification discount) for very high levels of internal capital market inexperience.

Using Regression (1) as an example, ten percentage points of takeover-introduced diversification for a fully concentrated acquirer results in an increase of 0.163 percentage points in cost of capital, as the decrease of 0.603 percentage points (from *Diversification*) is more than offset by the increase of 0.766 percentage points (from *Interaction*).[14]

[14] $Deviation_{CC}$ is not transformed into percentage points; for instance, a value of 0.001 equals 0.1 percentage points. Furthermore, the estimates for the pre-merger concentration of the acquirer are very low in absolute values and are never significant. Therefore, we do not consider this effect in our explanation.

Table 6.9: OLS Regressions Based on Internal Capital Market Inexperience

	(1)	(2)	(3)	(4)
Dependent Variable		$\text{Deviation}_{\text{CC}}$		
Diversification	-0.0603***	-0.0594***	-0.0551***	-0.0538***
	(0.0196)	(0.0203)	(0.0203)	(0.0207)
Interaction	0.0766***	0.0763***	0.0697***	0.0687***
	(0.0229)	(0.0245)	(0.0233)	(0.0246)
$\text{Concentration}_{\text{A}}$	0.00234	0.000793	0.000814	0.0000628
	(0.0045)	(0.0046)	(0.0051)	(0.0051)
Rating_{A}	0.00179	0.000339	0.00214	0.000800
	(0.0013)	(0.0014)	(0.0014)	(0.0015)
RatingChange	0.00355***	0.00247*	0.00353***	0.00244*
	(0.0013)	(0.0013)	(0.0013)	(0.0014)
RatingDifference	-0.000889	0.00000153	-0.00103	-0.000265
	(0.0008)	(0.0008)	(0.0009)	(0.0009)
LeverageChange	0.0460***	0.0456***	0.0441***	0.0435***
	(0.0102)	(0.0103)	(0.0105)	(0.0108)
RelativeSize	0.000940	0.000614	0.000863	0.000587
	(0.0010)	(0.0010)	(0.0011)	(0.0011)
$\text{Leverage}_{\text{A}}$	0.00210	0.00292	0.00261	0.00324
	(0.0080)	(0.0081)	(0.0086)	(0.0090)
$\text{Leverage}_{\text{T}}$	-0.0185***	-0.0133*	-0.0221***	-0.0161**
	(0.0071)	(0.0069)	(0.0076)	(0.0073)
$\text{MarketToBook}_{\text{A}}$	0.000158	0.000186	0.0000815	0.0000966
	(0.0002)	(0.0003)	(0.0002)	(0.0003)
$\text{MarketToBook}_{\text{T}}$	0.0000760	0.0000604	0.000132	0.0000860
	(0.0001)	(0.0001)	(0.0002)	(0.0001)
Constant	-0.00499	0.00785	-0.0225	-0.00490
	(0.0044)	(0.0063)	(0.0190)	(0.0179)
Year Fixed Effects	No	Yes	No	Yes
Industry Fixed Effects	No	No	Yes	Yes
Observations	483	483	483	483
Adjusted R^2	0.142	0.196	0.135	0.184

Heteroscedasticity-consistent standard errors are in parentheses. *, **, and *** indicate a significant difference from zero on a ten-, five-, and one-percent level. A detailed explanation of all variables is given in Chapter 6.4. *Interaction* is the product of $Concentration_A$ and *Diversification*. Year fixed effects are based on the effective year. Industry fixed effects include acquirer as well as target industry fixed effects, based on the first digit of the respective primary SIC code.

This implication holds true in all four regressions of Table 6.9, and fixed effects have only a minor influence on the estimated coefficients. Independent of the setting, the coefficients of *Diversification* and *Interaction* are very similar and range from -0.0603 to -0.0538 and from 0.0687 to 0.0766, respectively. Even though we use relative values compared to the current market level of interest rates at the respective point in time, Regression (2) with year fixed effects shows a higher explanatory power than Regression (1) without those year fixed effects. This indicates that our measure is not completely catching all time effects.

Besides the two main variables of interest, *LeverageChange* is also always highly significant. The interpretation is that an increase in leverage after the takeover yields to higher cost of capital for the merged firm. On the one hand, this increase in the leverage ratio could benefit shareholders, as it might enhance the return on equity. On the other hand, the high demand for funding in the context of a takeover (with a listed target) might require more debt in the short run. This short-run funding and the related debt could be more expensive than the usual sources of financing for the company.

For the moment, we conclude that both effects – the coinsurance effect and the diversification discount – exist. While the negative diversification discount outweighs the positive coinsurance effect in cases when a fully concentrated acquirer starts to diversify by undertaking a diversifying takeover, the coinsurance effect more than offsets the diversification discount when the acquirer is already diversified. In other words, the diversification discount is prevalent when the pre-merger acquirer has no previous experience in handling internal capital markets. This directly confirms Hypothesis 3.2.

6.6.2 Internal Capital Market Friction

As inexperience with managing internal capital markets is only one dimension, we estimate Table 6.9 with the pre-merger internal capital market friction in Table 6.10. Again, the regression settings only differentiate with regard to the implemented fixed effects.

The results are basically unchanged. Whereas *Diversification* has highly significant negative coefficients in the range of -0.0552 to -0.0422 and therefore, represents the coinsurance effect, *Interaction* has highly significant and positive estimated values in the range of 0.0507 to 0.0657 and hence, represents the diversification discount. The interpretation is similar to the previous regressions based on the inexperience with handling internal capital markets. For acquirers with pre-merger internal capital markets that work well,

Table 6.10: OLS Regressions Based on Internal Capital Market Friction

	(1)	(2)	(3)	(4)
Dependent Variable		Deviation_{CC}		
Diversification	-0.0450***	-0.0552***	-0.0422***	-0.0548***
	(0.0138)	(0.0156)	(0.0154)	(0.0178)
Interaction	0.0547***	0.0657***	0.0507***	0.0643***
	(0.0184)	(0.0196)	(0.0194)	(0.0214)
ICMF_{A}	0.00965***	0.00733**	0.00857**	0.00684*
	(0.0034)	(0.0035)	(0.0036)	(0.0039)
Rating_{A}	0.000658	-0.000495	0.00148	0.000542
	(0.0022)	(0.0021)	(0.0024)	(0.0022)
RatingChange	0.00168	0.000247	0.00196	0.000468
	(0.0018)	(0.0019)	(0.0018)	(0.0019)
RatingDifference	-0.00177	-0.00121	-0.00212	-0.00171
	(0.0013)	(0.0012)	(0.0015)	(0.0014)
LeverageChange	0.0487***	0.0454***	0.0435***	0.0399***
	(0.0138)	(0.0130)	(0.0130)	(0.0128)
RelativeSize	0.00124	-0.000139	0.000166	-0.00163
	(0.0028)	(0.0028)	(0.0029)	(0.0029)
Leverage_{A}	0.00858	0.00872	0.00517	0.00869
	(0.0131)	(0.0129)	(0.0130)	(0.0129)
Leverage_{T}	-0.0107	-0.00514	-0.0163*	-0.00822
	(0.0093)	(0.0097)	(0.0098)	(0.0105)
MarketToBook_{A}	-0.000282	-0.000331	-0.000437*	-0.000485*
	(0.0002)	(0.0003)	(0.0003)	(0.0003)
MarketToBook_{T}	0.000138	0.000155	0.0000668	0.0000651
	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Constant	-0.00651	0.00580	0.00649	0.0328*
	(0.0074)	(0.0104)	(0.0142)	(0.0194)
Year Fixed Effects	No	Yes	No	Yes
Industry Fixed Effects	No	No	Yes	Yes
Observations	237	237	237	237
Adjusted R^2	0.134	0.190	0.110	0.163

Heteroscedasticity-consistent standard errors are in parentheses. *, **, and *** indicate a significant difference from zero on a ten-, five-, and one-percent level. A detailed explanation of all variables is given in Chapter 6.4. *Interaction* is the product of $ICMF_A$ and *Diversification*. Year fixed effects are based on the effective year. Industry fixed effects include acquirer as well as target industry fixed effects, based on the first digit of the respective primary SIC code.

the coinsurance effect outweighs the diversification discount. For acquirers with poorly working internal capital markets, takeover-introduced diversification is detrimental. This finding fully confirms Hypothesis 3.3.

As before, the absolute value of the interaction term is slightly above the absolute value of the variable on takeover-introduced diversification, indicating that the post-merger cost of capital increases for $ICMF_A$ values close to one. In contrast to Table 6.9 with $Concentration_A$, Table 6.10 shows significant values for $ICMF_A$. However, the estimated coefficients are rather small and do not change the above conclusions. Other than that, the results in Table 6.10 are very close to the results in Table 6.9, even though the high data requirements for the calculation of internal capital market frictions halves the sample size. Again, the explanatory power increases with year fixed effects, and industry fixed effects seem to have no impact. Furthermore, *LeverageChange* is almost unchanged regarding the sign, significance, and the range of estimated coefficients. The previously significant coefficients of *RatingChange* and $Leverage_T$ remain with the same sign but decrease in absolute values and significance.

Summarizing the results so far, both indicators of the quality of internal capital markets show that an acquirer with the highest pre-merger level of friction (highest pre-merger level of inexperience) faces a diversification discount not completely offset by the coinsurance effect.

