

An Investigation of Bargaining Power in Mergers and Acquisitions

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Abstract: In this paper we seek to investigate factors influencing the bargaining position within merger negotiations. We take a step back from agency theory and explore the source of bargaining power rather than the management's bargaining performance. In doing so, we focus mainly on two factors: the product market interactions between acquirer and target, and the method of payment for the deal. First, we consider the effect of business interdependencies in non-horizontal mergers, when targets and acquirers are interdependent on each other as suppliers and customers. Second, we study horizontal mergers where powerful acquirers can leverage on their pricing strength to negotiate a better deal. Third, we analyse the effect the method of payment has within the context of bargaining power. Acknowledging the market signalling effect of cash we extend current theories by hypothesising that using cash as method of payment for the deal provides acquirers with bargaining leverage and enables them to negotiate a more favourable premium on the deal.

Keywords: Mergers and acquisitions; Bargaining power; Industry interdependencies; Payment method

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Notes to the reader:

1. The paper does not aim at differentiating between a merger and an acquisition. Therefore, we use the terms interchangeably.
2. All tables presenting regression results contain only an excerpt with the results of the variables of interest. The complete tables with the results for all of the variables in the regression are present in the appendix under the same name and number.

1. Introduction

The academic literature examining the effects of different factors on profitability of mergers overall, as well as for the sell or buy side individually is extensive. However, relatively few analyses consider the following two issues together: examination and discussion of factors leading to the success or failure of one party in a transaction (either the buy or the sell side separately) or the overall success of the deal on the one hand, and determination and exploration of the factors that influence the relative performance of one side in comparison to the opposing side. The second issue is, in other word, the analysis of the relative bargaining ability of the respective sides in determining which one will obtain a larger share of the anticipated added value stemming from the transaction.

There has been much discussion, especially in agency theory, about factors influencing managers' drive to negotiate favourable deals for their respective shareholders. Prior research has identified a causal link between ownership structure and abnormal returns, in that target shareholders' gains increased with managerial ownership in the target company and decreased with institutional ownership (e.g. Stulz et al., 1990, Moeller, 2005). Similarly, on the acquisition side, agency conflicts between managers and owners are shown to result in strategically inferior matches since growth generally appears to be more desirable to a manager than it is to the institution from the point of view of its return on capital (Parvinen, Tikkanen, 2007). On a more general level and in line with agency theory, research finds that managers with little or no ownership not only tend to be less effective in negotiating on behalf of the shareholders but typically actively pursue their own self-interest over the aims of the shareholders (Hartzell, Ofek and Yermack, 2004).

Despite the extensive research on bargaining behaviour within merger negotiations, we found that there is comparatively little research on the actual basis of respective sides' bargaining power. In other words, the leverage one side has over the other due to its business relationships (or other factors), apart from the manager's motivation and drive to bargain within the bounds of the given circumstance. We believe that the starting point i.e. the basis of the bargaining position should be more crucial

than the manager's drive to utilise the leverage presented to him. Consequently, we believe that this field of research is significantly underrepresented in academic literature so far. In this paper we would, therefore, like to shift the focus away from agency theory and explore several factors from a different perspective which we believe should have a significant effect in the bargaining process of an acquisition.

First, we re-evaluate the relationship between a target's ability to capture a larger share of projected merger gains and its product market interaction with its acquirer, initially proposed by Ahern (2009). More precisely, in the case of horizontal mergers, the leverage the acquirer has, due to posing a credible and significant threat of perusing a predatory pricing strategy if the target's management should fight a merger. Similarly, in the case of vertical mergers, the leverage one firm has over the other by threatening to end or reduce an existing business relationship (or the opportunity cost of foregoing on the possibility of such) if the deal should not find the desired end. For instance, acquirers, which are highly dependent on targets as key suppliers, will restrain from aggressive bargaining in order not to damage the existing business relationship. Therefore, our premise is that a firm's bargaining position is determined by the leverage gained through existing real and perceived commercial interdependencies or vulnerabilities.

Hypothesis 1: The credible threat of a possible price war increases the bargaining power of the acquirer and decreases that of the target. – The market pressure hypothesis

Hypothesis 2: There is a causal link running from the business interdependencies between acquirer and target to the bargaining power of both firms in the merger process. – The business interdependency hypothesis

In this paper we modify the approach Ahern has undertaken in two main aspects. First, we use a different method to classify whether mergers are horizontal or non-horizontal by employing a new industry classification system (TNIC¹) developed by Hoberg and Philips (2011), which allows us to identify for each company a personalised

¹ TNIC – acronym for text-based network industry classifications

set of direct competitors based on the product descriptions given in its 10-K² reports, thereby being more precise than previous classification methods. To the best of our knowledge this is the first paper to apply the TNIC industry classification in this context.

Secondly, we identify a weakness in Ahern's horizontal deal analysis where he uses the highly industry specific variables such as market share and return on assets (RoA) to proxy for the pricing power and the financial strength of each firm involved in the acquisition process. The main issue here is that his horizontal analysis involves M&A deals in various industries which are characterized by different market conditions and profitability benchmarks. For instance, the return on assets of a target in the services industry is directly compared to that of a target in the manufacturing sector. This general approach is unreasonable and can provide misleading results. In order to solve this issue, we separately investigate the merger activity among several industry sectors (i.e. banking, software development, oil, mining & utilities, healthcare and electronics manufacturing). We argue that this industry clustering approach is more suitable for the analysis of bargaining power in horizontal deals since the merger samples will contain deals from the same industry. Consequently, the usage of RoA is comparable among targets and acquirers in different mergers from the same industry and can serve as a proxy for the financial strength of each firm. By analysing horizontal acquisitions in the same industries we mitigate the market specificities problems evident in Ahern's approach.

In line with Ahern (2009) we report that larger targets with respect to the acquirer in terms of market value tend to capture a higher premium and a larger share of the abnormal dollar merger gains around the announcement date. Moreover, the result seems to be evident in all of the five industries we have considered. Nevertheless, our findings do not seem to be very conclusive in support of the market pressure hypothesis. With respect to the business interdependency hypothesis, we do not find conclusive robust empirical evidence in line with the findings of Ahern (2009).

² K10 report – standardised information required by the SEC for stock market participants

In addition to the product market interactions between a target and an acquirer we investigate the form of payment in a deal (i.e. cash or stock), which we believe to also have a significant effect over the bargaining process in acquisitions.

The payment method, in particular cash versus stock, may influence the bargaining process due to uncertainty and information asymmetry issues regarding the acquirer's and target's true value. According to Fuller, Netter & Stegemoller (2002) each firm (naturally) has a superior understanding of its own (over- or under-) valuation and hence can exploit this in using the method of payment accordingly. The information asymmetry aspects arising in this situation have also given rise to theories about the signalling effect when the acquirer decides to use stock as a form of payment. Several studies including Myer and Majluf (1984), Fishman (1989) and Hansen (1987) argue that using stock exclusively as a payment method to acquire a company can indicate that the acquirer estimates its own shares to be overvalued. Alternatively, a cash payment can hint the opposite – a possibility that the market undervalues the shares of the bidding firm.

In this paper we thus explore a further hypothesis linking the payment method with the bargaining process. We argue that from a target's point of view cash would be a preferred method of payment since it mitigates the uncertainty regarding the fair valuation of the acquirer's stock. Our assumption is that a target's management board would settle for a lower premium if the acquirer offers cash as a payment method for the deal. Looking at the buy side of the deal we identify two effects related to the choice of payment. On the one hand, a cash payment may be interpreted as a signal that the acquirer was able to achieve a better price for the deal if the causal relationship described above were to hold. On the other hand, acquirers experience the same uncertainty issues with the valuation of the target and consequently might be less willing to use cash exclusively as a payment method. Thus, if the acquirer chooses to pay in cash this would tend to decrease the transaction value of the deal. In essence, the choice of payment can provide a significant leverage in the bargaining process.

We further argue that the effect of cash or stock as payment method is different for horizontal than it is for non-horizontal mergers. A simple share exchange as a form

of payment can provide an incentive for the shareholders of the acquired company to ensure the success of the merger since their payoff depends on the value of the shares of the combined company. We reason that in horizontal mergers, the acquirer typically has more knowledge about the target and its operations since both companies operate in the same industry and are direct competitors. Therefore, in a horizontal merger, the acquirer will usually be less dependent on the participation of the target's management board and shareholders in order to enable an effective merger integration. In contrast, in non-horizontal mergers, which include both vertical and diversifying mergers, the acquirers will typically be more dependent on the participation of the target's shareholders and management board to ensure a successful merger since the bidding firm will generally have less insight into the business and operations of the target. Consequently, our argument is that in non-horizontal deals acquirers are more prone to use stock as payment for the deal. In turn, this means that if the acquirer decides to use cash they will pay a much lower premium. In essence the effect of payment method on the bargaining process should be larger in non-horizontal deals than it should in horizontal mergers.

Hypothesis 3: The acquirer would pay less for the acquired company if it offers cash instead of stock as payment method. The effect should be more evident in non-horizontal deals. – The payment method hypothesis

Our empirical findings suggest that targets capture less of the abnormal dollar merger gains when the payment is in cash. However, the effect seems to be relatively stronger for horizontal acquisitions than it is for non-horizontal mergers. Furthermore, there is no statistically significant effect on the acquisition premiums.

Following this introduction our paper is organized as follows. Section 2 presents a review of academic literature. Section 3 goes on to describe the data and the empirical methods used in the paper. Section 4 presents the empirical results of the analysis. In section 5 we discuss possible limitations and criticism of the paper. In closing, section 6 summarizes the results, concludes the paper and outlines ideas for further research into the topic.

2. Literature review

2.1 PRODUCT MARKET INTERACTIONS

The effect business interdependencies have on business partners' bargaining positions has been previously examined in a different context, namely in incomplete contract theory. In the case of a business relationship that depends on one side to undertake a relationship-specific investment, the value of which is highly dependent on that relationship (i.e. losing significant value outside that relationship), the party undertaking that relationship-specific investment will encounter a loss in bargaining power, as the opposing side can post-investment opportunistically renegotiate the terms of the original agreement, in a context where contracts cannot be made to a sufficiently specific level (Klein, Crawford, and Alchian, 1978). This effect can make business relationships unattractive to a point where they are no longer undertaken. The weakening of the bargaining position of one party after the dependency on another party can, in fact, be so harmful to the first party that a merger or acquisition may become the best solution to overcome the outlined problem of mistrust, incomplete information and insufficiently accurate contracts (Graebner, 2009). This effect of mutual dependency illustrated above shows that high business dependencies on the part of one party relative to another are synonymous with a weak bargaining position.

Fan and Goyal (2006) first employ the Input-Output tables published by the US department of Commerce: "Bureau of Economic Analysis" (BEA) to distinguish between vertical and diversifying mergers also used in our paper. They find an increase of vertical merger activities in the years after 1980 by studying a time period between 1962 and 1996. Furthermore, Fan and Goyal (2006) argue that vertical mergers achieve a comparable wealth effect to horizontal mergers and a significantly higher wealth effect than diversifying mergers. In vertical acquisitions, Ahern (2009) finds a positive relationship between the premium paid to the target and the acquirer's dependence on the target's input. An inversely proportionate relationship is found between the premium paid by the acquirer and the target's dependency on the acquirer's input. Furthermore, a larger toehold³ reduces premiums and target leverage increases premiums. Firm market

³ Toehold purchase is the purchase of less than 5% of a firm's outstanding stock by an acquirer.

share is, however, not found to have any significance.

For horizontal mergers firm size plays a significant role: large targets command smaller premiums while smaller targets command high premiums – the opposite holds true for the acquirer's firm size. Ahern hypothesizes that economic strength (measured in RoA), market share and legitimacy of price war through similarity (measured in stock price correlation) have a significant effect on the target's share of gains. In an empirical event study Burns (1996) shows that pricing pressure could have reduced acquisition costs of American Tobacco by as much as 56%. Following airline mergers Kim and Singal (1993) suggest that M&A activity in this industry has led to an increase in end prices for consumers. Eckbo (1983), Shahrur (2005) and Fee and Thomas (2005) have found that increased market share gained by horizontal mergers resulted in neither positive nor negative effects post-merger. On the topic of acquirer's size Moeller, Schlingemann, and Stulz (2004) find that large acquirers tend to destroy significant value while small acquirers tend to create value in mergers in a comprehensive look at the 1980–2001 period.

2.2 PAYMENT METHOD

A number of studies with contradicting findings have been carried out on the topic of payment methods and their relevance for corporate takeovers. Myers & Majluf (1984) develop an asymmetric information model which proposes that applying stock in corporate transactions is typically interpreted by the market as a bad signal which would result in a negative effect over the share price of the issuer. DeAngelo, DeAngelo & Rice (1984) further apply the model to the corporate takeover research field. They rely on the assumption that a bidding firm can effectively better evaluate their stock price in relation to the current market value before the deal since the management may possess inside information not available to the public. Consequently, they argue that if the acquirer believes its stock is undervalued they will choose cash as a method of payment and vice versa. Thus, the choice of payment can be interpreted by the markets as stating something about the acquirer's expectations on the intrinsic value of their share price in respect to its current market value.

The other side of the coin is explored by Hansen (1987) who argues that

information asymmetry can also arise not only for the acquirer's stock but also for the valuation of the acquired firm, since this is generally also difficult to estimate. Using the same premise that a company is best at estimating its own true intrinsic value, Hansen argues that the bidder may decide to use a share exchange method of payment in order to share the risk of a possible post-acquisition revaluation with the shareholders of the acquired firm. Furthermore, the use of stock as payment can provide incentives for the target's shareholder to ensure a successful merger and realization of beneficial synergies. Instead, a cash only payment will shift the post-acquisition risk entirely to the bidding firm. This aspect is discussed by Rapport and Sirower (1999).

Another theory developed by Jensen (1986) seeks to explain the relationship between payment method and acquirer share price. Jensen argues that cash acquisitions divert excess cash from the management and in that way limit the possibility of "wasteful allocation of free cash flows" by the management. In turn, this should exert a positive effect on the bidding firm's share price. Martin (1996) takes a different approach and finds that companies which have "good investment opportunities" prefer to use share exchange as a form of payment. Jung, Kim and Stulz (1996) further support these findings.

Several researchers including Stulz (1988), Ghosh and Ruland (1998) and Walkling (1993) propose the existence of links between the method of payment and the level of managerial ownership. Managers that own shares of the acquirer will prefer to pay the target's shareholders in cash in order not to dilute their own control of the newly formed venture which can be expected if the payment is in stock. In another analysis, Wansley, Lane and Yang (1983) claim that the bidder may be inclined to pay higher premiums if it uses a cash payment because this can enable the acquirer to avoid cash dividends which are typically subject to taxes by the recipient. Finally, Moore (1980) relates the method of payment in M&A deals to business cycles and outlines that the use of cash is more prevalent in phases of expansion.

From these analyses it is evident that there is a mixed opinion on the relationship between the form of payment and the gains from an M&A deal. This paper proposes a hypothesis linking the choice of payment as leverage of bargaining power in the process

of an acquisition. This hypothesis does not seek to refute previous theories but rather aims at providing further insight into the already existent research in the field of payment methods in merger activity.

3. Methodology & Data

3.1. DATA SELECTION

For the purpose of this study we will consider transactions with an announcement date within the 15-year-period of 1.1.1996 until 30.12.2010. Furthermore, the transaction has to be effective within two years of the merger announcement, the transaction value has to be larger than USD 1 million and the target's market capitalisation has to exceed 1% of the acquirer's market capitalisation as of 10 days before the merger announcement. Prior to the acquisition announcement, the acquirer must hold less than 50% of the target's shares and must be the sole owner of the company thereafter. Only transactions between listed companies with all the relevant data available are taken into consideration. The initial deal information was retrieved from the SDC Platinum (SDC) database. Next to the CUSIP⁴ company-identifier provided by SDC, we could only consider transactions for which the company identifier in combination with the event date could be translated into the firm's GVKEY- and PERMNO- identifier code, as these were required by the different databases used to identify vertical and horizontal relationships. A more elaborate explanation will be discussed later in the respective sections of this paper. Stock price data was retrieved from CRSP database while company fundamentals (i.e. EBIT, total assets, etc.), to assess a company's financial health, were retrieved from COMPUSTAT. Lastly, all acquisition announcements made within five days of each other by the same acquirer were disregarded, as the effect of each merger could otherwise not be estimated to a satisfactory level.

3.2 MEASURE OF MERGER GAINS AND THE DIVISION THEREOF BETWEEN ACQUIRER AND TARGET

⁴ CUSIP acronym for Committee on Uniform Securities Identification Procedures

In order to proxy for bargaining power in M&A deals we use several different measures typically outlined by scholars to be relevant for that purpose. First, we consider the traditional target premium of the deal defined as the ratio of transaction value divided by the market value of the target four weeks prior to the announcement of the deal. Second, we examine the target's and acquirer's abnormal returns over several event windows around the announcement day. Finally, we use a measure proposed by Ahern (2009) which takes into account the division of gains between a target's and acquirer's abnormal dollar returns normalized by their combined market capitalisation. The last measure takes into account the size difference between both parties in a merger which is not possible by using simple abnormal returns.

We employ the traditional premium measure of a merger which we compute by dividing the transaction value of the deal by the market value of the acquired firm. Scholars use different points in time to retrieve the market value of the target. Ahern (2009) argues that using a market capitalization from 50 trading days prior to the announcement could mitigate possibility of stock run-ups which could bias the premiums. However, we believe that this increases the probability of incorrectly measuring the acquisition premium in the case that there was information revealed about the acquiring firm in the 50 day trading period before the announcement of the merger. In that situation the value of the transaction will reflect the new information but the market capitalization will not and, therefore, the premium will be distorted. Contrary to Ahern (2009), Officer (2004) uses the market value of the target 4 days prior to the announcement. On the one hand, this mitigates the above-mentioned drawback of Ahern's approach. On the other hand, it presents the possibility that the stock price 4 days before the deal is affected by information leakage about the future acquisition deal. In essence, the market may find out that a deal is underway and reflect this information in the stock price which will in turn corrupt the measurement of the premium paid. In our paper we use a market value of one month prior to the announcement date. We believe this is a reasonable compromise between the above mentioned considerations and risks when choosing the target's market value period before the deal announcement.

To assess the stock market reaction to the merger announcement we consider each party's abnormal returns which are computed, based on a 90 trading-day estimation window from 100 to 10 trading-days before the announcement. We employ a traditional event study methodology (MacKinlay 1997) and we consider a CAPM single factor model. A regression of stock price performance of the parties involved in the transaction relative to the market return (S&P 500) was used to infer the predicted return and consequently stipulate the abnormal return for the considered event windows.

Secondly, as we wish to investigate and thus compare the distribution of merger gains among the acquirer and target shareholders, we will consider the abnormal dollar returns around the announcement date. In an ideal case (with positive returns) one would want to consider the percentage share of each party's abnormal dollar return from the total value of abnormal dollar returns generated from the merger. Abnormal dollar return is used here as the absolute amount, expressed in USD, of shareholders' gains or losses in excess of the predicted return. However, as these returns can individually or jointly be negative this would distort the true division of proceeds stemming from the merger. To deal with this issue we, therefore, adopted the approach of analysing the dollar difference of abnormal dollar return as a fraction of the combined market capitalisation in the ratio:

$$\$CAR = \frac{\text{target abnormal dollar return} - \text{acquirer abnormal dollar return}}{\text{acquirer} + \text{target market cap.}}$$

The market capitalisation will thereby be aligned with the starting date of the event window, so that the market capitalisation is measured one day prior to the start of the event window. This has the advantage of representing the share of value gains that the new combined entity is anticipated to create, and thus reflects best the abnormal dollar returns in relation to the newly formed company.

However, this method has the drawback of being prone to distorting the comparability of the respective shares of the value created by the transaction for both sides, as the size of the companies will be a significant factor when the transaction

becomes the trigger for re-evaluating the companies' value and thus a 1% increase in the acquirers stock weighs significantly more in dollar terms than the same percentage increase for the (smaller) target.

For robustness we consider three event windows - 5 days around the announcement day (+/- 2 days), 11 days (+/-5 days) and 21 days (+/-10 days).

3.3 IDENTIFYING HORIZONTAL RELATIONSHIPS

To measure the horizontal linkages between the acquirer and target we rely on a new method proposed by Hoberg and Phillips (2011). The most widely used industry classification systems (SIC/ NAICS) ordinarily used in research studies investigating factors influencing M&A transactions (e.g. Dutordoir et. al, 2013, Feito-Ruiz et al., 2011, Jeon et al., 2011) have two main weaknesses. Firstly, they are transitive, meaning that all firms within one category compete against each other and only against each other. This is a rather unrealistic assumption as industry lines, especially with larger corporations, are blurry with different companies having different compositions of business lines competing in different industry groups (i.e. different SIC/NAICS codes). To date, the only available response to this was to balance the inaccuracy of including too many industry codes against having too narrow a definition by drawing the line at some number of industry classification codes to be considered. Thereby, the study either disregards some actual connections between firms or assumes relationships where in reality there are none. Ahern (2009) chooses a very broad definition by allowing for all industry codes allotted to a company in the database we relied upon (in our dataset from the SDC database firms were allotted up to 30 different SIC codes). This has the obvious flaw of making the field of possible competitors too large, leading to an inevitable loss of accuracy both in terms of missing competitors and to a possibly even larger extent label firms as competitors despite them not operating in the same marketplace. The second flaw of these classifications is that they are relatively rigid. They are rarely updated or adjusted as a company evolves over time. This can lead to a company retreating from some market segments or growing into new or existing markets still being classified according to its no longer true profile of years back.

Furthermore, these classifications are rather slow to accommodate entirely new markets emerging due to innovations e.g. acknowledging the smartphone market as an industry.

To address these issues Hoberg and Phillips (2011) derive a new industry classification system⁵ called “text-based network industry classifications” (TNIC). The main idea is that a web-crawling algorithm reads and compares annual reports (10-K) product descriptions, filed with the SEC. It is legally binding for listed companies to include (accurate) product descriptions as “Item 101 of Regulation S-K legally requires that firms describe the significant products they offer to the market, and these descriptions must also be updated and representative of the current fiscal year of the 10-K” (Hoberg and Phillips, 2011). The dataset provided consists of all listed (domestic) companies traded on NYSE, NASDAQ or AMEX and for which data in the COMPUSTAT and CRSP database is available.

Based on the premise that companies’ competition is based on similar products or services offered, the algorithm compares the mandatory product description within these filings thus relying on the premise that companies in the same industry offering competing products or services are using specific (industry) vocabulary thus enabling the algorithm to identify and group firms competing in the same industry. In doing so, the algorithm defines for each company that “(...) industry competitors are defined relative to each firm in the production space - like a geographic radius around each firm” (Hoberg and Phillips, 2011). This procedure thus identifies for each company its own set of competitors and re-evaluates this on an annual basis, so that transitivity is no longer imposed and market evolution is accounted for. TNIC, therefore, allows not only for within-industry relations, but also for cross-industry connections, and is entirely adjustable to changes in both companies as well as marketplaces, giving a much more realistic picture of companies’ connections. The TNIC classification system is limited to US firms only, where it encompasses 50,673 firms, identifying a horizontal relationship in approx. 50% (49.8% according to our calculations) of transactions in our sample.

The TNIC dataset is available for the time period from 1996 to 2008. With the exception of transactions in 1996 and 2010 where we used the 1996 and 2008

⁵ Available under <http://www.rhsmith.umd.edu/industrydata/industryconcen.htm>

classifications, we applied the industry classifications according to TNIC from the year prior to the announcement date.

The main limitations of both the new and the old measure remains, namely that whole companies rather than only the specific business lines are compared. While the selection of companies competing with any given firm is greatly improved, the underlying fundamentals of the comparisons still refer to the overall company rather than to a specific business line. This problem can be expected to be less severe with an increasing number of competitors as the performance of the non-relevant divisions in each case can be expected to offset each other to some degree in aggregate.

To the best of our knowledge these new classifications have up to this point not been applied in this context, so that the findings based on these classifications should be more precise / meaningful than prior research.

3.4 MEASURE OF HORIZONTAL RELATIONSHIP

Ahern (2009) develops the hypothesis that bargaining power in horizontal mergers is closely influenced by the credible threat of a price war which the acquirer can pose to the target in case the merger does not happen. Following his study, we also use market shares (within the targets market) in order to proxy for the pricing power of both acquirer and target. We apply the TNIC table to identify each firm's set of competitors to derive the number and identity its competitors. What this effectively means is that, in any given year, every firm has its own set of competitors or "industry" defined by a string of company codes. These "industries" can in turn be used to cross-reference the company identifiers with the sales figures of the previous year, provided by COMPUSTAT, to arrive at an estimate for each firm's specific market size and share. Secondly, we consider the relative market value defined as the ratio of the deal value to the market capitalization of the acquirer.

Ahern (2009) also employs return on assets⁶ as a measure of the financial strength of each firm. The idea behind this approach is that a target that is financially stronger (indicated by a higher RoA) will be able to better withstand possible price

⁶ Return on Assets (RoA) is defined as Net Income divided by Total Assets

pressure from the acquirer. Also, an acquirer that is financially strong will be more inclined to pursue predatory pricing as a form of bargaining leverage in the merger process. The flaw in using RoA in this context across the entire sample is that RoA is a highly industry-specific measure of financial strength and, therefore, cannot be compared among companies in different industries. For instance, the capital-intensive industries such as transportation, oil production or construction have a much lower RoA than service industries such as financial services, software development, etc. In other words, RoA is an inadequate proxy when the horizontal deal sample is composed of acquisitions in a large set of different industries as it is done in Ahern (2009). Therefore, using RoA in the regression analysis of a sample of horizontal deals in different industries will not correctly proxy for the financial strength of targets or acquirers.

In order to tackle this issue we create different subsamples of our horizontal deal sample by clustering the mergers into industries. Then we identify five industries based on the Fama-French 49 industry classification for which we have a significant number of observations (complete acquisitions) to run our empirical analysis:

- Banking
- Software development
- Oil, mining and utilities
- Healthcare
- Electronics manufacturing

3.5 MEASURE OF OTHER FACTORS AFFECTING PREMIUMS AND MERGER GAINS

To control for other key variables commonly found by researchers to be determinants on acquisition success, we also account for the presence of toehold⁷, termination fees⁸, tender offer, target's leverage, number of bidders, presence of collar agreement, poison pill takeover defences and others. Stulz, Walkling and Song (1990) suggest and empirically investigate that merger premiums decrease if the bidding firm owns a larger share (toehold) before the announcement of the deal. In essence, a larger toehold will reduce the premium paid for the acquired firm. Officer (2003) argues that the usage of

⁷ Toehold purchase is the purchase of less than 5% of a firm's outstanding stock by an acquirer.