6.6.3 Economic Implications

As the interpretation of the interaction term with two scaled variables is difficult, we illustrate these results in several ways: a plot of fitted values in Figure 6.3, a hypothetical development in Table 6.11, and a more interpretable regression settings in Table 6.12.[15]

Figure 6.3 shows the development of the cost of capital when the acquirer is expected to have functioning internal capital markets compared to acquirers that are supposed to have problems with their internal capital markets. More precisely, the left graph differentiates acquirers based on their pre-merger concentration. Acquirers with only one segment before the merger have no previous experience in handling internal capital markets. In contrast, acquirers with more than one segment before the takeover have previous expe-

[15] Furthermore, more interpretable regression settings are presented as part of the robustness tests in Table 6.15.

rience with internal capital markets and therefore, are expected to already have better functioning internal capital markets in place. The right side differentiates acquirers based on our measure of internal capital market friction. Acquirers with the highest frictions are supposed to have non-functioning internal capital markets. Functioning internal capital markets are expected for acquirers with lower levels of frictions.

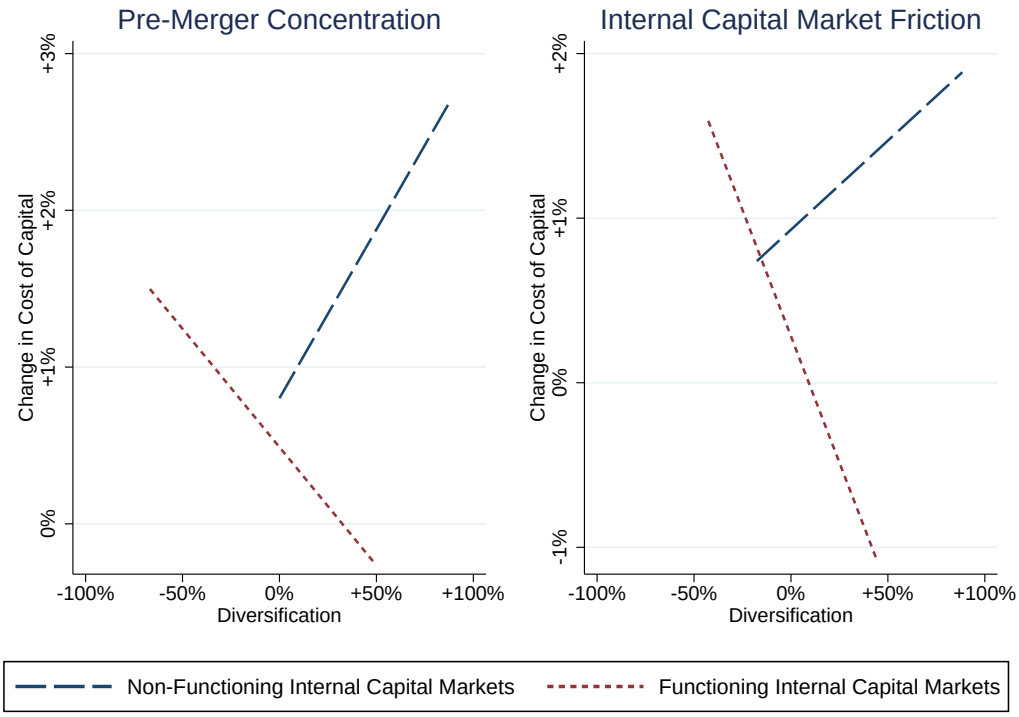

Figure 6.3: Development of Cost of Capital Based on Pre-Merger Concentration and Internal Capital Market Friction

All lines are based on fitted values of $Deviation_{CC}$ and *Diversification*. In the left graph, fully concentrated acquirers are considered to have non-functioning internal capital markets, and diversified acquirers ($Concentration_A < 1$) are supposed to have functioning internal capital markets. In the right graph, acquirers with $ICMF_A = 1$ have non-functioning internal capital markets and acquirers with $ICMF_A < 1$ are supposed to have functioning internal capital markets.

Whereas acquirers with non-functioning internal capital markets are facing higher cost of capital with an increase in diversification, the opposite holds true for acquirers with functioning internal capital markets. Interestingly, the increase that concentrated acquirers face is more pronounced than the increase that acquirers with high frictions in their internal capital markets face. In contrast, the decrease that already diversified acquirers realize is lower than the benefits of diversification for acquirers with a higher quality of internal capital markets. Overall, the main result is similar whether we split the effects

based on pre-merger concentration or based on internal capital market friction. The values for *Diversification* in Figure 6.3 are only conducive as an illustrative presentation.

Table 6.11 uses actual deviations (derived from our sample values) and presents the hypothetical development of the cost of capital based on different levels of acquirers' pre-merger concentration and takeover-introduced diversification. The estimates of this table are directly based on Regression (1) of Table 6.9. All variables except for *Diversification*, $Concentration_A$, and *Interaction* are set to their in-sample mean values. Based on the in-sample mean value for *Diversification* and $Concentration_A$, the developments of the cost of capital, when deviating from the means, are calculated.

Table 6.11: Exemplary Development of Cost of Capital

	Diversification						
$\text{Concentration}_\text{A}$	$\mu-\sigma$	$\mu-\frac{2}{3}\sigma$	$\mu-\frac{1}{3}\sigma$	μ	$\mu+\frac{1}{3}\sigma$	$\mu+\frac{2}{3}\sigma$	$\mu+\sigma$
$\mu-\sigma$	0.81%	0.68%	0.54%	0.41%	0.27%	0.14%	0.00%
$\mu-\frac{2}{3}\sigma$	0.75%	0.65%	0.55%	0.45%	0.34%	0.24%	0.14%
$\mu-\frac{1}{3}\sigma$	0.69%	0.62%	0.55%	0.48%	0.41%	0.35%	0.28%
μ	0.63%	0.59%	0.56%	0.52%	0.48%	0.45%	0.41%
$\mu+\frac{1}{3}\sigma$	0.56%	0.56%	0.56%	0.56%	0.55%	0.55%	0.55%
$\mu+\frac{2}{3}\sigma$	0.50%	0.53%	0.56%	0.59%	0.62%	0.65%	0.68%[1]
$\mu+\sigma$	0.44%	0.50%	0.57%	0.63%	0.69%[1]	0.76%[1]	0.82%[1]

Theoretical $Deviation_{CC}$ based on the coefficients of Regression (1) of Table 6.9. All variables except for *Diversification*, $Concentration_A$, and *Interaction* are set to their in-sample mean values. A detailed explanation of the variables is given in Chapter 6.4. *Interaction* is the product of *Diversification* and $Concentration_A$. μ indicates the mean value of *Diversification* and $Concentration_A$ in the sample, and σ denotes the corresponding standard deviation. [1] indicates that those values are technically not possible and are only shown for completeness.

The conclusions are similar to Figure 6.3. Having a low level of pre-merger concentration, the coinsurance effect outweighs the drawbacks from the diversification discount. Consequently, higher takeover-introduced diversification yields relatively lower post-merger cost of capital. In contrast, acquirers with high levels of pre-merger concentration (and therefore, insufficient experience in managing internal capital markets) face higher cost of capital with an increase in diversification. For instance, an averagely concentrated acquirer pays 0.41 percentage points more in cost of capital after a highly diversifying takeover (mean plus one standard deviation) than a lowly concentrated acquirer (mean minus one standard deviation) pays.

If an interaction term is used, the partial effect of one of the variables included in the interaction term on the dependent variable depends on the value of the other explanatory variable. For example, for *Diversification* in Table 6.9, the partial effect would be:

$$\frac{\Delta Deviation_{CC}}{\Delta Diversification} = \beta_{Diversification} + \beta_{Interaction} Concentration_A \tag{6.10}$$

From this equation, it is clear that $\beta_{Diversification}$ measures the partial effect of *Diversification* on $Deviation_{CC}$ when $Concentration_A$ is zero. Obviously, this coefficient is not always insightful. In order to obtain more informative coefficients, it is often useful to reparameterize the model. We do so in Table 6.12.

In Regression (1), we estimate the following model:

$$\begin{aligned} Deviation_{CC} = Constant + \beta_{Interaction} \times (Diversification - Diversification_{Maximum}) \\ \times (Concentration_A - Concentration_{A,Maximum}) + \delta_{Diversification} Diversification \\ + \delta_{Concentration_A} Concentration_A + Controls + \epsilon \end{aligned} \tag{6.11}$$

It can be shown that

$$\delta_{Diversification} = \beta_{Diversification} + \beta_{Interaction} Concentration_{A,Maximum} \tag{6.12}$$

which means that $\delta_{Diversification}$ can be interpreted as the partial effect of *Diversification* on $Deviation_{CC}$ when $Concentration_A$ is at its maximum ($Concentration_A = 1$). Note that this coefficient is positive and significant at the five-percent level, indicating that for fully concentrated acquirers, a diversifying merger will increase their cost of capital.

In Regression (2) of Table 6.12, the model is reparameterized so that $\delta_{Diversification}$ is the partial effect of *Diversification* on $Deviation_{CC}$ when $Concentration_A$ is at its minimum. Now the coefficient is negative and highly significant. The interpretation is that for already diversified acquirers, a diversifying merger will decrease their cost of capital. Regression (3) of Table 6.12 shows a similar reparameterization as Regression (1) except that instead of using the maximum for *Diversification*, we use the 90^{th} percentile. The coefficients are similar to Regression (1). For Regression (4), we use the 10^{th} percentile for $Concentration_A$

Table 6.12: OLS Regressions with Interpretable Settings

	(1)	(2)	(3)	(4)
Dependent Variable		Deviation_{CC}		
Diversification Is Set to	Maximum	Maximum	90^{th} Pctl.	90^{th} Pctl.
Concentration_A Is Set to	Maximum	Minimum	Maximum	10^{th} Pctl.
Interaction	0.0766***	0.0766***	0.0766***	0.0766***
	(0.0229)	(0.0229)	(0.0229)	(0.0229)
Diversification	0.0163**	-0.0507***	0.0163**	-0.0326***
	(0.0074)	(0.0169)	(0.0074)	(0.0120)
Concentration_A	0.0701***	0.0701***	0.0201***	0.0201***
	(0.0208)	(0.0208)	(0.0070)	(0.0070)
Rating_A	0.00179	0.00179	0.00179	0.00179
	(0.0013)	(0.0013)	(0.0013)	(0.0013)
RatingChange	0.00355***	0.00355***	0.00355***	0.00355***
	(0.0013)	(0.0013)	(0.0013)	(0.0013)
RatingDifference	-0.000889	-0.000889	-0.000889	-0.000889
	(0.0008)	(0.0008)	(0.0008)	(0.0008)
LeverageChange	0.0460***	0.0460***	0.0460***	0.0460***
	(0.0102)	(0.0102)	(0.0102)	(0.0102)
RelativeSize	0.000940	0.000940	0.000940	0.000940
	(0.0010)	(0.0010)	(0.0010)	(0.0010)
Leverage_A	0.00210	0.00210	0.00210	0.00210
	(0.0080)	(0.0080)	(0.0080)	(0.0080)
Leverage_T	-0.0185***	-0.0185***	-0.0185***	-0.0185***
	(0.0071)	(0.0071)	(0.0071)	(0.0071)
MarketToBook_A	0.000158	0.000158	0.000158	0.000158
	(0.0002)	(0.0002)	(0.0002)	(0.0002)
MarketToBook_T	0.0000760	0.0000760	0.0000760	0.0000760
	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Constant	-0.0727***	-0.0135***	-0.0227***	-0.0114**
	(0.0207)	(0.0051)	(0.0069)	(0.0048)
Observations	483	483	483	483
Adjusted R^2	0.142	0.142	0.142	0.142

Heteroscedasticity-consistent standard errors are in parentheses. *, **, and *** indicate a significant difference from zero on a ten-, five-, and one-percent level. A detailed explanation of all variables is given in Chapter 6.4. *Interaction* is the product of $Concentration_A$ and *Diversification*. $Concentration_A$ and *Diversification* are set to the indicated in-sample values. In Regression (1), both are set to their maximum values. In Regression (2), $Concentration_A$ is set to the minimum value, and *Diversification* is set to the maximum value. In Regression (3), $Concentration_A$ is set to the maximum value, and *Diversification* is set to the 90^{th} percentile. In Regression (4), $Concentration_A$ is set to the 10^{th} percentile and *Diversification* is set to the 90^{th} percentile.

instead of its minimum as well as the 90^{th} percentile for *Diversification*. Again, the results are similar to those from Regression (2).

Summarizing Table 6.12, we observe alternating signs for *Diversification* based on the level of concentration. For high levels of acquirers' concentration, we find a positive sign, resulting in an increase in the cost of capital due to diversification. For low levels of acquirers' concentration, the effect is reversed.

Finally, to show the economic significance, we use the initial results of Regression (1) in Table 6.9 again. Except for *Diversification*, $Concentration_A$, and *Interaction*, we set all variables to their respective in-sample mean value. We focus on two cases: a not fully concentrated acquirer with a diversifying takeover, and a fully concentrated acquirer with a diversifying takeover. In the first case, an average (in-sample) diversifying takeover yields to a reduction of 0.11 percentage points in the deviation of the cost of capital compared to a non-diversifying takeover – all else being equal. Assuming the mean (in-sample) firm value for the merged firm, these 0.11 percentage points are equal to savings of approximately 34 million U.S. Dollar in the first year. For fully concentrated acquirers, an average (in-sample) diversifying takeover increases the deviation of the cost of capital by 0.56 percentage points compared to a non-diversifying takeover – again, all else being equal. The average (in-sample) firm value of the merged firm is 11.86 billion U.S. Dollar, which translates into extra costs of over 65 million U.S. Dollar in the first year. Both examples show the large practical relevance of our considerations. Economical first-year effects of a 34 million U.S. Dollar decrease and a 65 million U.S. Dollar increase are huge in scale, even for the largest acquirers.

6.7 Robustness Tests

6.7.1 Larger Set of Control Variables

As our results might be influenced by our assumptions and measurement procedures, we conduct a battery of robustness tests. Besides the control variables that we consider so far, Table 6.13 includes additional firm and takeover characteristics that might affect the change in the cost of capital.

Table 6.13: OLS Regressions with Additional Control Variables

	(1)	(2)	(3)	(4)
Dependent Variable		Deviation_{CC}		
Diversification	-0.0433**	-0.0352**	-0.0501**	-0.0353*
Interaction	0.0620***	0.0509**	0.0651**	0.0543**
Concentration_A	-0.0000746	-0.00218		
ICMF_A			0.00627	0.00592
Rating_A	0.00122	0.00369***	-0.00119	0.00508***
RatingChange	0.00628***	0.00410***	0.00490*	0.00191
RatingDifference	0.000932	-0.00100	0.000472	-0.00274**
LeverageChange	0.0369**	0.0402***	0.0251**	0.0534***
RelativeSize	0.00115	-0.0000451	0.00100	-0.000927
Leverage_A	-0.00202	-0.00326	0.0281	0.00870
Leverage_T	-0.0102	-0.0171*	-0.00724	-0.0199
MarketToBook_A	0.000640	0.000228	-0.000255	-0.000240
MarketToBook_T	0.0000109	-0.0000110	-0.0000986	0.000196***
GovernanceIndex_A	-0.000229		-0.00108*	
GovernanceIndex_T	0.0000229		0.000348	
$\ln(\text{MarketValue}_A)$	-0.000324	0.000461	-0.000940	0.00219*
$\ln(\text{MarketValue}_T)$	0.00622	0.00133	0.00182	-0.00660
ln(TransactionValue)	-0.00532	-0.000802	-0.000994	0.00603
StdDevEPS_A	-0.0000193***	-0.0000153***	0.00753	-0.0174
StdDevEPS_T	-0.000846	-0.00417	0.00305	0.0181***
LongTermGrowth_A	-0.0260	-0.0326	0.0357	-0.0266
LongTermGrowth_T	0.0138	0.00357	0.0177	-0.0258*
CAR	0.0140	-0.0133	0.0128	-0.0305
Synergies	0.0387***	-0.00516	0.00783	-0.0265
NumberOfBidders	0.0100**	0.00245	0.00876	-0.00539
FriendlyTakeover	0.0219***	0.00743	0.00886	0.0111*
StockPayment	0.00225	0.00535*	0.00243	0.00901***
Constant	-0.0319	-0.0231	-0.0143	-0.0405*
Observations	183	353	86	166
Adjusted R^2	0.233	0.145	0.216	0.246

Heteroscedasticity-consistent standard errors are implemented but not shown. *, **, and *** indicate a significant difference from zero on a ten-, five-, and one-percent level. A detailed explanation of the previously used variables is given in Chapter 6.4. In Regression (1) and Regression (2), *Interaction* is the product of $Concentration_A$ and *Diversification*. In Regression (3) and Regression (4), *Interaction* is the product of $ICMF_A$ and *Diversification*.

To control for differences in the corporate governance structure, we include the governance index (*GovernanceIndex*), as calculated in Gompers, Ishii, and Metrick (2003).[16] We take the latest value before the takeover for the acquiring firm and the target because this index is only updated every few years. Although we already control for the relative size of the takeover, we add the market value before the takeover (*MarketValue*) for both companies. Furthermore, we include the actual transaction value (*TransactionValue*). To account for differences in analysts' forecasts, we include the standard deviation of analysts' earnings-per-share forecasts (*StdDevEPS*) as well as the median long-term growth forecasts (*LongTermGrowth*) for both companies.

Besides those variables, we include several takeover characteristics. To control for announcement effects, we include the acquirer's cumulative abnormal returns (*CAR*) measured by the market model as outlined in Chapter 3.1.[17] Even though we argue that the level of diversification is reflected in the discount rate and that synergies only influence earnings, we add a control variable for synergies (*Synergies*) using a measure which is defined similarly to our cost of capital variable.[18] We also add the number of bidders in the takeover process (*NumberOfBidders*) and a dummy variable for friendly takeovers (*FriendlyTakeover*) to control for the bidding procedure. Finally, we approximate any payment effects with the percentage of stock payment for the target (*StockPayment*).

Regression (1) and Regression (2) of Table 6.13 use the previous inexperience with internal capital markets ($Concentration_A$), and Regression (3) and Regression (4) use internal capital market friction ($ICMF_A$) to separate the coinsurance effect and the diversification discount. Because of the poor coverage for the governance index, we omit the governance structure of the companies in Regression (2) and Regression (4).

[16] Anderson et al. (2000) find differences in the governance structure between focused and diversified firms. However, their findings are unable to explain the value loss from diversification. Investigating the change in operating performance around takeovers, Carline, Linn, and Yadav (2009) provide evidence that those changes for acquirers are influenced by corporate governance characteristics. Furthermore, Masulis, Wang, and Xie (2007) show that corporate governance can lead to better takeover decisions.

[17] The estimation period starts 190 days before the announcement date and ends 41 days before the announcement date. We use a symmetric three-day event window around the announcement date.

[18] More precisely, we use analysts' earnings forecasts for both pre-merger firms to proxy for expected earnings for the two companies as single entities. Those analysts' earnings forecasts are taken before the announcement and forecast the earnings after the takeover is effective. Subtracting the realized earnings of the merged firm after the takeover yields the realized synergies for the combined firm. To scale the variable, we divide it by the merged firm's sales. It is worth noting that Devos, Kadapakkam, and Krishnamurthy (2009) also use forecasts to calculate synergies – however, they separate synergies into operating and financial synergies.

The signs are as expected and similar to our main regressions of Table 6.9 and Table 6.10. Furthermore, the coefficients of the relevant variables are very close to the original estimates, and all estimates remain statistically significant. The overall almost unchanged results also hold true for *LeverageChange* as the control variable with the most influence. The variable keeps its significantly positive coefficient. As before, *RatingChange* has a positive coefficient, with varying statistical significance. For the newly added control variables, we do not find any obvious pattern.