⁸ Termination fees are fees imposed on the side that backs out of the deal. They compensate the other side for the resources wasted on the deal.

target termination fees in an M&A deal can lead to higher premiums and boosts success rates of acquisition deals. The presence of takeover defences, in particular the so called poison pills, should also have an impact on the bargaining power of a target not only in respect to hostile takeovers but also in friendly deals. The bargaining power hypothesis states that takeover defences should provide an additional leverage for the board to demand a higher premium from the acquirer since the alternative hostile takeover should be more costly due to the presence of the aforementioned takeover defences (Subramanian 2003). Even though Subramanian (2003) finds that the bargaining power hypothesis holds in a very small number of acquisition deals, we include a control variable to account for it.

3.6 MEASURE OF VERTICAL RELATIONSHIP

To investigate the inter-industry dependencies we use the data provided by the US department of Commerce: “Bureau of Economic Analysis” (BEA). The tables are published every 5 years. We therefore used the 1997 and 2002 table for the years 1996 to 2000 and 2001 to 2010 respectively. From an enquiry, we understand that the 2007 benchmark table is going to be published later this year, so that the 2002 figures will be used also for the later years, as there is no better proxy for inter-industry dependencies available⁹. The dataset provided by BEA distinguishes between roughly 500 different private-sector industry groups.

The Input- Output tables are defined in their own industry codes with a translation table provided only for the NAICS (North American Industry Classification System) codes. In order to allocate every company involved in a transaction to its NAICS code at that point in time, we matched each firm’s GVKEY identifier one year prior to the announcement day to COMPUSTAT’s NAICS database. So that if company A was acquired by company B in time period t , then company B is allotted the NAICS codes matching the databases entry for company A’s GVKEY in $t-1$. If no NAICS code was provided in that database we considered the primary SIC (Standard Industrial Classification) code, provided in the original dataset from SDC, and matched this with

⁹ As of 20.11.2013 2007 figures have not yet been uploaded

the corresponding NAICS code through correspondence tables¹⁰. The resulting NAICS codes are successively matched through the Input-Output industry codes conversion table, previously mentioned.

The “use tables” relevant for our study, indicate the dollar amount of goods or services provided by one industry and used by another industry in its production. Thus, for any combination between two industry groups, estimates of input flows are given in US Dollar terms. The sum of these outputs reflects the total output generated by any such industry. Following Fan and Goyal (2006) we use these figures to calculate the fraction of dollar input of the first industry to the output volume of the second industry. Furthermore, following Ahern (2009), we also consider, next to the customer dependency on supplier, the supplier dependency on the customer:

$$D_{SoC} = \text{Supplier dependency on customer} = \frac{\$ \text{Value of input purchased by customer}}{\$ \text{Value of total supplier output}}$$

$$D_{CoS} = \text{Customer dependency on supplier} = \frac{\$ \text{Value of input purchased from supplier}}{\$ \text{Value of total customer output}}$$

If, for example, we consider the relationship between Input-Output code 324110 – petroleum refineries and 486000 – Pipeline transportation (as was e.g. the case in 1997, when Tejas Gas Corp. was bought by Shell Oil Co.). The use table tells us that in 1997 petroleum refineries had a total output of USD 154,955 million while pipeline transportation produced a total output of USD 27,284 million. Furthermore, petroleum refineries sold a total of USD 3,295 million to, and bought a total of USD 5,680 million from Pipeline transportation. As the figures show, the two industries are both customers and suppliers to each other. Consequently, we calculate the dependency of the respective industries to one another in both roles. In this particular case, pipeline transportation depends rather heavily on petroleum refinery as a customer as they make up for $5,680 / 27,284 = 20.8\%$ of their business. Also, as a supplier, petroleum refineries play a vital role accounting for 12.1% ($3,295 / 27,284$) of pipeline transportation inputs. From the perspective of petroleum refineries these dependencies seem to be

¹⁰ Retrieved from census.gov

less significant with pipeline transportation accounting for only 3.7% (5,680/154,955) of the industries inputs and for only 2.1% (3,295/154,955) of its sales. In this example, the question to be investigated would therefore be, whether the petroleum refinery industry makes up a significant portion of pipeline transportations business, much more so than the other way around. According to business interdependency hypothesis, petroleum refineries should have more leverage over pipeline transportation companies than vice versa.

In considering the underlying economics we believe that it is important to note that for the purpose of our analysis these industry interdependencies are more relevant than the actual current connections, since – amongst other factors – the possibility of vertical relationships may also have a strong effect on respective bargaining positions. Other studies have focused more strongly on actual connections (Shahrur 2005, Fee and Thomas 2004) we, however, believe that this understates the influence industry interdependencies could have.

Following the previously outlined procedure, some firms were being associated with several Input-Output industry codes leading in some cases to multiple possible combinations between two firms with more than one allotted Input-Output code. In these cases we took the highest value for each supplier – as well as customer – dependency.

3.7 PAYMENT METHOD

In order to assess whether the choice of payment method can provide leverage in the bargaining for better premiums we study a subsample of our acquisition database which involves only deals where the payment has been settled either completely in cash or completely in a share exchange i.e. paying in stock. In other words, we exclude mergers where the payment was a mix between both cash and stock.

We construct a variable called payment elasticity in the following manner:

$$\text{payment elasticity} = \begin{cases} 1 & \text{if the acquisition is settled only in cash} \\ 0.5 & \text{if the acquisition is settled only in stock but with a collar} \\ 0 & \text{if the acquisition is settled only in stock} \end{cases}$$

According to Officer (2003) the inclusion of a collar agreement¹¹ makes the stock payment more cash-like in nature. Consequently, to account for a payment method which combines a share exchange with a collar we add an additional value of 0.5 to the payment elasticity variable.

3.8 METHODOLOGY

3.8.1 Analysis of non – horizontal industry dependencies

In order to estimate the effect of the industry dependencies on bargaining power, we run several OLS regressions with industry and time-fixed effects, standard errors, clustered by industry, and control variables. Our data sample includes all non-horizontal acquisition deals meaning that we consider both vertical deals where we can identify industry relationship between the acquirer and target, and also diversifying acquisitions for which there is no industry relationship between acquirer and target. We also identify a subsample of only vertical deals by setting a cut-off value of 1% for the four Input-Output measures following Fan and Goyal (2006)'s definition of vertically related industries. For the larger non-horizontal deals sample we use Huber-White sandwich estimators for the standard errors to account for possible heteroskedasticity (Bach 2012). The estimator is given by the formula.

$$V(\widehat{\beta}|\{x_i\}) = \frac{1}{n} \frac{\sum (x_i - \bar{x})^2 \hat{u}_i^2}{(\sum_i (x_i - \bar{x})^2)^2}$$

For the subsample containing only vertical deals where we have a much smaller number of observations we use OLS estimators for the standard errors due to the wide variance of the Huber-White sandwich estimators in smaller samples.

3.8.2 Analysis of horizontal industry

The analysis of horizontal deals in the five industry sectors previously outlined (banking, software development, oil, mining & utilities, healthcare, electronics manufacturing) is performed through OLS regressions with time-fixed effects. Due to the low number of

¹¹ Collar agreement establishes a price range within which the stock will be valued to insure both buyer and seller get the deal they expect

observations in the samples we use standard OLS estimators for the standard errors. We have also included interaction variables between the relative value of the deal and the market share of acquirer and target respectively because of the interdependency between those variables.

3.8.3 Payment method

The effect on the bargaining process of the payment method is tested with OLS regressions with industry and time-fixed effects, Huber-White sandwich estimators for the standard errors clustered by industry.

4 Empirical Results

4.1 SUMMARY STATISTICS

Our sample of merger activity consists of 1,941 deals which have been selected according to the criteria mentioned above in the data section. In line with our methodology of classifying whether a merger is horizontal or non-horizontal we have identified 981 horizontal mergers and another 960 non-horizontal mergers. The ratio of horizontal to non-horizontal deals in our sample equals approximately 1 which contrasts the same ratio in the sample used by Ahern (2009) where he identifies 1,659 horizontal and 897 vertical acquisitions. This is likely a result of our approach to use the TNIC industry classification method rather than the very broad classification criteria adopted by Ahern. As previously elaborated, we believe that our approach evaluates more robustly whether two companies are in the same industry or not.

Table 1. Summary Statistics by subsamples of horizontal and non-horizontal deals.

Significance test is a two-sample t-test. Asterisks indicate significance at 10%, 5% and 1% levels

	(1) Non-horizontal acquisitions	(2) Horizontal acquisitions	(1) - (2) Difference
Company characteristics			
Target Market share (%)	4.86	1.11	3.75***
Target Leverage ratio (%)	20.61	21.98	1.37
Acquirer Market share (%)	14.28	4.20	10.08***
Relative value	30.66	33.82	-3.16
RoA of Target	-4.09	-6.40	2.31
RoA of Acquirer	2.19	2.03	0.15

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Performance measures			
Premiums (%)	67.80	71.46	-0.37
\$RCAR 2 day (%)	2.97	4.07	-1.10***
\$RCAR 5 day (%)	2.95	4.30	-1.34***
\$RCAR 10 day (%)	3.29	4.52	-1.23**
Target CAR, (-1,+1) (%)	25.55	22.17	3.38***
Target CAR, (-2,+2) (%)	26.81	23.35	3.46***
Target CAR, (-5,+5) (%)	27.59	25.65	1.94
Target \$ CAR, (-1,+1)	144.83	173.22	-28.40
Target \$ CAR, (-2,+2)	135.28	211.67	-76.38
Target \$ CAR, (-5,+5)	136.46	183.78	-47.32
Acquirer CAR, (-1,+1) (%)	-1.13	-1.91	0.78**
Acquirer CAR, (-2,+2) (%)	-1.14	-1.94	0.80***
Acquirer CAR, (-5,+5) (%)	-1.17	-2.00	0.03
Acquirer \$ CAR, (-1,+1)	-181.53	-198.58	17.05
Acquirer \$ CAR, (-2,+2)	-228.43	-205.74	-22.69***
Acquirer \$ CAR, (-5,+5)	-258.32	-214.13	-44.20
Deal characteristics			
Collar (%)	8.83	11.15	2.32
Acquirer termination fees (%)	14.92	23.17	8.25
Target termination fees (%)	75.19	74.23	0.96
Toehold (%)	0.49	0.86	-0.37
Tender offer (%)	21.48	12.60	0.89
Number of bidders	1.04	1.05	-0.01
Only cash payment	37.61	24.48	13.13
Only stock payment	36.09	43.33	-7.24
Cash & stock – majority cash	12.54	10.21	2.33
Cash & stock – majority stock	13.46	21.67	-8.21
Industry dependence variables			
Target dependent as a customer (%)	2.28		
Target dependent as a supplier (%)	2.41		
Acquirer dependent as a customer (%)	2.26		
Acquirer dependent as a supplier (%)	1.97		

Table 1. presents summary statistics for the dataset. The average premium for horizontal deals is 71.5% and for vertical mergers – 67.8%. These figures are in line with Ahern (2009) and Officer (2003). However, contrary to Ahern (2009), we find that the difference between the premium means of both horizontal and non-horizontal deals is not statically different from 0 using a two sample t-test. The \$RCAR¹² variable which we have defined following Ahern's approach is significantly larger for horizontal than for

¹² \$RCAR = target's share of dollar cumulative abnormal returns per combined market value of target and acquirer

non-horizontal transactions. The difference between both samples remains statistically significant for all of the three event windows for which we have calculated the cumulative dollar abnormal returns. We can see that horizontal acquisition targets achieved larger \$RCARs on average than targets in the non-horizontal deal sample did. The economic intuition behind the \$RCAR measure suggests that targets in horizontal mergers made around 4.07 - 4.52¹³ cents more than the acquirers did per dollar of combined market valuation before the merger (Ahern, 2009). For vertical deals the figure is 2.97 – 3.29¹⁴, which means that targets in the non-horizontal mergers sample capture around 1.10 – 1.34 cents less than targets in the horizontal deals sample with respect to the \$RCAR measure.

Cash as a form of payment is more often used in non-horizontal deals than it is in horizontal mergers – 37.61% of the vertical acquisitions are settled in cash in contrast to only 24.48% for horizontal deals. Looking at the summary statistics in Table 1. we can see that cash and stock are approximately equally used forms of payment in non-horizontal deals. In contrast, the horizontal deal sample suggests that almost twice as many deals are settled in stock than they are settled in cash. This is also the case when the payment is a mixture between cash and stock. The percentage of horizontal-industry deals where stock plays the major part in the form of payment is 21.67% whereas the percentage of deals where cash plays a more significant role than stock is less than half, namely 10.21%. In the non-horizontal deals sample the relative prevalence of stock and cash as form of payment are almost equal – 13.46% where stock is the major part and 12.54% where cash is the largest instrument in the payment method.

Other deal characteristics such as the presence of collars, acquirer termination fees, toehold purchase and tender offers also vary between horizontal and non-horizontal deals. Table 1. shows that termination fees for the acquirer, collar agreements and toeholds are more prevalent in horizontal deals. On the other hand, the percentage of mergers where the acquirer resorted to tender offers is almost twice as high in non-horizontal as it is in horizontal acquisitions.

¹³ Depending on the event window for the calculation of the dollar cumulative abnormal returns

¹⁴ Depending on the event window for the calculation of the dollar cumulative abnormal returns

The summary data for the target's and acquirer's characteristics shows another interesting aspect: targets in the horizontal sample have much smaller market share on average than targets in the non- horizontal deals sample. The difference is 3.75% and is statistically significant at the 1% level. The same relationship is evident for acquirers where the bidding companies in the vertical merger sample have on average 10.08% more market share than acquiring firms in the horizontal sample. A possible explanation for that could be that dominant firms are either restricted by regulatory authorities or have already reached the critical size needed to utilise possible economies of scale within the industry itself. Furthermore, acquisitions especially for firms with high market shares in their home market up or downstream the value chain seem to be the intuitive next step. In terms of relative size as defined in Ahern (2009) we find that there is no statistically significant difference between the means of the horizontal and the non-horizontal samples.

4.2 NON-HORIZONTAL MERGERS

Table 2. outlines the expected signs of the coefficients for the four Input-Output variables if the business interdependency hypothesis should hold.

Table 2. Anticipated effects of the IO variables on the dependent variables

The table gives the expected signs of the coefficients for the industry Input-Output variables if the business interdependency hypothesis is valid

	(1) Premiums	(2) \$RCAR	(3) Target CAR	(4) Acquirer CAR
Target dependent on acquirer as key customer	-	-	-	+
Target dependent on acquirer as key supplier	-	-	-	+
Acquirer dependent on target as key customer	+	+	+	-
Acquirer dependent on target as key supplier	+	+	+	-

Table 3. reports the results when we use the acquisition premiums as dependent variable. We find that the only statistically significant input-output measure is the acquirer's industry dependency on the target's industry as a supplier. This variable captures how much of the target's industry input is required to produce the acquirer's

industry output. The effect of the variable is positive on the acquisition premium and in line with the tested hypothesis meaning that the more a bidding firm is dependent on the target to supply it with the necessary inputs, the less bargaining power this bidding firm has and hence pays a larger premium to the target. These findings are in line with Ahern (2009) where the industry dependencies from a supplier perspective (the share of target's industry inputs in acquirer's industry outputs and the share of acquirer's industry inputs in target's industry outputs) are found to have a significant effect on the merger premiums. The other three measures we use to determine industry dependencies are not significant even at the 10% level. When we run the same regression on the sub sample of only vertical deals shown in column 2, we do not find any significance among all of the four input-output variables. Therefore, we conclude that our empirical analysis yields inconclusive results which cannot firmly support the hypothesis that business interdependencies have a significant effect over the premiums paid in acquisition deals.

Table 3. Cross-sectional determinants of premiums in non-horizontal and vertical deals¹⁵.
Standard errors in parentheses. Asterisks indicate significance at 10%, 5%, 1% level

	(1) Premiums Non-horizontal deals	(1) Premiums Vertical deals
Target dependent on acquirer as key customer	-0.242 (0.284)	25.04 (54.02)
Target dependent on acquirer as key supplier	0.0537 (0.375)	19.34 (53.39)
Acquirer dependent on target as key customer	0.0719 (0.498)	-31.06 (72.78)
Acquirer dependent on target as key supplier	1.028** (0.475)	-9.447 (31.90)

Table 4. summarizes the results of the analysis when the dependent variable is the division of cumulative abnormal dollar gains (\$RCAR) defined by Ahern (2009). For the purpose of robustness we examine three event windows to calculate the dollar abnormal returns. Considering the event window (-2,+2) the regression yields two

¹⁵ All tables presenting regression results contain only an excerpt with the results of the variables of interest. The complete tables with the results for all of the variables in the regression are present in the appendix under the same name and number.

significant input-output variables at the 5% level. However, the direction of the effects is in contradiction to what the business interdependency hypothesis states. Furthermore, the regression using (-5,+5) and (-10,+10) event windows \$RCAR estimation as a dependent variable does not yield any significant effect of the four Input-Output relation variables on the division cumulative dollar abnormal gains. In addition, the subsample of vertical mergers also does not show any significance for the industry dependence variables as evident from Table 5. Consequently, we arrive at the conclusion that we do not find any empirical evidence from our sample of acquisition deals to support the effect of business interdependencies on the division of abnormal merger dollar gains.

Table 4. Cross-sectional determinants of dollar division gains in non-horizontal deals

Standard errors in parentheses. Asterisks indicate significance at 10%, 5%, 1% level

	(1) \$RCAR (-2,+2)	(2) \$RCAR (-5,+5)	(3) \$RCAR (-10,+10)
Target dependent on acquirer as key customer	0.137** (0.0566)	0.0630 (0.0596)	0.0848 (0.112)
Target dependent on acquirer as key supplier	0.00999 (0.0402)	-0.00685 (0.0460)	0.0261 (0.0638)
Acquirer dependent on target as key customer	-0.0700 (0.0618)	-0.0287 (0.0712)	-0.0518 (0.120)
Acquirer dependent on target as key supplier	-0.206*** (0.0607)	-0.130 (0.0933)	-0.165 (0.157)

Table 5. Cross-sectional determinants of dollar division gains in vertical deals

Standard errors in parentheses. Asterisks indicate significance at 10%, 5%, 1% level

	(1) \$RCAR (-2,+2)	(2) \$RCAR (-5,+5)	(3) \$RCAR (-10,+10)
Target dependent on acquirer as key customer	6.971 (4.550)	4.903 (5.490)	4.508 (4.353)
Target dependent on acquirer as key supplier	5.489 (4.335)	3.182 (5.175)	2.319 (4.275)
Acquirer dependent on target as key customer	-8.914 (6.071)	-6.314 (7.264)	-6.004 (5.862)
Acquirer dependent on target as key supplier	-4.162 (2.645)	-2.372 (3.041)	-1.166 (2.963)

Finally, we consider the effect of the four Input-Output relation variables on the Cumulative abnormal returns of acquirers and targets using the same three event windows. The results are presented in Table 6. As in the previous regressions we do not arrive at any robust and relatively significant results which are in line with the business dependency hypothesis.

Table 6. Cross-sectional determinants of Targets' and Acquirers' Cumulative Abnormal Returns in non-horizontal deals

Standard errors in parentheses. Asterisks indicate significance at 10%, 5%, 1% level

	(1) Target CAR (-2,+2)	(2) Target CAR (-5,+5)	(3) Target CAR (-10,+10)	(4) Acquirer CAR (-2,+2)	(5) Acquirer CAR (-5,+5)	(6) Acquirer CAR (-10,+10)
Target dependent on acquirer as key customer	0.0955 (0.125)	-0.186 (0.116)	-0.128 (0.184)	-0.150** (0.0639)	-0.0619 (0.0576)	-0.160 (0.133)
Target dependent on acquirer as key supplier	-0.197* (0.100)	-0.127 (0.151)	-0.276* (0.163)	-0.0279 (0.0392)	0.00419 (0.0556)	-0.0444 (0.0981)
Acquirer dependent on target as key customer	-0.0424 (0.128)	0.486* (0.261)	0.0125 (0.248)	0.0933 (0.0661)	0.0365 (0.0774)	0.0873 (0.143)
Acquirer dependent on target as key supplier	0.249 (0.270)	-0.00173 (0.118)	0.612* (0.349)	0.236*** (0.0846)	0.187 (0.114)	0.361* (0.211)

In summary, all of the above models do not present conclusive evidence that industry dependencies which should proxy for possible business interdependencies significantly affect the measures we utilize to proxy for bargaining power in acquisition deals in the direction that the tested hypothesis predicts.

4.3 HORIZONTAL MERGERS

4.3.1 Banking industry

Table 7. Cross sectional determinants for premiums and abnormal dollar division gains in horizontal deals in the banking sector

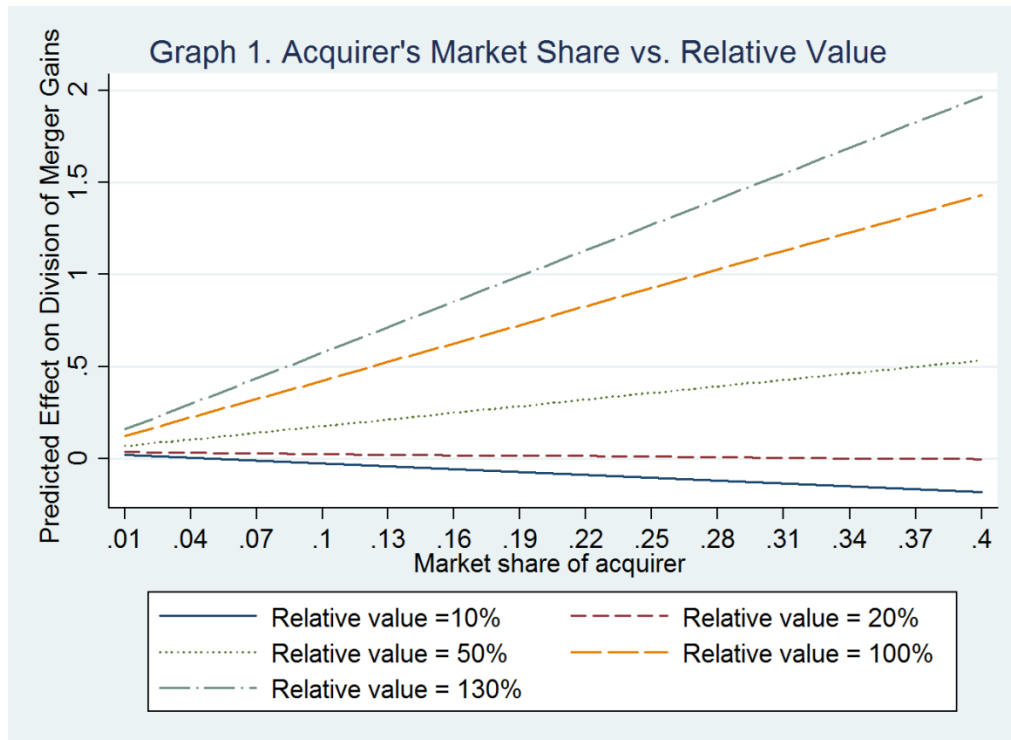
Standard errors in parentheses. Asterisks indicate significance at 10%, 5%, 1% level

	(2) Premiums	(1) \$RCAR (-2,+2)	(2) \$RCAR (-5,+5)	(3) \$RCAR (-10,+10)
Market share of Acquirer	-4.991*	-0.956**	-1.404***	-1.178

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	(2.734)	(0.470)	(0.536)	(0.716)
Market share of Target	-40.07	0.444	0.831	1.470
	(55.96)	(1.876)	(2.141)	(2.860)
RoA of Target	5.562	1.313**	1.024	1.540
	(3.809)	(0.621)	(0.709)	(0.947)
RoA of Acquirer	-3.463	2.555**	2.328**	1.885
	(6.694)	(0.985)	(1.124)	(1.501)
Market share of Acquirer x Relative Value	18.15	4.300**	6.546***	5.974*
	(12.14)	(2.077)	(2.370)	(3.167)
Market share of Target x Relative Value	68.36	-5.984	-5.379	-2.761
	(116.4)	(11.53)	(13.16)	(17.58)
Relative value	-0.0264	0.0689***	0.0390**	0.0462*
	(0.0991)	(0.0163)	(0.0186)	(0.0248)

We first look at the results in Table 7. from the sample containing horizontal deals in the banking industry. This is the industry in which we can observe the greatest number of completed acquisitions. Our analysis on the premiums of the acquisition finds that the acquirer's market share is statistically significant; the effect is negative which is in line with the hypothesis that a bidding firm with higher market share should have more pricing power in the market and, therefore, be able to negotiate a smaller premium for the acquisition. However, the effect is not straightforward when the dependent variable is the \$RCAR measure. Looking at the interaction variable between acquirer's market share and relative value of the deal we see a highly significant positive effect. Therefore, the overall effect of the acquirer's market share on premiums and division gains of merger dollars depends on the relative size of the target to the one of the acquirer. Graph 1. visually illustrates this relationship for the (-2,+2) event window regression. The graph plots the predicted effect of the acquirer's market share for several different relative sizes of the merger. We estimate that the effect of the acquirer's market share will generally be negative on the target's merger gains if the transaction value of the firm is below 20% of the market capitalization of the acquirer. Under the market pressure hypothesis we would interpret this to mean that acquirers with high market share can leverage on their market pricing power and secure a better bargaining position only when the target is sufficiently small.



Furthermore, if two banks with the same market share were to be acquired then the one with the higher relative size will capture more gains from the merger and achieve a higher premium which should suggest higher bargaining leverage in the negotiation process. This is substantiated by our finding of a significant positive effect of the relative size of the target, presented in Column 2 and 3 of Table 7.

There is also an effect of the acquirer's RoA on the \$RCAR variable in the (-2,+2) and (-5,+5) event windows. Instead of the negative effect that the market pressure hypothesis predicts, we find a positive one suggesting that targets capture more of the merger gains when the acquirer has a higher RoA. This can be explained by the fact that the abnormal returns around the announcement date do not only reflect the bargaining process of the deal but also the expectations for possible synergies between the two companies. The market may believe that an acquirer which is more financially stable will be able to deploy more capital to ensure the post-merger integration and the realization of synergies.

To conclude, our analysis of mergers in the banking industry suggest two significant effects – one of the acquirer's market share and another of the transaction

value of the deal relative to the market capitalization of the acquirer. The relative size effect for the target is direct – a larger target should capture more merger gains which implies a better bargaining position. The premise here is that the larger the target is, the better suited it is to withstand possible price or any other kind of market pressure from the acquirer. The effect of the acquirer's market share is not so straightforward and depends on the relative value of the target.