6.7.2 Different Measure for Diversification

As our concentration and diversification measures only consider the ratio of the largest segment to total sales, we follow Lang and Stulz (1994) as well as Comment and Jarrell (1995) and compute a Herfindahl-Hirschman index for the acquirer (HHI_A) based on all segment sales as an alternative measure:

$$HHI_A = \sum_{i=1}^{N} \left(\frac{SegmentSales_{A,i}}{TotalSales_A} \right)^2 \tag{6.13}$$

N is the number of segments and $SegmentSales_{A,i}$ is equal to the acquirer's sales in segment i. We calculate $Diversification_{HHI}$ in the same way that we calculated *Diversification* in Chapter 6.4. The same regressions as in Table 6.9 are performed in Table 6.14 with variables based on the Herfindahl-Hirschman index.

We find similar results as earlier. The coefficients of our variables of interest do not change qualitatively. All estimates remain highly significant; only $Diversification_{HHI}$ in Regression (4) drops from a one-percent significance level to a five-percent level. The almost identical results are rather unsurprising, as our previous diversification measure and the newly generated measure based on the Herfindahl-Hirschman index are highly correlated. For instance, $Concentration_A$ and HHI_A (*Diversification* and $Diversification_{HHI}$) show a correlation coefficient of 0.9774 (0.9335). Hence, accounting for all segment sizes does not change the previous results, which are based on the relative size of the largest segment.

Table 6.14: OLS Regressions Based on Herfindahl-Hirschman Index

	(1)	(2)	(3)	(4)
Dependent Variable		Deviation_{CC}		
$\text{Diversification}_{HHI}$	-0.0544***	-0.0518***	-0.0517***	-0.0488**
	(0.0197)	(0.0196)	(0.0195)	(0.0194)
Interaction_{HHI}	0.0733***	0.0712***	0.0690***	0.0662***
	(0.0227)	(0.0232)	(0.0222)	(0.0229)
HHI_{A}	0.000567	-0.000649	-0.000537	-0.00104
	(0.0040)	(0.0041)	(0.0045)	(0.0046)
Rating_{A}	0.00193	0.000488	0.00234*	0.00101
	(0.0013)	(0.0013)	(0.0014)	(0.0015)
RatingChange	0.00353***	0.00248*	0.00352***	0.00246*
	(0.0012)	(0.0013)	(0.0013)	(0.0013)
RatingDifference	-0.000905	-0.0000158	-0.00109	-0.000326
	(0.0008)	(0.0008)	(0.0009)	(0.0009)
LeverageChange	0.0460***	0.0457***	0.0439***	0.0436***
	(0.0102)	(0.0103)	(0.0104)	(0.0107)
RelativeSize	0.000991	0.000666	0.000927	0.000657
	(0.0011)	(0.0011)	(0.0011)	(0.0011)
Leverage_{A}	0.00313	0.00390	0.00314	0.00363
	(0.0082)	(0.0083)	(0.0087)	(0.0091)
Leverage_{T}	-0.0193***	-0.0140**	-0.0233***	-0.0172**
	(0.0072)	(0.0070)	(0.0076)	(0.0073)
MarketToBook_{A}	0.000181	0.000221	0.000108	0.000132
	(0.0002)	(0.0003)	(0.0002)	(0.0003)
MarketToBook_{T}	0.0000539	0.0000385	0.0000988	0.0000533
	(0.0001)	(0.0001)	(0.0002)	(0.0001)
Constant	-0.00446	0.00814	-0.0200	-0.00243
	(0.0042)	(0.0064)	(0.0195)	(0.0184)
Year Fixed Effects	No	Yes	No	Yes
Industry Fixed Effects	No	No	Yes	Yes
Observations	483	483	483	483
Adjusted R^2	0.145	0.198	0.139	0.187

Heteroscedasticity-consistent standard errors are in parentheses. *, **, and *** indicate a significant difference from zero on a ten-, five-, and one-percent level. A detailed explanation of all variables is given in Chapter 6.4. However, $Interaction_{HHI}$, HHI_A, and $Diversification_{HHI}$ are based on the Herfindahl-Hirschman index instead of the ratio of largest segment sales to total sales. $Interaction_{HHI}$ is the product of HHI_A and $Diversification_{HHI}$. Year fixed effects are based on the effective year. Industry fixed effects include acquirer as well as target industry fixed effects, based on the first digit of the respective primary SIC code.

6.7.3 Different Regression Settings

Another point we would like to address is our decision to include an interaction term in the main regressions. We use this setting to model the quality of the pre-merger internal capital markets of acquirers. However, one drawback might be possible multicollinearity of the interaction term with our variable of takeover-introduced diversification. Therefore, we provide two different regression approaches in Table 6.15 for robustness. Both approaches are easier to interpret than the regression setting with an interaction term and still allow us to investigate *Diversification* while controlling for the previous experience with internal capital markets. Whereas Regression (1) and Regression (2) split *Diversification*, Regression (3) and Regression (4) split the investigated sample.

For the former approach, we construct $Diversification_{CA}$, which is equal to regular *Diversification* if the acquirer is fully focused before the takeover ($Concentration_A = 1$). Otherwise, $Diversification_{CA}$ is set to zero. In addition, we introduce $Diversification_{DA}$, which is equal to *Diversification* if the acquirer is diversified before the merger ($Concentration_A < 1$). Again, $Diversification_{DA}$ is equal to zero otherwise. With these two new variables included in the model, Regression (1) and Regression (4) of Table 6.9 are repeated and presented in Regression (1) and Regression (2) of Table 6.15.

Overall, the results are basically unchanged, and the conclusions stay the same. In both regressions, the coefficient for $Diversification_{CA}$ is positive and significant at the one-percent level. This supports our earlier finding that focused acquirers experience an increase in their cost of capital when undertaking a diversifying merger (diversification discount). Contrary, the coefficient for $Diversification_{DA}$ is negative and significant at the five-percent level in both regression settings. Again, this is in line with our result that already diversified acquirers benefit with a decrease in their cost of capital when undertaking a diversifying merger (coinsurance effect).

Our second alternative setting for the regression model is to split the whole sample. Therefore, Regression (3) of Table 6.15 includes all takeovers with pre-merger concentrated acquirers ($Concentration_A = 1$) and Regression (4) contains all pre-merger diversified acquirers ($Concentration_A < 1$). As $Concentration_A$ has no variation in Regression (3) of Table 6.15, the variable is omitted.

Table 6.15: Alternative OLS Regressions for Internal Capital Market Inexperience

	(1)	(2)	(3)	(4)
Dependent Variable			Deviation_{CC}	
Restriction	None	None	One Segment	More Segments
Diversification			0.0142*	-0.0168**
			(0.0084)	(0.0080)
$\text{Diversification}_{CA}$	0.0275***	0.0251***		
	(0.0082)	(0.0084)		
$\text{Diversification}_{DA}$	-0.0193**	-0.0172**		
	(0.0079)	(0.0079)		
Concentration_{A}	0.000694	-0.00140		-0.00575
	(0.0044)	(0.0051)		(0.0060)
Rating_{A}	0.00182	0.000992	0.00387*	0.00101
	(0.0012)	(0.0014)	(0.0022)	(0.0015)
RatingChange	0.00338***	0.00235*	-0.000499	0.00433***
	(0.0012)	(0.0013)	(0.0021)	(0.0014)
RatingDifference	-0.000771	-0.000247	-0.00552**	0.000398
	(0.0008)	(0.0009)	(0.0024)	(0.0009)
LeverageChange	0.0468***	0.0437***	0.0642***	0.0418***
	(0.0102)	(0.0109)	(0.0207)	(0.0113)
RelativeSize	0.00152	0.00116	0.000446	0.00147
	(0.0009)	(0.0010)	(0.0037)	(0.0009)
Leverage_{A}	0.00254	0.00279	-0.00835	0.00678
	(0.0080)	(0.0090)	(0.0189)	(0.0094)
Leverage_{T}	-0.0174**	-0.0159**	0.00141	-0.0212***
	(0.0071)	(0.0072)	(0.0159)	(0.0080)
MarketToBook_{A}	0.000133	0.0000703	-0.000675	0.000220
	(0.0002)	(0.0003)	(0.0005)	(0.0002)
MarketToBook_{T}	0.0000693	0.0000707	0.000545	0.0000685
	(0.0001)	(0.0001)	(0.0008)	(0.0001)
Constant	-0.00418	-0.00587	-0.0108	0.00236
	(0.0044)	(0.0179)	(0.0116)	(0.0055)
Year Fixed Effects	No	Yes	No	No
Industry Fixed Effects	No	Yes	No	No
Observations	483	483	119	364
Adjusted R^2	0.152	0.194	0.204	0.143

Heteroscedasticity-consistent standard errors are in parentheses. *, **, and *** indicate a significant difference from zero on a ten-, five-, and one-percent level. A detailed explanation of most variables is given in Chapter 6.4. Year fixed effects are based on the effective year. Industry fixed effects include acquirer as well as target industry fixed effects, based on the first digit of the respective primary SIC code. In Regression (1) and Regression (2), *Diversification* is separated into two new variables. $Diversification_{CA}$ is equal to *Diversification* when the acquirer has only one segment before the merger; otherwise, this new variable is zero. $Diversification_{DA}$ is equal to *Diversification* when the acquirer has more than one segment before the merger; otherwise, this new variable is zero. In Regression (3) and Regression (4), the sample is restricted to acquirers with one pre-merger segment and more than one pre-merger segment, respectively.

Again, the results are as expected. *Diversification* is significant in both regressions and has the expected sign. Whereas takeover-introduced diversification increases the cost of capital for fully concentrated acquirers, the effect is contradictory for acquirers with more than one pre-merger segment. The relatively low significance of *Diversification* might be (at least partly) caused by the drop in observations. Splitting the sample inevitably results in a lower number of observations, which is especially true in Regression (3) of Table 6.15 with 119 observations.

6.7.4 Absolute Values for Cost of Capital

When introducing our cost of capital measure in Chapter 6.3, we argue that clustering of takeovers might cause problems for our dependent variable. If takeovers are systematically conducted in boom times with relatively high share prices, we would observe relatively low cost of equity before the announcement (for example, Dangl and Halling, 2012; Li, Ng, and Swaminathan, 2013; Fischer and Overkott, 2015). Our calculation allows a long time frame between the pre-merger and post-merger calculation of the implied cost of equity as is shown in Figure 6.1. Therefore, one might suspect that the post-merger cost of capital is mostly measured after those boom times and consequently, relatively lower share prices would lead to systematically higher post-merger costs of capital. To circumvent this problem, we use differences to the market level of interest rates for both the cost of equity and the cost of debt. Nevertheless, for some descriptive statistics, we also show the absolute cost of capital because of easier interpretation.

For our regression settings, Table 6.16 provides the results based on the absolute value for the cost of capital instead of the difference to the market level. The shown regressions are otherwise similar to Regression (1) and Regression (4) of Table 6.9 and Regression (1) and Regression (4) of Table 6.10.

Overall, we observe qualitatively unchanged results. The level of statistical significance drops in Regression (2) and Regression (3), but both variables of interest are still significant at the five-percent level. The signs of the respective coefficients are as expected, although we observe slightly lower coefficients compared to Table 6.9 and Table 6.10. The same can be said for *LeverageChange*; the coefficients are slightly lower than in the original regressions and we observe a drop in the significance level. However, as we do not account

Table 6.16: OLS Regressions Based on Absolute Cost of Capital

	(1)	(2)	(3)	(4)
Dependent Variable	Deviation_{CC} with Absolute Values			
Diversification	-0.0477***	-0.0491**	-0.0332**	-0.0462***
	(0.0182)	(0.0207)	(0.0155)	(0.0161)
Interaction	0.0629***	0.0630**	0.0423**	0.0572***
	(0.0217)	(0.0248)	(0.0201)	(0.0202)
Concentration_{A}	0.00276	0.00232		
	(0.0042)	(0.0045)		
ICMF_{A}			0.00718**	0.00549
			(0.0033)	(0.0037)
Rating_{A}	0.00327***	0.00137	0.00219	0.000742
	(0.0011)	(0.0013)	(0.0020)	(0.0021)
RatingChange	0.00380***	0.00271**	0.00169	0.000236
	(0.0010)	(0.0011)	(0.0016)	(0.0016)
RatingDifference	-0.000753	0.0000926	-0.00116	-0.000770
	(0.0007)	(0.0008)	(0.0012)	(0.0012)
LeverageChange	0.0228***	0.0182**	0.0335**	0.0234*
	(0.0086)	(0.0090)	(0.0130)	(0.0131)
RelativeSize	0.00151**	0.000840	-0.000469	-0.00338
	(0.0008)	(0.0009)	(0.0028)	(0.0028)
Leverage_{A}	-0.00628	-0.00251	0.00615	0.00737
	(0.0076)	(0.0084)	(0.0129)	(0.0129)
Leverage_{T}	-0.0175***	-0.0143**	-0.0150*	-0.0126
	(0.0060)	(0.0064)	(0.0082)	(0.0085)
MarketToBook_{A}	0.000327	0.000120	-0.000105	-0.000478*
	(0.0002)	(0.0002)	(0.0002)	(0.0002)
MarketToBook_{T}	0.0000986	0.000190	0.0000772	0.0000414
	(0.0002)	(0.0002)	(0.0002)	(0.0001)
Constant	-0.0104**	-0.0312	-0.00940	0.0541***
	(0.0043)	(0.0223)	(0.0068)	(0.0186)
Year Fixed Effects	No	Yes	No	Yes
Industry Fixed Effects	No	Yes	No	Yes
Observations	483	483	237	237
Adjusted R^2	0.109	0.197	0.078	0.211

Heteroscedasticity-consistent standard errors are in parentheses. *, **, and *** indicate a significant difference from zero on a ten-, five-, and one-percent level. A detailed explanation of all variables is given in Chapter 6.4. However, we do not subtract the current market level for the cost of equity or the cost of debt. In Regression (1) and Regression (2), *Interaction* is the product of $Concentration_A$ and *Diversification*. In Regression (3) and Regression (4), *Interaction* is the product of $ICMF_A$ and *Diversification*. Year fixed effects are based on the effective year. Industry fixed effects include acquirer as well as target industry fixed effects, based on the first digit of the respective primary SIC code.

for systematic variation in the cost of capital in this regression setting, our estimated coefficients in Table 6.16 might just be less precise.

6.7.5 Different Calculation Methods for Cost of Capital

Besides the trends in the overall cost of capital, in the following, we investigate two more issues regarding the calculation of the cost of capital. On the one hand, we change the calculation of our cost of equity. On the other hand, we use a different approximation for the cost of debt. The results for both alterations are presented in Table 6.17.

In Regression (1) and Regression (2), we only use the approach by Gebhardt, Lee, and Swaminathan (2001), referred to as GLS approach, instead of using the median of four different calculation methods for the cost of equity. The cost of debt is still calculated based on ratings. In Regression (3) and Regression (4) of Table 6.17, we alternate this cost of debt calculation and implement the spread of reported syndicated bank loans instead of ratings. As our sample includes observations with loan-based information but without all necessary ratings, we eliminate all control variables that require information on ratings in Regression (4). The result is an increase of 30 observations in Regression (4) compared to Regression (3). The cost of equity in Regression (3) and Regression (4) are based on the median value of the four implied cost of equity methods.

In all four regression settings of Table 6.17, the coefficients of *Interaction* and *Diversification* have the expected signs and are statistically significant. It is worth noting that the explanatory power increases in Regression (1) and Regression (2), compared to the regressions in Table 6.9. Regarding the magnitude of the estimates, Regression (1) and Regression (2) are very similar to the coefficients of Table 6.9. However, Regression (3) and Regression (4) of Table 6.17 show a distinct increase regarding the absolute magnitude of the estimated coefficients. This could be partly caused by the lower number of observations, as we only have approximately one-third of the initial sample left. Nevertheless, the variables are significant on the five- or one-percent level. As frequently in earlier regressions, *RatingChange* and *LeverageChange* have significant coefficients with positive signs.

Table 6.17: OLS Regressions Based on Different Calculation Methods

	(1)	(2)	(3)	(4)
Dependent Variable	$Deviation_{CC}$			
Cost of Equity	GLS Approach		Median Value	
Cost of Debt	Rating-Based		Loan-Based	
Diversification	-0.0490***	-0.0485**	-0.114***	-0.0877***
	(0.0178)	(0.0201)	(0.0328)	(0.0284)
Interaction	0.0685***	0.0674***	0.123***	0.0933**
	(0.0222)	(0.0248)	(0.0375)	(0.0370)
$Concentration_A$	0.00152	0.000191	0.00704	0.00567
	(0.0037)	(0.0040)	(0.0071)	(0.0060)
$Rating_A$	0.00220**	0.000944	0.000197	
	(0.0010)	(0.0011)	(0.0021)	
RatingChange	0.00322***	0.00260**	0.00537**	
	(0.0011)	(0.0011)	(0.0022)	
RatingDifference	-0.000431	0.000187	-0.000945	
	(0.0006)	(0.0007)	(0.0013)	
LeverageChange	0.0443***	0.0387***	0.0426***	0.0458***
	(0.0079)	(0.0085)	(0.0157)	(0.0158)
RelativeSize	0.00133*	0.000279	0.00615	0.00653*
	(0.0007)	(0.0009)	(0.0038)	(0.0033)
$Leverage_A$	-0.00265	-0.000941	0.0203	0.00769
	(0.0066)	(0.0079)	(0.0150)	(0.0130)
$Leverage_T$	-0.0160***	-0.0154***	-0.0229*	-0.0150
	(0.0052)	(0.0058)	(0.0132)	(0.0102)
$MarketToBook_A$	0.000291	0.000159	0.0000770	0.0000812
	(0.0003)	(0.0004)	(0.0006)	(0.0004)
$MarketToBook_T$	0.000283	0.000329	-0.000490*	-0.000417*
	(0.0002)	(0.0002)	(0.0003)	(0.0002)
Constant	-0.00724*	-0.0145	-0.00570	-0.00218
	(0.0040)	(0.0244)	(0.0093)	(0.0058)
Year Fixed Effects	No	Yes	No	No
Industry Fixed Effects	No	Yes	No	No
Observations	483	483	140	170
Adjusted R^2	0.199	0.245	0.237	0.175

Heteroscedasticity-consistent standard errors are in parentheses. *, **, and *** indicate a significant difference from zero on a ten-, five-, and one-percent level. A detailed explanation of all variables is given in Chapter 6.4. However, $Deviation_{CC}$ deviates from that definition. In Regression (1) and Regression (2), we use the approach of Gebhardt, Lee, and Swaminathan (2001) instead of the median value to calculate the implied cost of equity. In Regression (3) and Regression (4), we use the spread of reported syndicated bank loans instead of ratings to approximate for the respective cost of debt. *Interaction* is the product of $Concentration_A$ and *Diversification*. Year fixed effects are based on the effective year. Industry fixed effects include acquirer as well as target industry fixed effects, based on the first digit of the respective primary SIC code.