4.3.2 Software industry

Table 8. Cross sectional determinants for premiums and abnormal dollar division gains in horizontal deals in the software sector

Standard errors in parentheses. Asterisks indicate significance at 10%, 5%, 1% level

	(2) Premiums	(1) \$RCAR (-2,+2)	(2) \$RCAR (-5,+5)	(3) \$RCAR (-10,+10)
Market share of Acquirer	-6.505 (8.018)	-1.411*** (0.439)	-0.712 (0.492)	-1.328** (0.609)
Market share of Target	1.425 (6.634)	0.0358 (0.343)	0.466 (0.384)	-0.118 (0.475)
RoA of Target	-1.054 (0.294)	0.0250 (0.0161)	0.0158 (0.0181)	0.0448** (0.0224)
RoA of Acquirer	0.782 (0.982)	0.0103 (0.0439)	-0.0614 (0.0492)	-0.0891 (0.0609)
Market share of Acquirer x Relative Value	36.10 (45.33)	2.009 (2.471)	0.170 (2.771)	0.135 (3.431)
Market share of Target x Relative Value	-16.40 (89.47)	1.198 (4.610)	-5.512 (5.169)	0.577 (6.400)
Relative value	-0.296 (0.977)	-0.0290 (0.0500)	0.0103 (0.0561)	-0.0475 (0.0694)

The analysis of the acquisitions in the software development industry presented in Table 8. reveals a highly significant negative effect of the acquirer's market share on the division of abnormal dollar merger gains in two of the event windows (see columns 2 and 4). It appears that targets which are acquired by companies with a larger market share will tend to capture less of the merger gains. However, contrary to the situation in the banking industry, this effect is not dependent on the relative value of the target since neither relative value nor its interaction with the acquirer's market share are statistically significant.

4.3.3 Oil, Mining and Utilities

Table 9. Cross sectional determinants for premiums and abnormal dollar division gains in horizontal deals in the oil, mining & utilities

Standard errors in parentheses. Asterisks indicate significance at 10%, 5%, 1% level

	(2) Premiums	(1) \$RCAR (-2,+2)	(2) \$RCAR (-5,+5)	(3) \$RCAR (-10,+10)
Market share of Acquirer	3.959 (3.720)	-0.184 (0.473)	0.128 (0.535)	0.105 (0.757)
Market share of Target	-1.513 (12.51)	1.762 (1.591)	0.183 (1.800)	1.403 (2.546)
RoA of Target	-0.771 (1.138)	-0.229 (0.145)	-0.120 (0.164)	-0.215 (0.231)
RoA of Acquirer	-0.889 (2.043)	0.591** (0.260)	0.698** (0.294)	0.726* (0.416)
Market share of Acquirer x Relative Value	14.58 (20.77)	-0.225 (2.641)	-0.585 (2.988)	-0.103 (4.227)
Market share of Target x Relative Value	-23.08 (17.03)	-3.030 (2.165)	-0.835 (2.450)	-1.549 (3.465)
Relative value	0.533*** (0.171)	0.0493** (0.0218)	0.0232 (0.0246)	0.0116 (0.0348)

Table 9. displays the result of the horizontal merger regressions on the subsample of deals containing companies in the oil, mining and utilities sector. As is the banking industry we find that the RoA of the acquirer has a positive effect on the dependent variable \$RCAR in two of the event windows. Furthermore, relative value is also positively impacting both premiums and target's share of dollar gains from the merger.

4.3.4 Healthcare sector

Table 10. Cross sectional determinants for premiums and abnormal dollar division gains in horizontal deals in the healthcare sector

Standard errors in parentheses. Asterisks indicate significance at 10%, 5%, 1% level

	(2) Premiums	(1) \$RCAR (-2,+2)	(2) \$RCAR (-5,+5)	(3) \$RCAR (-10,+10)
Market share of Acquirer	2.252 (1.718)	-0.0587 (0.192)	-0.313 (0.253)	-0.182 (0.302)
Market share of Target	4.764 (9.944)	0.0127 (1.110)	0.111 (1.462)	1.623 (1.749)
RoA of Target	-0.409	0.00363	0.0195	0.0629**

	(0.168)	(0.0187)	(0.0247)	(0.0295)
RoA of Acquirer	0.602	-0.0404	0.0141	-0.0199
	(0.367)	(0.0410)	(0.0540)	(0.0646)
Market share of Acquirer x Relative Value	1.909	-0.229	0.692	1.508
	(5.807)	(0.648)	(0.854)	(1.022)
Market share of Target x Relative Value	-21.54	-0.599	-1.574	-4.942
	(18.42)	(2.055)	(2.708)	(3.240)
Relative value	0.750***	0.0481*	0.0159	0.0565
	(0.240)	(0.0267)	(0.0353)	(0.0422)

Table 10. presents the outputs of the horizontal merger regressions on the subsample of deals containing companies in the healthcare industry. The relative value of the deal increases the premium paid to the target. We do not find any other robust significant behaviour of the variables of interest - market share of target and acquirer, RoA of acquirer or target.

4.3.5 Electronics manufacturing

Table 11. Cross sectional determinants for premiums and abnormal dollar division gains in horizontal deals in electronics manufacturing

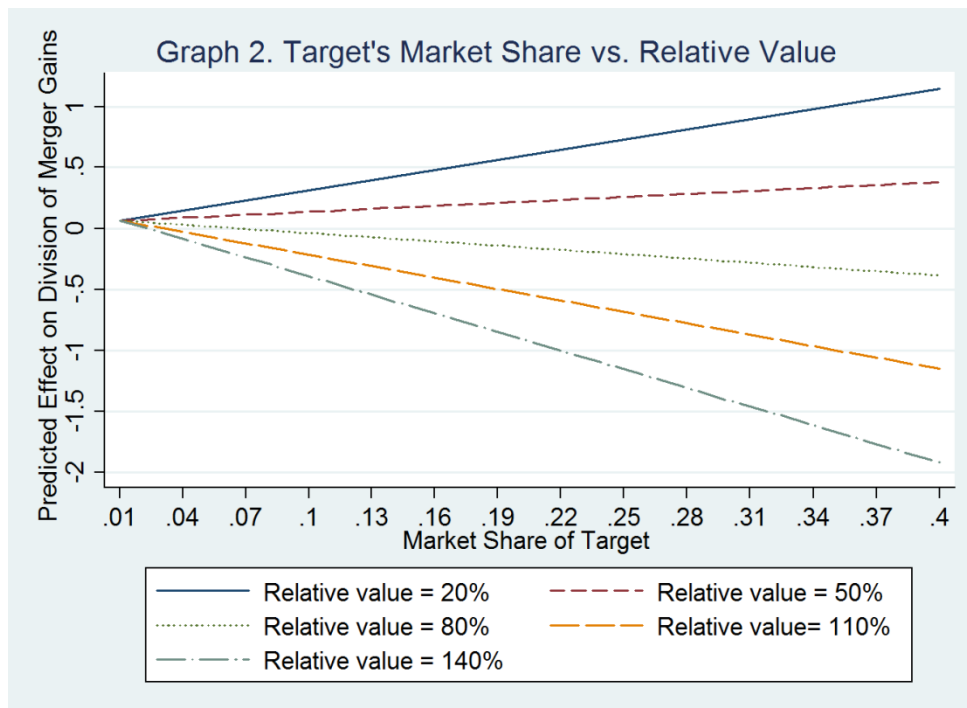
Standard errors in parentheses. Asterisks indicate significance at 10%, 5%, 1% level

	(2) Premiums	(1) \$RCAR (-2,+2)	(2) \$RCAR (-5,+5)	(3) \$RCAR (-10,+10)
Market share of Acquirer	-0.860 (0.619)	-0.0263 (0.0938)	0.0124 (0.150)	-0.0192 (0.200)
Market share of Target	1.899 (5.939)	1.687* (0.905)	4.090*** (1.445)	5.534*** (1.926)
RoA of Target	0.331* (0.185)	0.0595** (0.0280)	0.0677 (0.0446)	0.139** (0.0595)
RoA of Acquirer	0.188 (0.301)	-0.0341 (0.0454)	-0.0393 (0.0724)	-0.189* (0.0965)
Market share of Acquirer x Relative Value	-3.384 (4.972)	-0.843 (0.754)	-0.745 (1.203)	-0.582 (1.604)
Market share of Target x Relative Value	-0.336 (11.53)	-2.282 (1.757)	-6.559** (2.805)	-9.930*** (3.739)
Relative value	-0.196 (0.242)	0.0718** (0.0347)	0.0692 (0.0553)	0.0759 (0.0738)

The results for the horizontal merger regressions on the subsample of deals containing companies in the electronics manufacturing sector are presented in Table 11. A positive effect of the target's RoA is evident suggesting that more financially

stable targets negotiate a better premium and increase their share of dollar merger gains.

In this industry we find a direct significant positive effect of the target's market share and a negative effect of the interaction between the target's market share and the relative value of the merger. Graph 2. represents the overall effect of a target's market share on the \$RCAR variable for different deal sizes. It is evident that when the transaction value of the deal is 80% of the market capitalization of the acquirer then the effect of the target's market share on the \$RCAR becomes negative. In contrast, if the relative value is 50% the effect of the target's market share on the target's share of abnormal dollar gains becomes positive. We can infer that targets with very high relative size to the acquirer and high market share will in fact capture less of the merger gains as measured by the \$RCAR variable. These results contradict the market pressure hypothesis which would predict the exact opposite outcome.



4.3.6 Summary

The most consistently significant variable among the analysis of the different industries is the relative size of the deal which positively impacts the target's share of abnormal

dollar gains from the merger. Larger targets with respect to the acquirer's market capitalization are able to negotiate a higher premium and capture more of the merger gains. Under the market pressure hypothesis this would mean that larger targets are better equipped to withstand and deal with eventual market pressure from the acquirer if the deal does not happen.

The acquirer's market share exhibits negative significance in the case of the software industry and the banking sector which is in line with the market pressure hypothesis. However, in the banking sector the effect of the bidding firm's market share is highly dependent on the relative value of the deal. An acquirer with higher market share and, consequently, higher market power can leverage on that only if the target is sufficiently small in terms of size. Ahern's horizontal regressions yield similar significant results. However, he does not elaborate on the interaction between market share and relative size of the merger in his paper.

In contrast, the target's market share and the RoA of the acquirer do not exhibit effects in the predicted direction if they are significant at all.

In general the empirical results of the industry analysis cannot firmly back the market pressure hypothesis. Moreover, the findings are inconsistent among the different industries. It is worth noting that the small sample sizes which we study can greatly bias the results.

4.4 PAYMENT METHOD – CASH VERSUS STOCK

4.4.1 Non-horizontal mergers

Table 12. Payment method effects on premiums and division of dollar abnormal returns in non-horizontal mergers

Payment elasticity takes the value of 1 if the deal is settled in cash, 0.5 if the deal is settled in stock with a collar agreement and 0 if the deal is settled in stock without a collar agreement. The sample includes deals either settled in cash only or stock only. Standard errors in parentheses. Asterisks indicate significance at 10%, 5%, 1% level

	(1) Premiums	(2) \$RCAR (-2,+2)	(3) \$RCAR (-5,+5)	(4) \$RCAR (-10,+10)
Payment elasticity	0.0310 (0.0748)	-0.0184* (0.0100)	-0.0181 (0.0117)	-0.0367*** (0.0132)

Table 12. summarizes the results of the payment method regressions on the sample containing non-horizontal deals. We do not find any effect of the payment method on the premiums even without using additional control variables. However, when we consider the division of dollar abnormal returns between acquirer and target as the dependent variable in the regressions, we find that the choice between cash and stock has a considerable effect. The results suggest that using cash to acquire the target has a negative effect on the \$RCAR measure which means that the target's share of abnormal dollar merger gains decreases. This negative effect remains significant in two of the event windows (columns 2 and 4). Therefore, if we assume that the \$RCAR variable correctly proxies for the bargaining outcome of the deal we can infer that acquirers which pay in cash gain a significant leverage in the bargaining process. To investigate better this result we study separately the CARs of acquires and targets.

Table 13. Payment method effects on targets' and acquirers' cumulative abnormal returns in non-horizontal mergers

Payment elasticity takes the value of 1 if the deal is settled in cash, 0.5 if the deal is settled in stock with a collar agreement and 0 if the deal is settled in stock without a collar agreement. The sample includes deals either settled in cash only or stock only. Standard errors in parentheses. Asterisks indicate significance at 10%, 5%, 1% level

	(1) Target CAR (-2,+2)	(2) Target CAR (-5,+5)	(3) Target CAR (-10,+10)	(4) Acquirer CAR (-2,+2)	(5) Acquirer CAR (-5,+5)	(6) Acquirer CAR (-10,+10)
Payment elasticity	0.128*** (0.0400)	0.133*** (0.0461)	0.121** (0.0553)	0.0390*** (0.0136)	0.0402** (0.0163)	0.0626*** (0.0211)

The cumulative abnormal returns of the acquirers (columns 4-6) are also affected by whether the acquisition is settled in cash or stock as Table 13. shows. The results indicate a significant positive effect when the form of payment is cash which increases the abnormal returns of the acquirer. In the non-horizontal deals sample the effect is significant for all three event windows. These findings are also in line with Houston and Ryngaert (1997) who find that using stock as a form of payment has a negative effect on acquirer's announcement abnormal returns which is later confirmed by Officer (2003). We have to note that this could also be an evidence of the signalling hypothesis

which states that when the acquirers pay in cash they reveal to the market that they believe their stock to be undervalued. Consequently, the price of the stock rises.

In the non-horizontal sample we find a highly significant positive effect on the target's cumulative abnormal returns (columns 1-3) in all of the three event windows when the payment is settled in cash. In essence the payment method cash versus stock affects only the CARs of targets in non-horizontal deals¹⁶. To provide a possible explanation of this result, we can only speculate that non-horizontal deals have less of a chance of being successful since the acquirer has less knowledge of the business and the industry of the target than it is the case in horizontal mergers where both firms operate in the same industry. Therefore, if the target's stockholders get paid in stock there is a higher probability that the stock's value will decrease post-announcement as a result of the lower probability of the merger being successful. This could be a possible explanation of the observed positive relationship between the CARs of targets in non-horizontal mergers and using cash as payment for the acquisition.