6.7.6 Difference in Target Quality

Our main finding is partly based on the difference of focused and diversified acquirers. We argue that this difference is caused by characteristics of the acquirer and the takeover, and not by characteristics of the target. It is worth noting that we control for several aspects of the target – most importantly, the target's pre-takeover cost of capital. However, if there were significant differences in merger success between diversified and focused acquirers, some endogeneity concerns would arise. For instance, assume that there is outside pressure for a focused firm to diversify. This pressure might lead to this firm buying a bad target, which might cause its cost of capital to increase. In such a scenario, the characteristics of the target would vary depending on the pre-merger concentration of the acquirer. However, this would also mean that the abnormal returns at the announcement date for focused and diversified acquirers would be different.

Using cumulative abnormal returns estimated with the market model as described in Chapter 3.1, we do not find a statistically significant difference between the cumulative abnormal returns of fully focused acquirers and diversified acquirers on any conventional significance level when using the same sample as in Regression (1) of Table 6.9. Hence, we conclude that merger success is not different among pre-merger concentrated and pre-merger diversified acquirers.

This test also eliminates another concern regarding the influence of the cumulative abnormal returns on the cost of capital. As we use the implied cost of equity to approximate the actual cost of equity, the sensitivity of the implied cost of equity to share price developments could be problematic. If two firms are completely identical regarding their analysts' forecasts and their share price development over a certain time frame, abnormal returns during the time frame for one of those two firms would directly cause a change in the cost of capital. Because we focus on the change in the cost of capital over a time frame that includes a takeover announcement (and therefore, possible abnormal returns), our dependent variable would be systematically different if focused and diversified acquirers have systematically different cumulative abnormal returns. As we showed above, this is not the case.[19]

[19]Note that cumulative abnormal returns of acquirers are also unable to explain the changes in the cost of capital as can be seen in Table 6.13.

Furthermore, we would like to stress that our findings do not only hold true for the pre-takeover concentration of the acquirer, but also for its internal capital market frictions. Hence, an appropriate endogeneity concern would need to explain the opposing effects (coinsurance effect and diversification discount) based on internal capital market frictions as well.

6.7.7 Endogeneity in Takeover Decision

Even though this reasoning eliminates several endogeneity issues, we follow previous literature with regard to a possible selection bias caused by the initial decision to diversify or to participate in the market for corporate control (for example, Campa and Kedia, 2002; Villalonga, 2004b; Colak and Whited, 2007; Hann, Ogneva, and Ozbas, 2013). Those studies implement a two-stage regression setting, where the first stage explicitly models the decision to diversify or become an acquirer. This estimation procedure of Heckman (1979) then uses the inverse Mill's ratio (*InverseMillsRatio*) of the first-stage probit regression as control variable in the second stage. Table 6.18 presents the results of the second-stage regression with the inclusion of the inverse Mill's ratio as independent variable.

The dependent variable in our first-stage probit regression is a dummy variable with the value of one if the respective firm is an acquirer in a given year, and zero if the firm does not become an acquirer in that year. Hence, we use yearly data and our sample for the first-stage probit regression is based on all U.S. firms with sufficient data in Compustat/CRSP. Note that the second stage is unchanged (besides the inclusion of the inverse Mill's ratio) and is still based on data from Datastream/Worldscope.

The dummy variable for the merger decision is regressed on the following independent variables that are supposed to influence the decision to become an acquirer: firm's market share (based on sales from Compustat), firm's leverage ratio (debt over assets from Compustat), logarithm of firm's assets (from Compustat), firm's cash flow normalized by its assets (earnings plus depreciation over assets from Compustat), firm's market-to-book ratio (market value from CRSP and book value from Compustat), dummy variable that equals one if firm paid a dividend and zero otherwise (based on dividends from Compustat), logarithm of firm's age (approximated by years covered in CRSP), dummy variable that equals one if firm is a constituent of the Standard and Poor's industrial or transportation index, firm's industry-adjusted market-to-book ratio lagged by one year (industry

Table 6.18: OLS Regressions with Heckman (1979) Two-Stage Estimation

	(1)	(2)	(3)	(4)
Dependent Variable		Deviation_{CC}		
Diversification	-0.0513**	-0.0442**	-0.0457***	-0.0500**
	(0.0205)	(0.0211)	(0.0149)	(0.0197)
Interaction	0.0688***	0.0610**	0.0552***	0.0570**
	(0.0238)	(0.0250)	(0.0196)	(0.0234)
Concentration_{A}	0.000164	-0.00242		
	(0.0048)	(0.0054)		
ICMF_{A}			0.00836**	0.00562
			(0.0036)	(0.0040)
Rating_{A}	0.00188	0.000996	0.000993	0.00136
	(0.0013)	(0.0016)	(0.0021)	(0.0022)
RatingChange	0.00332***	0.00238*	0.00102	0.000225
	(0.0013)	(0.0014)	(0.0017)	(0.0019)
RatingDifference	-0.000713	-0.0000407	-0.00164	-0.00190
	(0.0009)	(0.0009)	(0.0013)	(0.0014)
LeverageChange	0.0376***	0.0335***	0.0469***	0.0380***
	(0.0115)	(0.0119)	(0.0140)	(0.0128)
RelativeSize	0.00401	0.00468*	0.000324	-0.00162
	(0.0025)	(0.0027)	(0.0028)	(0.0032)
Leverage_{A}	0.00182	-0.00175	0.0134	0.0133
	(0.0091)	(0.0096)	(0.0138)	(0.0134)
Leverage_{T}	-0.0175**	-0.0133	-0.0115	-0.0139
	(0.0082)	(0.0086)	(0.0108)	(0.0126)
MarketToBook_{A}	0.000191	0.0000607	-0.000258	-0.000460
	(0.0002)	(0.0002)	(0.0002)	(0.0003)
MarketToBook_{T}	0.0000711	0.0000681	0.000123	-0.0000191
	(0.0001)	(0.0001)	(0.0001)	(0.0001)
InverseMillsRatio	-0.00314	-0.00622	-0.00390	-0.00765
	(0.0049)	(0.0056)	(0.0063)	(0.0086)
Constant	-0.000896	0.00236	-0.00293	0.0343*
	(0.0062)	(0.0198)	(0.0096)	(0.0207)
Year Fixed Effects	No	Yes	No	Yes
Industry Fixed Effects	No	Yes	No	Yes
Observations	434	434	221	221
Adjusted R^2	0.102	0.152	0.092	0.120

Heteroscedasticity-consistent standard errors are in parentheses. *, **, and *** indicate a significant difference from zero on a ten-, five-, and one-percent level. A detailed explanation of all variables is given in Chapter 6.4. Additionally, *InverseMillsRatio* is the inverse Mill's ratio from a first-stage regression on the decision to undertake a takeover in a given year. In Regression (1) and Regression (2), *Interaction* is the product of $Concentration_A$ and *Diversification*. In Regression (3) and Regression (4), *Interaction* is the product of $ICMF_A$ and *Diversification*. Year fixed effects are based on the effective year. Industry fixed effects include acquirer as well as target industry fixed effects, based on the first digit of the respective primary SIC code.

defined by the three-digit primary SIC code), Hirschman-Herfindahl index of industry sales (sales from Compustat, industry again defined by the three-digit primary SIC code), GDP growth rate in the United States (from the Bureau of Economic Analysis), number of months the economy was in contraction over the last year (from the National Bureau of Economic Research), number of merger announcements over the last year (based on SDC Platinum), logarithm of dollar volume of merger announcements over the last year (based on SDC Platinum), and logarithm of dollar volume of share issues over the last year (based on SDC Platinum).[20]

As expected, the inverse Mill's ratio is insignificant in Table 6.18 and does not help to explain the observed change in the cost of capital. Both variables of interest – *Diversification* and *Interaction* – retain their sign and significance. Compared to the initial results of Table 6.9 and Table 6.10, we observe a slight drop in significance in some cases, which might also be caused by the slightly lower number of observations.

6.7.8 Eliminating Distortions

Last but not least, we treat two possible distortions. First, one could argue that a takeover only has an impact on the acquirer's cost of capital if the takeover is of a significant size for the acquirer. Second, an acquirer could undertake more than one takeover in a short period of time (serial acquirer). Both of these distortions should work against our findings, as we would face additional noise in the regressions. Nevertheless, we perform robustness tests in Table 6.19 to rule out these issues.

Regression (1) and Regression (2) restrict the sample to takeovers with a relative size of more than ten percent. Regression (3) and Regression (4) exclude acquirers with more than one takeover. More precisely, we exclude all acquirers that have another takeover announcement between the considered takeover's announcement and effective date.[21] Besides those two restrictions, Regression (1) and Regression (3) are similar to Regression (1) of Table 6.9, and Regression (2) and Regression (4) are similar to Regression (1) of Table 6.10.

[20] The two market-to-book ratios are winsorized at the respective one-percent level.

[21] It is worth noting that we take all relevant takeovers in SDC Platinum as a basis. This means that the target faces no restrictions regarding location or public status, and the minimum percentage of shares bought in the takeover is only 50 percent (compared to our sample criteria of 100 percent).