Despite both the target's and the acquirer's CARs being positively affected when the form of payment for the deal is cash, the overall effect on the \$RCAR variable is negative. The explanation lies in the construction of this variable which uses the abnormal dollar gains which take into account the different market capitalization of acquirer and target. Due to the fact that, on average, acquirers are larger than targets acquirers capture more of the dollar gains as measured by the \$RCAR. In essence, both acquirer and target have increased dollar abnormal returns but the relative gain of the target is negative due to its smaller market capitalization.

4.4.2 Horizontal mergers

Table 14. Payment method effects on premiums and division of dollar abnormal returns in horizontal mergers

Payment elasticity takes the value of 1 if the deal is settled in cash, 0.5 if the deal is settled in stock with a collar agreement and 0 if the deal is settled in stock without a collar agreement. The sample includes deals either settled in cash only or stock only. Standard errors in parentheses. Asterisks indicate significance at 10%, 5%, 1% level .

	(1) Premiums	(2) \$RCAR (-2,+2)	(3) \$RCAR (-5,+5)	(4) \$RCAR (-10,+10)
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¹⁶ The results for the horizontal deals are presented in the next section

Payment elasticity	-0.116 (0.191)	-0.0244* (0.0127)	-0.0388*** (0.0108)	-0.0334** (0.0149)
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The results using the horizontal sample of mergers in Table 14. display a similar pattern - there is a significant negative relationship between the usage of cash as payment for the deal and the target's share of abnormal dollar merger gains. This relationship holds true in all three event windows. However, we cannot provide conclusive evidence whether the effect of the payment method on bargaining power is larger for non-horizontal mergers as we had hypothesized earlier. We have, however, found evidence that there is a significant relationship between the method of payment and the division of dollar gains and that it is stronger for the horizontal deals than it is for the non-horizontal deals.

Table 15. Payment method effects on targets' and acquirers' cumulative abnormal returns in horizontal mergers

Payment elasticity takes the value of 1 if the deal is settled in cash, 0.5 if the deal is settled in stock with a collar agreement and 0 if the deal is settled in stock without a collar agreement. The sample includes deals either settled in cash only or stock only. Standard errors in parentheses. Asterisks indicate significance at 10%, 5%, 1% level

	(1) Target CAR (-2,+2)	(2) Target CAR (-5,+5)	(3) Target CAR (- 10,+10)	(4) Acquirer CAR (-2,+2)	(5) Acquirer CAR (-5,+5)	(6) Acquirer CAR (-10,+10)
Payment elasticity	0.0426 (0.0258)	0.0514 (0.0392)	0.0628 (0.0637)	0.0417** (0.0161)	0.0539** (0.0217)	0.0538 (0.0343)

The cumulative abnormal returns of the acquirers are also affected by whether the acquisition is settled in cash or stock as Table 15. outlines. Similar to the non-horizontal deals sample we find a positive effect on the CARs of acquirers in horizontal mergers when they use cash to pay for the acquired company. This effect is significant for two of the three event windows. The same table also shows the results when the dependent variable is the target's cumulative abnormal return (columns 1 to 3). However, there is no statistical significance of the payment elasticity variable as there is in the non-horizontal deals sample. This suggests that using cash as payment method

exerts a larger effect on cumulative returns when the deal is horizontal since it only affects the CARs of the acquirer.

4.4.3 Summary

Merger deals where the payment is settled in cash seem to benefit more the acquirer and decrease the target's share of abnormal dollar merger gains. This result, evident for both horizontal and non-horizontal deals, does support the payment method hypothesis. Nevertheless, other theories, especially the signalling effect of the payment method, can cause the same observed effect. Furthermore, we find no statistically significant effect of the payment method on the acquisition premium which puts into question the validity of the payment method hypothesis.

5 Limitations of the paper

This section discusses possible limitations which are inherent to the study and, thus, present limited possibility to be addressed.

In general, the nature of bargaining and negotiation is highly subjective and people-oriented which presents significant disadvantages for an empirical study of such a process. There are numerous determinants in a deal which cannot be observed or quantified. For instance, the level of expertise of the management boards and their respective financial advisors can greatly influence the end result of the bargaining process.

Furthermore, the proxies that we utilize to measure bargaining power do not only reflect the leverage one firm has over the other in the negotiation process. Acquisition premiums can be highly deal specific and reflect the expected realization of synergies from the merger. In addition, the assumption that the stock market return around the announcement day can provide some insight of the company's ability to structure the deal in a way favourable to its shareholders is considerably biased. There are numerous other factors that also play a significant role in the market reaction around the announcement date of the merger which can strongly influence the stock price reaction such as overall synergies of the merger, change in strategy, etc.

A further limitation of the paper is that we regard the US market in a closed box scenario (which of course is not entirely representative in times of a global economy), not accounting for overseas competitors, customers or suppliers. Due to the limitations of available datasets a "global model" which would be desirable, is not feasible yet.

Another restraint of this paper is, again due to lack of existent data, that we account for industry dependencies and not company specific business interdependencies. As each firm might have very different precautions and possibilities (through long term contracts, Joint ventures, etc.) to mitigate dependencies not apparent in an outside analysis of a market.

6 Conclusion

The paper further explores and develops the theory first developed by Ahern (2009) that business and product market relationships can considerably influence the bargaining power of either side involved in an M&A deal. In non-horizontal deals supplier/customer interdependencies determine the relative bargaining position of the companies. In horizontal mergers, the credible threat of a price war or another kind of market pressure from the acquirer can effectively lower the bargaining power of the target.

We develop this approach by applying the TNIC method to identify more accurately whether the companies involved in the deal are direct competitors. In fact, we arrive at a much smaller sample of horizontal deals as a result of the more precise identification of horizontal and non-horizontal mergers. Moreover, we enhance the analysis of horizontal deals by segmenting the sample into several different industries and analysing merger activity within the same industry. Through this approach we are able to utilize highly industry specific measurements such as RoA to proxy for the financial strength of the companies involved in the deal.

Our empirical results find inconclusive evidence to support the business interdependency hypothesis. The supplier/customer dependencies do not exhibit consistent robust significance in line with the prediction and findings of Ahern (2009). In

horizontal mergers we find that larger targets with respect to the acquirer are able to secure higher premiums and a larger share of the abnormal dollar returns from the merger. The effect is persistent through all of the investigated industries and consistent with the market pressure hypothesis.

In addition, we propose a new hypothesis to address the effect of the payment method on the bargaining process. We argue that targets would concede to a lower premium in order to mitigate the uncertainty in their payoffs when the deal is settled through a share exchange. Consequently, the choice between stock and cash as payment method to settle the deal can provide leverage in the bargaining process.

Studying a sample of deals where the payment method is either cash or stock exclusively (not a mixture of both), we find that when deals are settled in cash targets capture less of the abnormal dollar merger gains relative to the acquirer. The observed result seems robust through all of the considered event windows and valid for both horizontal and non-horizontal deals.

On the side of industry dependencies we felt that our study was restricted by the limitations of the available data. Novel ways of identifying industries (such as the TNIC methodology) could give this field of study further meaning in the future. Furthermore we were limited to the US market. Further research could yield more significant insights if also global business linkages and mutual dependencies are included, accounting for the growing number of cross-border transactions and their dynamics. Until then we see the possibilities in that field as limited.

The effect of the payment method on the bargaining power also presents opportunities for further research. A possible direction would be to study the actual bargaining process by observing different bids for the same deal instead of just investigating the end result of the deal. This can prove to be an interesting topic especially for game theory researchers.

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A. Appendix

Table 3. Cross-sectional determinants of premiums in non-horizontal and vertical deals

The first four variables are the industry interdependency variables constructed following Ahern (2009). Toehold measures the percentage of toehold ownership by the acquirer prior to the announcement date. Relative value is the transaction value divided by the market capitalization of the acquirer. Payment method tracks whether the acquisition was settled in cash only, cash & stock or only stock. Poison pill dummy reflects whether the company has takeover defenses or not. Termination fees dummy reflect whether there were any termination fees involved in the deal. Tender offer dummy tracks whether there was a tender offer. Collar dummy reflects whether there was a collar agreement involved in the deal. The regressions involve time and industry fixed effects. Standard errors in parentheses. Asterisks indicate significance at 10%, 5%, 1% level.

	(1) Premiums Non-horizontal deals	(1) Premiums Vertical deals
Target dependent on acquirer as key customer	-0.242 (0.284)	25.04 (54.02)
Target dependent on acquirer as key supplier	0.0537 (0.375)	19.34 (53.39)
Acquirer dependent on target as key customer	0.0719 (0.498)	-31.06 (72.78)
Acquirer dependent on target as key supplier	1.028** (0.475)	-9.447 (31.90)
Market share of Acquirer	-0.185 (0.119)	-1.375 (1.934)
Toehold	-0.0124 (0.00947)	0.169 (0.140)
Relative value	-0.0362 (0.123)	0.423 (0.530)
Acquirer termination fees dummy	0.0551 (0.150)	0.178 (0.203)
Target termination fees dummy	0.0596 (0.0937)	-0.107 (0.232)
Tender offer dummy	0.0350 (0.0991)	0.428 (0.290)
Number of bidders	0.0646 (0.197)	1.248*** (0.266)
Collar dummy	-0.0277 (0.112)	0.169 (0.403)
Poison pill dummy	-0.184* (0.0932)	-0.346 (0.467)
Payment method	0.00505 (0.0253)	-0.0128 (0.156)
Target leverage	0.00332 (0.00247)	0.00138 (0.00297)
Constant	1.453*** (0.190)	0.0556 (0.379)
Observations	543	118
R-squared	0.220	0.487

Table 4. Cross-sectional determinants of dollar division gains in non-horizontal deals

The first four variables are the industry interdependency variables constructed following Ahern (2009). Toehold measures the percentage of toehold ownership by the acquirer prior to the announcement date. Relative value is the transaction value divided by the market capitalization of the acquirer. Payment method tracks whether the acquisition was settled in cash only, cash & stock or only stock. Poison pill dummy reflects whether the company has takeover defenses or not. Termination fees dummy reflect whether there were any termination fees involved in the deal. Tender offer dummy tracks whether there was a tender offer. Collar dummy reflects whether there was a collar agreement involved in the deal. The regressions involve time and industry fixed effects. Standard errors in parentheses. Asterisks indicate significance at 10%, 5%, 1% level.

	(1) \$RCAR (-2,+2)	(2) \$RCAR (-5,+5)	(3) \$RCAR (-10,+10)
Target dependent on acquirer as key customer	0.137** (0.0566)	0.0630 (0.0596)	0.0848 (0.112)
Target dependent on acquirer as key supplier	0.00999 (0.0402)	-0.00685 (0.0460)	0.0261 (0.0638)
Acquirer dependent on target as key customer	-0.0700 (0.0618)	-0.0287 (0.0712)	-0.0518 (0.120)
Acquirer dependent on target as key supplier	-0.206*** (0.0607)	-0.130 (0.0933)	-0.165 (0.157)
Market share of Acquirer	-0.0123 (0.0147)	-0.0114 (0.0215)	-0.0353 (0.0296)
Toehold	-0.000395 (0.000723)	-0.000828 (0.00182)	-0.000207 (0.00232)
Relative value	0.0643*** (0.0118)	0.0562*** (0.0138)	0.0587*** (0.0121)
Acquirer termination fees dummy	-0.00905 (0.0105)	-0.0185 (0.0110)	-0.0366** (0.0157)
Target termination fees dummy	0.00919 (0.00636)	0.0194* (0.00974)	0.0322** (0.0153)
Tender offer dummy	-0.00351 (0.00753)	-0.000334 (0.0107)	-0.0207 (0.0171)
Number of bidders	-0.0141 (0.0161)	-0.0222 (0.0247)	-0.0219 (0.0309)
Collar dummy	-0.00903 (0.0108)	0.00619 (0.0139)	-0.0166 (0.0175)
Poison pill dummy	-0.00398 (0.0132)	-0.0101 (0.0162)	-0.0282 (0.0217)
Payment method	-0.00649* (0.00336)	-0.00641 (0.00424)	-0.00837 (0.00595)
Target_leverage	-9.03e-05 (0.000164)	-3.55e-05 (0.000191)	-3.98e-05 (0.000312)
Constant	0.0377** (0.0177)	0.0461 (0.0281)	0.0696* (0.0407)
Observations	552	552	552
R-squared	0.264	0.182	0.170

Table 5. Cross-sectional determinants of dollar division gains in vertical deals

The first four variables are the industry interdependency variables constructed following Ahern (2009). Toehold measures the percentage of toehold ownership by the acquirer prior to the announcement date. Relative value is the transaction value divided by the market capitalization of the acquirer. Payment method tracks whether the acquisition was settled in cash only, cash & stock or only stock. Poison pill dummy reflects whether the company has takeover defenses or not. Termination fees dummy reflect whether there were any termination fees involved in the deal. Tender offer dummy tracks whether there was a tender offer. Collar dummy reflects whether there was a collar agreement involved in the deal. The regressions involve time and industry fixed effects. Standard errors in parentheses. Asterisks indicate significance at 10%, 5%, 1% level.

	(1) \$RCAR (-2,+2)	(2) \$RCAR (-5,+5)	(3) \$RCAR (-10,+10)
Target dependent on acquirer as key customer	6.971 (4.550)	4.903 (5.490)	4.508 (4.353)
Target dependent on acquirer as key supplier	5.489 (4.335)	3.182 (5.175)	2.319 (4.275)
Acquirer dependent on target as key customer	-8.914 (6.071)	-6.314 (7.264)	-6.004 (5.862)
Acquirer dependent on target as key supplier	-4.162 (2.645)	-2.372 (3.041)	-1.166 (2.963)
Market share of Acquirer	-0.167* (0.0817)	-0.333*** (0.0910)	-0.428*** (0.116)
Toehold	-0.00265 (0.00930)	0.00750 (0.0134)	0.0262** (0.0123)
Relative value	0.0684*** (0.0233)	0.0853** (0.0339)	0.0963** (0.0373)
Acquirer termination fees dummy	-0.00928 (0.0530)	-0.00528 (0.0442)	0.0135 (0.0475)
Target termination fees dummy	0.0313 (0.0482)	0.0256 (0.0417)	0.0255 (0.0219)
Tender offer dummy	-0.00704 (0.0368)	0.0157 (0.0665)	-0.00694 (0.0837)
Number of bidders	-0.00627 (0.0469)	-0.0624 (0.0565)	-0.0703 (0.0502)
Collar dummy	-0.0320 (0.0390)	-0.000912 (0.0344)	0.00994 (0.0548)
Poison pill dummy	0.0202 (0.0209)	0.00464 (0.0307)	-0.0126 (0.0583)
Payment method	-0.00958 (0.0176)	-0.00177 (0.0257)	0.00605 (0.0288)
Target_leverage	0.000379 (0.000254)	0.000347 (0.000598)	0.000161 (0.00128)
Constant	0.108 (0.0859)	0.135 (0.0900)	0.113 (0.0957)
Observations	124	124	124
R-squared	0.562	0.502	0.565

Table 6. Cross-sectional determinants of Targets' and Acquirers' Cumulative Abnormal Returns in non-horizontal deals

The first four variables are the industry interdependency variables constructed following Ahern (2009). Toehold measures the percentage of toehold ownership by the acquirer prior to the announcement date. Relative value is the transaction value divided by the market capitalization of the acquirer. Payment method tracks whether the acquisition was settled in cash only, cash & stock or only stock. Poison pill dummy reflects whether the company has takeover defenses or not. Termination fees dummy reflect whether there were any termination fees involved in the deal. Tender offer dummy tracks whether there was a tender offer. Collar dummy reflects whether there was a collar agreement involved in the deal. The regressions involve time and industry fixed effects. Standard errors in parentheses. Asterisks indicate significance at 10%, 5%, 1% level.

	(1) Target CAR (-2,+2)	(2) Target CAR (-5,+5)	(3) Target CAR (-10,+10)	(4) Acquirer CAR (-2,+2)	(5) Acquirer CAR (-5,+5)	(6) Acquirer CAR (-10,+10)
Target dependent on acquirer as key customer	0.0955 (0.125)	-0.186 (0.116)	-0.128 (0.184)	-0.150** (0.0639)	-0.0619 (0.0576)	-0.160 (0.133)
Target dependent on acquirer as key supplier	-0.197* (0.100)	-0.127 (0.151)	-0.276* (0.163)	-0.0279 (0.0392)	0.00419 (0.0556)	-0.0444 (0.0981)
Acquirer dependent on target as key customer	-0.0424 (0.128)	0.486* (0.261)	0.0125 (0.248)	0.0933 (0.0661)	0.0365 (0.0774)	0.0873 (0.143)
Acquirer dependent on target as key supplier	0.249 (0.270)	-0.00173 (0.118)	0.612* (0.349)	0.236*** (0.0846)	0.187 (0.114)	0.361* (0.211)
Market share of Acquirer	-0.0175 (0.0424)	-0.0553 (0.0456)	-0.0280 (0.0524)	0.00643 (0.0217)	0.00354 (0.0300)	0.0445 (0.0446)
Toehold	-0.000762 (0.00361)	-0.00292 (0.00410)	-0.00259 (0.00296)	0.000757* (0.000443)	0.00125 (0.00143)	0.000579 (0.00202)
Relative value	-0.0849*** (0.0199)	-0.0958*** (0.0247)	-0.0929*** (0.0275)	-0.0194 (0.0173)	-0.000246 (0.0244)	0.0191 (0.0311)
Acquirer termination fees dummy	-0.0307 (0.0350)	-0.0574* (0.0310)	-0.0581* (0.0330)	0.00735 (0.0109)	0.0109 (0.0130)	0.0255 (0.0206)
Target termination fees dummy	0.0356 (0.0339)	0.0497 (0.0343)	0.0576* (0.0332)	-0.00857 (0.00662)	-0.0208 (0.0144)	-0.0362 (0.0238)
Tender offer dummy	0.0123 (0.0348)	0.0185 (0.0326)	0.0514 (0.0378)	0.00963 (0.00965)	0.00183 (0.0146)	0.0248 (0.0225)
Number of bidders	-0.0473 (0.0625)	-0.0367 (0.0652)	-0.0239 (0.0704)	0.00985 (0.0143)	0.0151 (0.0231)	0.0155 (0.0264)
Collar dummy	-0.0207 (0.0456)	-0.00459 (0.0587)	0.000535 (0.0702)	0.0127 (0.0128)	-0.0137 (0.0203)	0.0123 (0.0236)
Poison pill dummy	-0.0218 (0.0459)	-0.0243 (0.0454)	0.00937 (0.0589)	-0.00394 (0.0135)	-0.00313 (0.0195)	0.0193 (0.0243)
Payment method	0.0242** (0.00969)	0.0213* (0.0112)	0.0121 (0.0147)	0.0105** (0.00456)	0.00982* (0.00502)	0.00977 (0.00738)
Target leverage	0.000290 (0.000493)	0.000282 (0.000564)	0.000238 (0.000799)	-7.32e-05 (0.000199)	-0.000193 (0.000245)	-0.000190 (0.000360)
Constant	0.225*** (0.0788)	0.217** (0.0867)	0.197* (0.0982)	-0.0285 (0.0196)	-0.0347 (0.0316)	-0.0801 (0.0505)
Observations	552	552	552	552	552	552
R-squared	0.204	0.224	0.192	0.153	0.094	0.102

Table 7. Cross sectional determinants for premiums and abnormal dollar division gains in horizontal deals in the banking sector

Toehold measures the percentage of toehold ownership by the acquirer prior to the announcement date. Relative value is the transaction value divided by the market capitalization of the acquirer. Payment method tracks whether the acquisition was settled in cash only, cash & stock or only stock. Poison pill dummy reflects whether the company has takeover defenses or not. Termination fees dummy reflect whether there were any termination fees involved in the deal. Tender offer dummy tracks whether there was a tender offer. Collar dummy reflects whether there was a collar agreement involved in the deal. The regressions involve time fixed effects. Standard errors in parentheses. Asterisks indicate significance at 10%, 5%, 1% level.

	(2) Premiums	(1) \$RCAR (-2,+2)	(2) \$RCAR (-5,+5)	(3) \$RCAR (-10,+10)
Market share of Target	-4.991* (2.734)	-0.956** (0.470)	-1.404*** (0.536)	-1.178 (0.716)
Market share of Target	-40.07 (55.96)	0.444 (1.876)	0.831 (2.141)	1.470 (2.860)
RoA of Target	5.562 (3.809)	1.313** (0.621)	1.024 (0.709)	1.540 (0.947)
RoA of Acquirer	-3.463 (6.694)	2.555** (0.985)	2.328** (1.124)	1.885 (1.501)
Market share of Acquirer x Relative Value	18.15 (12.14)	4.300** (2.077)	6.546*** (2.370)	5.974* (3.167)
Market share of Target x Relative Value	68.36 (116.4)	-5.984 (11.53)	-5.379 (13.16)	-2.761 (17.58)
Relative value	-0.0264 (0.0991)	0.0689*** (0.0163)	0.0390** (0.0186)	0.0462* (0.0248)
Toehold	0.0629 (0.0642)	0.0152 (0.0108)	0.00371 (0.0124)	0.0157 (0.0165)
Acquirer termination fees dummy	-0.00695 (0.0729)	-0.00292 (0.0126)	-0.00511 (0.0143)	-0.00793 (0.0192)
Target termination fees dummy	-0.0812 (0.0753)	-0.00374 (0.0130)	-0.00230 (0.0149)	-0.0160 (0.0199)
Number of bidders	0.146 (0.0963)	0.00178 (0.0167)	-0.0114 (0.0191)	-0.0325 (0.0255)
Collar dummy	0.0398 (0.0709)	-0.00838 (0.0119)	-0.00203 (0.0136)	-0.00890 (0.0182)
Poison pill dummy	-0.0153 (0.148)	0.0223 (0.0234)	-0.00294 (0.0267)	0.0128 (0.0357)
Payment method	-0.0121 (0.0266)	-0.00445 (0.00450)	-0.00357 (0.00514)	0.00319 (0.00686)
Target Leverage	0.00158 (0.00316)	0.000303 (0.000523)	-0.000253 (0.000597)	0.000337 (0.000798)
Constant	1.313***	-0.0144	0.0217	0.0421
Observations	(0.149)	(0.0252)	(0.0287)	(0.0384)
R-squared	0.145	0.289	0.269	0.242

Table 8. Cross sectional determinants for premiums and abnormal dollar division gains in horizontal deals in the software sector

Toehold measures the percentage of toehold ownership by the acquirer prior to the announcement date. Relative value is the transaction value divided by the market capitalization of the acquirer. Payment method tracks whether the acquisition was settled in cash only, cash & stock or only stock. Poison pill dummy reflects whether the company has takeover defenses or not. Termination fees dummy reflect whether there were any termination fees involved in the deal. Tender offer dummy tracks whether there was a tender offer. Collar dummy reflects whether there was a collar agreement involved in the deal. The regressions involve time fixed effects. Standard errors in parentheses. Asterisks indicate significance at 10%, 5%, 1% level.

	(2) Premiums	(1) \$RCAR (-2,+2)	(2) \$RCAR (-5,+5)	(3) \$RCAR (-10,+10)
Market share of Acquirer	-6.505 (8.018)	-1.411*** (0.439)	-0.712 (0.492)	-1.328** (0.609)
Market share of Target	1.425 (6.634)	0.0358 (0.343)	0.466 (0.384)	-0.118 (0.475)
RoA of Target	-1.054 (0.294)	0.0250 (0.0161)	0.0158 (0.0181)	0.0448** (0.0224)
RoA of Acquirer	0.782 (0.982)	0.0103 (0.0439)	-0.0614 (0.0492)	-0.0891 (0.0609)
Market share of Acquirer x Relative Value	36.10 (45.33)	2.009 (2.471)	0.170 (2.771)	0.135 (3.431)
Market share of Target x Relative Value	-16.40 (89.47)	1.198 (4.610)	-5.512 (5.169)	0.577 (6.400)
Relative value	-0.296 (0.977)	-0.0290 (0.0500)	0.0103 (0.0561)	-0.0475 (0.0694)
Acquirer termination fees dummy	0.0690 (0.495)	-0.0143 (0.0259)	-0.00377 (0.0291)	0.00689 (0.0360)
Target termination fees dummy	-0.782 (0.520)	0.0166 (0.0283)	0.0385 (0.0318)	0.101** (0.0393)
Tender Offer dummy	-0.396 (0.513)	0.0179 (0.0281)	-0.0572* (0.0315)	-0.0795** (0.0390)
Number of bidders	0.420 (0.966)	-0.0655 (0.0524)	0.0299 (0.0588)	-0.0105 (0.0728)
Collar dummy	0.564 (0.808)	-0.00987 (0.0442)	-0.00755 (0.0496)	0.0917 (0.0614)
Poison pill dummy	0.0906 (0.731)	0.0202 (0.0398)	0.0752* (0.0447)	0.112** (0.0553)
Payment method	0.0595 (0.182)	-0.0223** (0.00997)	-0.00839 (0.0112)	0.00463 (0.0138)
Constant	1.878 (1.192)	0.161** (0.0649)	0.0227 (0.0728)	0.0289 (0.0901)
Observations	91	92	92	92
R-squared	0.416	0.408	0.419	0.473

Table 9. Cross sectional determinants for premiums and abnormal dollar division gains in horizontal deals in the oil, mining & utilities

Toehold measures the percentage of toehold ownership by the acquirer prior to the announcement date. Relative value is the transaction value divided by the market capitalization of the acquirer. Payment method tracks whether the acquisition was settled in cash only, cash & stock or only stock. Poison pill dummy reflects whether the company has takeover defenses or not. Termination fees dummy reflect whether there were any termination fees involved in the deal. Tender offer dummy tracks whether there was a tender offer. Collar dummy reflects whether there was a collar agreement involved in the deal. The regressions involve time fixed effects. Standard errors in parentheses. Asterisks indicate significance at 10%, 5%, 1% level.