Table 6.19: OLS Regressions Eliminating Distortions

	(1)	(2)	(3)	(4)
Dependent Variable	$Deviation_{CC}$			
Restriction	High Relative Size		Exclusion of Serial Acquirers	
Diversification	-0.0749***	-0.0378**	-0.0799***	-0.0502***
	(0.0269)	(0.0175)	(0.0229)	(0.0169)
Interaction	0.0917***	0.0401*	0.0974***	0.0657***
	(0.0323)	(0.0239)	(0.0267)	(0.0202)
$Concentration_A$	0.00644		0.00954*	
	(0.0064)		(0.0055)	
$ICMF_A$		0.0133***		0.00960**
		(0.0045)		(0.0041)
$Rating_A$	0.00141	-0.000644	0.00167	0.000495
	(0.0017)	(0.0030)	(0.0015)	(0.0020)
RatingChange	0.00299*	-0.0000947	0.00429***	0.00322*
	(0.0016)	(0.0025)	(0.0015)	(0.0019)
RatingDifference	-0.000966	-0.00281	-0.00130	-0.00226
	(0.0013)	(0.0021)	(0.0011)	(0.0016)
LeverageChange	0.0426***	0.0431**	0.0419***	0.0298
	(0.0126)	(0.0196)	(0.0135)	(0.0181)
RelativeSize	0.000660	0.00283	0.0000176	0.00127
	(0.0010)	(0.0032)	(0.0008)	(0.0031)
$Leverage_A$	0.00112	0.00342	0.00871	0.000261
	(0.0101)	(0.0160)	(0.0088)	(0.0131)
$Leverage_T$	-0.0147	-0.00895	-0.0279***	-0.0173
	(0.0102)	(0.0143)	(0.0094)	(0.0118)
$MarketToBook_A$	0.000337	-0.000114	-0.000188	-0.00112**
	(0.0003)	(0.0003)	(0.0006)	(0.0005)
$MarketToBook_T$	0.0000523	-0.0000147	0.000155	0.000154
	(0.0002)	(0.0001)	(0.0002)	(0.0001)
Constant	-0.00649	-0.00329	-0.00851	-0.000589
	(0.0064)	(0.0112)	(0.0068)	(0.0093)
Observations	308	152	290	146
Adjusted R^2	0.106	0.071	0.175	0.206

Heteroscedasticity-consistent standard errors are in parentheses. *, **, and *** indicate a significant difference from zero on a ten-, five-, and one-percent level. A detailed explanation of all variables is given in Chapter 6.4. In Regression (1) and Regression (3), *Interaction* is the product of $Concentration_A$ and *Diversification*. In Regression (2) and Regression (4), *Interaction* is the product of $ICMF_A$ and *Diversification*. In Regression (1) and Regression (2), the sample is restricted to takeovers with a relative size of more than ten percent. In Regression (3) and Regression (4), acquirers with several takeovers are excluded.

The results of Regression (1) and Regression (2) show that the constraint for the relative size of the takeover hardly changes our previous results for *Diversification* and *Interaction*. The levels of significance decrease in Regression (2), which might be caused by the distinctly lower number of observations. Regression (3) and Regression (4) also follow the previous results and conclusions. We actually observe more pronounced results in form of higher absolute coefficients, while *Diversification* and *Interaction* keep the one-percent significance level in both regressions.

6.8 Limitations

Even though the results seem very robust in our battery of robustness test, there are at least three limitations in this empirical work.

First, we find evidence for both previously shown effects – namely the coinsurance effect and the diversification discount. As the main difference between stand-alone firms and conglomerates is the existence of internal capital markets in the latter, we investigate if this theoretical channel is actually able to explain the coexistence of both effects. It turns out that it does. However, in reality, our empirical findings can only be correct on average for several reasons. Similar to most empirical studies, the reaction of capital markets might be subject to noise or influences that we do not catch with our control variables. Furthermore, it should be noted that there is no reason to presume that the capital market always has the same view on the value impact of the merger as the board of the acquirer. In fact, investors and financial analysts will come up with their own opinion as to whether the coinsurance effect or the diversification discount is relatively more important in the transaction under consideration. Depending on this judgment, the merger will be considered to be value-increasing or value-destroying. It is also worth mentioning that we only investigate the cost of capital and not the overall value effects of a merger in this context. Even if the management board and the acquirer's shareholders agree that the cost of capital will increase after a certain takeover, the merger might still be conducted. Possible explanations can be the realization of synergies or ensuring strategic influences in new products or geographic markets.

Second, we argue that our unique setting has several advantages compared to previous studies. It allows us to control for the characteristics of the target in both cases – for

a diversifying and a focusing takeover. This should help filtering out the real effect of diversification, as there might be a systematic difference in targets between pre-merger diversified and fully concentrated acquirers. It is important to note that we do not find statistically different cumulative abnormal returns between pre-merger diversified and fully concentrated acquirers. This indicates that the quality of targets is not systematically different in our sample. Moreover, using a dependent variable which includes the pre-merger cost of capital for the target should diminish any remaining difference. Our unique setting circumvents a matching procedure of stand-alone firms to conglomerates or their business segments. Nevertheless, the requirements for this unique setting (and the related data) are rather high and consequently, lead to a small sample of U.S. takeovers undertaken by public acquirers with listed targets. Another byproduct of the setting is that we only investigate the influence of changes in diversification. Our setting does not allow one to examine the influence of diversification on a very stable (no activity in the market for corporate control over a long time frame) firm.[22] It is possible that at some point, such firms start learning to handle internal capital markets and therefore, the influence of the coinsurance effect and the diversification discount might change.

Third, we use state-of-the-art measures for the cost of capital. More precisely, we approximate the cost of equity using the implied cost of equity obtained from analysts' forecasts and control for changes in the cost of debt using a rating-based and a loan-based approach. Overall, we strengthen our main results with several robustness tests in this regard. However, measuring the cost of capital (and related changes) is a non-trivial task and might be sensitive to the measurement procedure.

6.9 Summary

The third empirical investigation in this thesis focuses on the effects of diversification. So far, empirical literature proposes two contradictory findings. On the one hand, a higher degree of corporate diversification should lead to a coinsurance effect. This is expected to reduce the harmful impact of credit constraints on long-term investment decisions, and the non-perfectly correlated cash flows of different segments can also reduce the deadweight cost of bankruptcy. As a consequence, the reduced risk should lead to a decrease in the

[22] Even though we are not examining those firms, our two-stage regression setting in Table 6.18 explicitly models this decision to become active in the market for corporate control.

cost of capital for conglomerates. On the other hand, there exists a well-documented diversification discount, which suggests that conglomerates have lower valuations than similar stand-alone firms. From a theoretical perspective, this diversification discount roots in agency problems caused by poorly governed internal capital markets. Assuming the same cash flow patterns, the lower valuations as a consequence of the diversification discount imply higher cost of capital. Hence, the coinsurance effect should yield to lower cost of capital, whereas the diversification discount is expected to increase the cost of capital – assuming the same cash flow patterns.

In this context, theory suggests that the difference between diversified conglomerates and fully focused (stand-alone) firms is the existence of internal capital markets in the former. Concentrated firms have only one cash flow stream and do not have to take care of investments in several possible segments. Therefore, those companies do not reallocate their available cash within business segments. In contrast, diversified conglomerates have several (most of the times imperfectly related) cash flows from different business segments. Those conglomerates need to decide where to invest their available cash, as they have the possibility to subsidize weaker segments on the costs of stronger segments. This reallocation takes place in an internal capital market. However, the quality of internal capital markets can vary among diversified firms.

To reconcile those two opposing effects, we examine the effects of corporate diversification on the cost of capital in a unique empirical setting. Our setting has the advantage that it avoids matching conglomerates to stand-alone firms and therefore, the setting circumvents an endogeneity problem which arises because a firm's diversification level is not exogenously given. More precisely, we use acquisitions in which the acquirer buys 100 percent of the target and examine the effects of the takeover-introduced change in diversification on the cost of capital. We calculate the difference between the actual post-merger cost of capital for the combined firm and the cost of capital a hypothetical firm based on the pre-merger (stand-alone) acquirer and target would have. The difference is equal to the change in the cost of capital – which should be (at least partly) driven by the change in takeover-introduced diversification.

Our empirical findings contribute to the corporate diversification literature by providing a novel explanation for the coinsurance effect and the diversification discount at the same time. They are also relevant for corporate managers who have to evaluate potential

acquisitions, as the economic significance is tremendous. We present evidence corroborating the hypothesis that the coinsurance effect and the diversification discount coexist. In fact, we show that the impact of an acquisition on the cost of capital can be split into these two offsetting components. On the one hand, we identify the existence of a statistically and economically significant coinsurance effect. If the average pre-merger company increases its degree of diversification by one standard deviation above the average takeover, the cost of capital of the merged firm decreases by about 0.11 percentage points, compared to a transaction where the degree of diversification for the takeover is average. On the other hand, we also identify the existence of a statistically and economically significant diversification discount. If a transaction with an average diversification impact is done by a highly concentrated firm (concentration is one standard deviation above the mean), the cost of capital of the merged firm increases by 0.11 percentage points as compared to the same transaction being done by a firm with an average degree of concentration. With an average acquirer's size of approximately 23 billion U.S. Dollar, the 0.11 percentage points in both ways are equal to first-year savings (or costs) of over 25 million U.S. Dollar.[23]

To receive those results, we condition the change of diversification on two measures that are supposed to capture the prevalence of internal capital markets. The first one is the experience in handling internal capital markets. This is approximated by the degree of pre-merger diversification. Higher diversified acquirers are expected to have more experience with managing internal capital markets. The second one is the quality of the existing internal capital markets. Acquirers with efficient pre-merger internal capital markets should be able to benefit more from diversification than acquirers with large frictions in their internal capital markets. Overall, we show that for firms with efficient internal capital markets (or with a high level of experience with internal capital markets), the coinsurance effect outweighs the diversification discount so that acquirers benefit, on average, from further diversification by a reduction in their cost of capital. For companies that have inefficient internal capital markets (or that are inexperienced with managing those internal capital markets), the diversification discount dominates the coinsurance effect and thus, their cost of capital increases on average. Finally, it should be said that our results are very robust against a battery of robustness test. Those include tests regarding endogeneity concerns, the calculation of the cost of capital, and different regression settings.

[23]The numerical examples are based on Table 6.2 and Table 6.11.

Chapter 7

Conclusion

7.1 Summary and Implications

Over the last decade, finding an explanation for mergers has been an area given much attention. Several empirical studies have examined short-run and long-run returns of acquirers, and researchers have outlined possible explanations for the outperformance of cash payment compared to stock payment. Since the underlying financial decisions of takeovers are supposed to be of major importance, academics argue that means of payment can be an approximation of the underlying financial decisions – an approximation that is necessary due to the poor data availability of the financial sources in takeovers. Assuming that companies have only very limited amounts of cash, every cash payment has to be financed with debt. On the other hand, own shares as payment method suggest equity financing of the takeover. If those assumptions are loosened, one might be able to obtain valuable insights of the real financing effect.

This thesis advances that strand of literature and presents a comprehensive investigation of how financial decisions influence mergers and acquisitions. In the course of the thesis, an extensive literature review presents the current status of empirical research in this area; then, three separate empirical examinations provide new evidence on the underlying financial considerations for acquirers. In the first study, all different sources of financing are taken into account. In the second study, a focus on the impact of bank financing is implemented. In the final study, the implications of corporate diversification on the resulting cost of capital are analyzed.

Compared to the literature surveys of Bruner (2002) and Martynova and Renneboog (2008), which summarize around 100 and 200 studies, respectively, my literature review can be considered comprehensive, as it involves more than 400 previous studies. This review reveals that an enormous number of studies with a focus on the payment method in takeovers exists. However, the literature on the actual source of financing in takeovers is scarce. Whereas the short-run and long-run implications of the payment method for the success of acquirers are well documented, the same cannot be said about the source of financing. To date, only Bharadwaj and Shivdasani (2003) and Martynova and Renneboog (2009) provide detailed empirical investigations of the underlying financial decision.

The first empirical part of my thesis uses those two studies as starting point and extends them in at least three dimensions. My study exploits a worldwide sample and, in particular, includes the United States. I use a sequential two-step model to approximate for the decision process with regard to the source of financing. Finally, my study examines the short-run as well as long-run effects of the source of financing on the success of an acquirer.

The descriptive statistics in this first empirical part suggest that the relative size of the target is larger when credit financing is used and decreases when a higher proportion of internal funds is used. As expected, more internal cash as financing source is connected to acquirers with lower levels of leverage. In the sequential model, the initial decision if the takeover should be financed with internal funds is driven by the relative size of the target, the completion time, and the acquirer's pre-takeover cash level. When then deciding the exact proportion of external funds, the method of payment, the acquirer's pre-takeover leverage, and the bidding competition gain importance. During the three-day announcement window, credit-financed takeovers perform the best, with abnormal returns of approximately two percent. Internal financing creates abnormal returns of around one percent, whereas takeovers financed with new issues do not generate any abnormal returns. Fully cash-paid takeovers realize abnormal returns almost four percentage points higher than those of stock-paid takeovers. For the long-run performance, results are less clear due to measurement problems. Nevertheless, I apply several settings, and my results suggest only minor changes in the long-run compared to short-run market reactions, indicating that the capital market efficiently prices all information at the announcement. More

precisely, only new issues as financing source continue to significantly underperform with around one percent per month compared to the Carhart (1997) four-factor model.

Altogether, my first empirical investigation not only contributes to the literature on mergers and acquisitions, but also helps to explain traditional corporate finance issues. If a takeover is seen as an investment project, I empirically show the validity of traditional theories on marginal financing of those investment projects. For most other investment projects, any breakdown of the underlying source of financing is arbitrary for company outsiders. However, the case of takeovers allows insights to the actual sources of financing and therefore, the setting indirectly tests traditional capital structure theories with a focus on marginal financing.

A closely-related topic is examined in the second empirical part of this thesis. Assuming that a buying company can finance the acquisition with internal sources, bank loans, bond issues, or stock issues, I focus on reported syndicated loans. This allows me to calculate the appropriate deal leverage under the assumption that no other source of external financing is involved. As new equity and bond issues are typically very large in size, this is not possible when investigating bond and stock issues instead of bank loans. The regular assumption in the academic literature of cash payment being equal to debt financing becomes redundant in my setting. The unique sample of at least partly bank-financed acquisitions allows me to disentangle the effects of financing and payment and allows me to provide valuable insights for the ongoing discussion about the economic rationale behind the payment effect in takeovers.

My second study provides evidence that the payment method is just an estimator of debt proportion in takeovers. Although percentage of cash has significant explanatory power to account for the sources of financing, variation still remains. In a next step, my study presents unique empirical evidence that the outperformance of cash payment might actually just be an outperformance of debt financing. Using a typical regression setting similar to other researchers, controlling for the real financial structure renders the payment method insignificant. This finding has major implications regarding the economic rationale for the outperformance of cash payment and helps narrow the theoretical explanations. My sample of bank-financed takeovers confirms the results of Bharadwaj and Shivdasani (2003), as those acquisitions do generate, on average, positive abnormal returns for acquirers' shareholders. The effect is not only of statistical significance, but also

economical importance, with over two percent in three days around the announcement. Furthermore, my analyses reveal that banks can significantly contribute to the success of a takeover. Higher bank involvement in form of greater deal leverage, higher loan cost, longer maturity, lower interest coverage, or no previous banking relationship is a signal for a more successful takeover and hence, helps create value for acquirers' shareholders.

From a corporate governance perspective, this second study not only helps filter out the economic rationale for the outperformance of cash payments, but also allows one to examine the influence of debt characteristics on the success of a takeover. From a corporate finance perspective, the study adds to the understanding of project financing and again, adds to the understanding of capital structure decisions in general. The main contribution of this investigation to the growing takeover literature is that it separates both effects – the method of payment and the source of financing.

The third and final empirical part of this thesis turns the focus away from the source of financing and investigates the changes in the cost of capital introduced by the takeover. Our study contributes to the long-lasting academic debate on the wealth effects of corporate diversification and helps reconcile two opposing views. So far, there is still no consensus whether or under what conditions diversification is beneficial or detrimental to shareholders. On the one hand, researchers emphasize the bright side of internal capital markets. By creating a coinsurance effect, corporate diversification is able to reduce the harmful impact of credit constraints on long-term investment decisions of stand-alone firms. Furthermore, the non-perfectly correlated cash flows of different segments can also reduce the deadweight cost of bankruptcy. This effect is expected to lower the cost of capital if diversification increases as a consequence of the takeover. On the other hand, previous studies highlight the dark side of internal capital markets, causing the well-documented diversification discount. From a theoretical perspective, the diversification discount roots in agency problems caused by poorly governed internal capital markets. Therefore, the expectation based on the diversification discount is that the cost of capital rises if the diversification increases – assuming the cash flow patterns are the same for diversified and focused firms.

To reconcile those differences, we make use of acquisitions in which the acquirer buys 100 percent of the target. This allows one to investigate how the combined firm's post-merger cost of capital differentiates from the expected cost of capital if one considers a

synthetic firm of the pre-merger acquirer and target. Thereby, we avoid matching diversified firms to stand-alone companies, which mitigates endogeneity concerns. This setting further allows us to isolate the effect of a change in diversification on the cost of capital.

The empirical results strongly suggest that both previous effects (the coinsurance effect and the diversification discount) exist and influence the cost of capital in the expected direction. Theoretically, an investor could decide to hold a portfolio of stand-alone firms or an equivalent diversified company. In perfect capital markets, those two alternatives mainly differ because of the existence of internal capital markets for the diversified company. The presented analyses in this thesis unite the different views on diversification with the rationale of internal capital markets. If acquirers have a lot of experience in managing internal capital markets or already have high-quality internal capital markets in place, the positive coinsurance effect dominates the negative diversification discount. However, if the acquirer lacks experience in managing internal capital markets or the internal capital markets work insufficiently, higher takeover-introduced diversification increases the cost of capital. Therefore, the diversification discount outweighs the coinsurance effect.

The results of this third empirical part have major implications for academics and practitioners alike. If one brings to mind the average diversification discount of 13 to 15 percent (Berger and Ofek, 1995), the importance of understanding this value impact of diversification is obvious. Our study helps reconcile the opposing views not only in the context of takeovers, but more generally, adds to considerations on how to structure an organization. Finally, the clearer understanding of the relation between internal capital markets, cost of capital, and corporate diversification can also be transferred to adjacent areas, such as value creation with private equity investments that eliminate the diversification discounts in their respective portfolio firms.

7.2 Outlook

Looking at the literature overview in Chapter 2 and the contained Table 2.1, a central empirical development over time is evident. Sample sizes of the cited empirical studies significantly rise with the introduction and growth of SDC Platinum. Although increases in sample size will draw to an end in the near future (as the number of takeovers is limited), the increased sample sizes allow one to examine takeovers in more detail. Whereas earlier

studies are more concerned with the overall success of takeovers, more recent investigations zero in on distinct characteristics of takeovers in order to make conclusions. This trend will continue in the future and will be fueled further by improved data availability.

One example of such a characteristic influencing the success of a takeover from the acquirer's perspective is the source of financing. Even though the theoretical considerations are outlined by the literature on capital structure and the literature on marginal financing of investment projects, the empirical evidence is scarce. This thesis attempts to fill this gap by providing two empirical investigations on the source of financing in Chapter 4 and Chapter 5. In both settings, deeper insights into the process of how to access different sources of financing would be interesting. As I am unable to observe the contracting process between the acquirer and bank in Chapter 5, my study leaves room to include this negotiation. For instance, cases where the bank initially refuses to grant the loan, or cases where the initial loan is renegotiated, can yield additional insights.

In the third empirical setting, we focus on the effects of corporate diversification on the cost of capital, but we limit our setting to takeovers. As aforementioned, one downside to our approach is that we are unable to draw conclusions for firms that do not enter the market for corporate control. The effect of a slowly changing degree of diversification on the value of those firms remains mostly unaffected by the implications of our results. However, as we suggest that the value effect of diversification might be partly driven by differences in the quality of internal capital markets, one interesting avenue for further research would be to transfer this idea to the universe of listed firms. More precisely, conditioning the value impact of corporate diversification on the quality of internal capital markets might enhance the understanding of corporate diversification in general, as well as reconcile the coinsurance effect and the diversification discount even in this broader scope.

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