	(1) Premiums	(2) \$RCAR (-2,+2)	(3) \$RCAR (-5,+5)	(4) \$RCAR (-10,+10)
Market share of Acquirer	3.959 (3.720)	-0.184 (0.473)	0.128 (0.535)	0.105 (0.757)
Market share of Target	-1.513 (12.51)	1.762 (1.591)	0.183 (1.800)	1.403 (2.546)
RoA of Target	-0.771 (1.138)	-0.229 (0.145)	-0.120 (0.164)	-0.215 (0.231)
RoA of Acquirer	-0.889 (2.043)	0.591** (0.260)	0.698** (0.294)	0.726* (0.416)
Market share of Acquirer x Relative Value	14.58 (20.77)	-0.225 (2.641)	-0.585 (2.988)	-0.103 (4.227)
Market share of Target x Relative Value	-23.08 (17.03)	-3.030 (2.165)	-0.835 (2.450)	-1.549 (3.465)
Relative value	0.533*** (0.171)	0.0493** (0.0218)	0.0232 (0.0246)	0.0116 (0.0348)
Toehold	-0.0737*** (0.0207)	0.000995 (0.00263)	0.00250 (0.00298)	0.00318 (0.00421)
Acquirer termination fees dummy	-0.143 (0.164)	0.0116 (0.0208)	-0.00701 (0.0236)	-0.00687 (0.0333)
Target termination fees dummy	0.661** (0.279)	-0.000331 (0.0355)	-0.00909 (0.0402)	-0.0156 (0.0568)
Tender Offer dummy	0.350 (0.366)	0.0644 (0.0466)	0.0389 (0.0527)	0.0368 (0.0745)
Number of bidders	-0.625 (0.388)	0.0222 (0.0493)	0.0298 (0.0558)	0.0121 (0.0790)
Collar dummy	-0.106 (0.338)	-0.0309 (0.0430)	-0.0861* (0.0486)	-0.0737 (0.0688)
Poison pill dummy	0.0901 (0.426)	-0.0914 (0.0541)	-0.130** (0.0613)	-0.174* (0.0867)
Payment method	-0.124 (0.0967)	-0.00549 (0.0123)	-0.00217 (0.0139)	0.0176 (0.0197)
Constant	1.697*** (0.486)	-0.0233 (0.0619)	-0.00867 (0.0700)	-0.00930 (0.0990)
Observations	70	71	71	71
R-squared	0.601	0.654	0.605	0.467

Table 10. Cross sectional determinants for premiums and abnormal dollar division gains in horizontal deals in the healthcare sector

Toehold measures the percentage of toehold ownership by the acquirer prior to the announcement date. Relative value is the transaction value divided by the market capitalization of the acquirer. Payment method tracks whether the acquisition was settled in cash only, cash & stock or only stock. Poison pill dummy reflects whether the company has takeover defenses or not. Termination fees dummy reflect whether there were any termination fees involved in the deal. Tender offer dummy tracks whether there was a tender offer. Collar dummy reflects whether there was a collar agreement involved in the deal. The regressions involve time fixed effects. Standard errors in parentheses. Asterisks indicate significance at 10%, 5%, 1% level.

	(2) Premiums	(1) \$RCAR (-2,+2)	(2) \$RCAR (-5,+5)	(3) \$RCAR (-10,+10)
Market share of Acquirer	2.252 (1.718)	-0.0587 (0.192)	-0.313 (0.253)	-0.182 (0.302)
Market share of Target	4.764 (9.944)	0.0127 (1.110)	0.111 (1.462)	1.623 (1.749)
RoA of Target	-0.409 (0.168)	0.00363 (0.0187)	0.0195 (0.0247)	0.0629** (0.0295)
RoA of Acquirer	0.602 (0.367)	-0.0404 (0.0410)	0.0141 (0.0540)	-0.0199 (0.0646)
Market share of Acquirer x Relative Value	1.909 (5.807)	-0.229 (0.648)	0.692 (0.854)	1.508 (1.022)
Market share of Target x Relative Value	-21.54 (18.42)	-0.599 (2.055)	-1.574 (2.708)	-4.942 (3.240)
Relative value	0.750*** (0.240)	0.0481* (0.0267)	0.0159 (0.0353)	0.0565 (0.0422)
Toehold	-0.00922 (0.0168)	-0.00160 (0.00188)	-0.00382 (0.00248)	-0.00503* (0.00296)
Acquirer termination fees dummy	0.139 (0.194)	0.0420* (0.0217)	0.0468 (0.0286)	0.0227 (0.0342)
Target termination fees dummy	-0.265 (0.247)	0.0127 (0.0275)	0.00919 (0.0363)	0.0414 (0.0434)
Tender Offer dummy	0.418* (0.218)	0.0451* (0.0244)	0.0114 (0.0321)	0.0283 (0.0384)
Number of bidders	-0.228 (0.265)	0.00284 (0.0295)	-0.00500 (0.0389)	-0.0116 (0.0466)
Collar dummy	-0.0287 (0.194)	0.00394 (0.0216)	-0.0263 (0.0285)	-0.0541 (0.0341)
Poison pill dummy	-0.130 (0.221)	-0.0109 (0.0246)	0.00306 (0.0325)	0.000240 (0.0388)
Payment method	-0.0293 (0.0817)	0.00276 (0.00912)	-0.00244 (0.0120)	-0.0106 (0.0144)
Constant	1.723*** (0.456)	-0.000336 (0.0509)	0.0559 (0.0671)	0.0501 (0.0803)
Observations	84	84	84	84
R-squared	0.429	0.457	0.330	0.453

Table 10. Cross sectional determinants for premiums and abnormal dollar division gains in horizontal deals in the electronics manufacturing

Toehold measures the percentage of toehold ownership by the acquirer prior to the announcement date. Relative value is the transaction value divided by the market capitalization of the acquirer. Payment method tracks whether the acquisition was settled in cash only, cash & stock or only stock. Poison pill dummy reflects whether the company has takeover defenses or not. Termination fees dummy reflect whether there were any termination fees involved in the deal. Tender offer dummy tracks whether there was a tender offer. Collar dummy reflects whether there was a collar agreement involved in the deal. The regressions involve time fixed effects. Standard errors in parentheses. Asterisks indicate significance at 10%, 5%, 1% level.

	(1) Premiums	(2) \$RCAR (-2,+2)	(3) \$RCAR (-5,+5)	(4) \$RCAR (-10,+10)
Market share of Acquirer	-0.860 (0.619)	-0.0263 (0.0938)	0.0124 (0.150)	-0.0192 (0.200)
Market share of Target	1.899 (5.939)	1.687* (0.905)	4.090*** (1.445)	5.534*** (1.926)
RoA of Target	0.331* (0.185)	0.0595** (0.0280)	0.0677 (0.0446)	0.139** (0.0595)
RoA of Acquirer	0.188 (0.301)	-0.0341 (0.0454)	-0.0393 (0.0724)	-0.189* (0.0965)
Market share of Acquirer x Relative Value	-3.384 (4.972)	-0.843 (0.754)	-0.745 (1.203)	-0.582 (1.604)
Market share of Target x Relative Value	-0.336 (11.53)	-2.282 (1.757)	-6.559** (2.805)	-9.930*** (3.739)
Relative value	-0.196 (0.242)	0.0718** (0.0347)	0.0692 (0.0553)	0.0759 (0.0738)
Toehold	-0.0307 (0.0258)	-0.00598 (0.00392)	-0.00486 (0.00626)	-0.00492 (0.00835)
Acquirer termination fees dummy	-0.0310 (0.143)	0.0113 (0.0215)	-0.00991 (0.0343)	0.00782 (0.0458)
Target termination fees dummy	0.445** (0.172)	0.0161 (0.0249)	0.0654 (0.0397)	0.0416 (0.0530)
Tender Offer dummy	-0.114 (0.162)	0.0289 (0.0246)	0.0398 (0.0393)	0.0342 (0.0524)
Number of bidders	1.024*** (0.346)	-0.0304 (0.0521)	0.0150 (0.0832)	0.0424 (0.111)
Collar dummy	-0.269 (0.198)	-0.00830 (0.0301)	0.0150 (0.0481)	0.0236 (0.0641)
Poison pill dummy	0.182 (0.260)	-0.0220 (0.0359)	-0.0220 (0.0572)	-0.0168 (0.0763)
Payment method	-0.0529 (0.0535)	-0.0184** (0.00801)	-0.0395*** (0.0128)	-0.0345** (0.0170)
Constant	0.333 (0.426)	0.0733 (0.0636)	0.00530 (0.102)	-0.00815 (0.135)
Observations	91	93	93	93
R-squared	0.473	0.446	0.399	0.357

Table 12. Payment method effects on premiums and division of dollar abnormal returns in non-horizontal mergers

Payment elasticity takes the value of 1 if the deal is settled in cash, 0.5 if the deal is settled in stock with a collar agreement and 0 if the deal is settled in stock without a collar agreement. The sample includes deals either settled in cash only or stock only. Industry interdependency variables are constructed according to Ahern (2009). Toehold measures the percentage of toehold ownership by the acquirer prior to the announcement date. Relative value is the transaction value divided by the market capitalization of the acquirer. Payment method tracks whether the acquisition was settled in cash only, cash & stock or only stock. Poison pill dummy reflects whether the company has takeover defenses or not. Termination fees dummy reflect whether there were any termination fees involved in the deal. Tender offer dummy tracks whether there was a tender offer. The regressions involve time and industry fixed effects. Standard errors in parentheses. Asterisks indicate significance at 10%, 5%, 1% level.

	(2) Premiums	(1) \$RCAR (-2,+2)	(2) \$RCAR (-5,+5)	(3) \$RCAR (-10,+10)
Payment elasticity	0.0310 (0.0748)	-0.0184* (0.0100)	-0.0181 (0.0117)	-0.0367*** (0.0132)
Market share of Acquirer	-0.0423 (0.103)	-0.0100 (0.00849)	-0.000224 (0.0132)	-0.0404* (0.0216)
Market share of Target	-0.281 (0.173)	-0.0225 (0.0229)	-0.0400 (0.0344)	-0.0391 (0.0494)
Target dependent on acquirer as key customer	0.0677 (0.310)	0.0173 (0.0860)	0.0435 (0.0803)	0.171* (0.0961)
Target dependent on acquirer as key supplier	-0.339 (0.533)	0.0736 (0.0530)	0.0361 (0.0732)	0.104 (0.112)
Acquirer dependent on target as key customer	-0.408 (1.348)	-0.276* (0.161)	-0.0988 (0.181)	-0.186 (0.236)
Acquirer dependent on target as key supplier	0.569 (0.475)	0.0875 (0.102)	0.0767 (0.141)	-0.221* (0.125)
Toehold	-0.0427 (0.0703)	-0.000716 (0.000796)	-0.00132 (0.00191)	-0.00107 (0.00241)
Relative value	-0.0188 (0.0115)	0.0638*** (0.0178)	0.0600** (0.0263)	0.0610** (0.0277)
Acquirer termination fees dummy	0.233 (0.175)	-0.0104 (0.0106)	-0.0118 (0.0163)	-0.0199 (0.0146)
Target termination fees dummy	-0.00890 (0.115)	0.0137 (0.00906)	0.0171 (0.0113)	0.0293* (0.0168)
Tender offer dummy	0.0878 (0.0991)	0.00468 (0.00644)	0.0170* (0.00912)	0.0145 (0.0111)
Number of bidders	0.255** (0.125)	-0.00201 (0.0123)	-0.00831 (0.0362)	-0.00644 (0.0429)
Poison pill dummy	-0.0435 (0.0589)	-0.00615 (0.00631)	-0.0175 (0.0116)	-0.0438 (0.0276)
Constant	1.394*** (0.212)	0.0211 (0.0214)	0.0322 (0.0401)	0.0876* (0.0461)
Observations	424	432	432	432
R-squared	0.157	0.250	0.202	0.207

Table 13. Payment method effects on targets' and acquirers' cumulative abnormal returns in non-horizontal mergers

Payment elasticity takes the value of 1 if the deal is settled in cash, 0.5 if the deal is settled in stock with a collar agreement and 0 if the deal is settled in stock without a collar agreement. The sample includes deals either settled in cash only or stock only. Industry interdependency variables are constructed according to Ahern (2009). Toehold measures the percentage of toehold ownership by the acquirer prior to the announcement date. Relative value is the transaction value divided by the market capitalization of the acquirer. Payment method tracks whether the acquisition was settled in cash only, cash & stock or only stock. Poison pill dummy reflects whether the company has takeover defenses or not. Termination fees dummy reflect whether there were any termination fees involved in the deal. Tender offer dummy tracks whether there was a tender offer. The regressions involve time and industry fixed effects. Standard errors in parentheses. Asterisks indicate significance at 10%, 5%, 1% level.

	(1) Target CAR (-2,+2)	(2) Target CAR (-5,+5)	(3) Target CAR (-10,+10)	(4) Acquirer CAR (-2,+2)	(5) Acquirer CAR (-5,+5)	(6) Acquirer CAR (-10,+10)
Payment elasticity	0.128*** (0.0400)	0.133*** (0.0461)	0.121** (0.0553)	0.0390*** (0.0136)	0.0402** (0.0163)	0.0626*** (0.0211)
Market share of Acquirer	0.0332 (0.0508)	0.0451 (0.0529)	0.0667 (0.0648)	0.0121 (0.0118)	0.00306 (0.0202)	0.0556* (0.0294)
Market share of Target	-0.0743 (0.0798)	-0.0600 (0.0869)	-0.0572 (0.0867)	0.0371 (0.0228)	0.0444 (0.0365)	0.0291 (0.0553)
Target dependent on acquirer as key customer	0.118 (0.199)	-0.0301 (0.217)	-0.0748 (0.217)	-0.0773 (0.113)	-0.116 (0.113)	-0.188 (0.175)
Target dependent on acquirer as key supplier	-0.0140 (0.225)	-0.0518 (0.281)	-0.224 (0.397)	-0.141* (0.0715)	0.328 (0.295)	0.424 (0.392)
Acquirer dependent on target as key customer	-0.297 (0.545)	-0.413 (0.646)	-0.0464 (0.887)	0.553** (0.224)	-0.0405 (0.187)	0.324 (0.197)
Acquirer dependent on target as key supplier	0.181 (0.333)	0.352 (0.314)	0.289 (0.360)	-0.0624 (0.143)	-0.123 (0.104)	-0.277** (0.118)
Toehold	-0.00341 (0.00392)	-0.00603 (0.00414)	-0.00468 (0.00338)	0.00103 (0.000783)	0.00159 (0.00176)	0.00161 (0.00238)
Relative value	-0.0968** (0.0384)	-0.100** (0.0442)	-0.106*** (0.0380)	-0.00463 (0.0194)	0.0110 (0.0400)	0.0369 (0.0542)
Acquirer termination fees dummy	-0.0324 (0.0390)	-0.0465 (0.0277)	-0.0415* (0.0225)	0.00748 (0.0109)	0.00768 (0.0238)	0.0135 (0.0238)
Target termination fees dummy	0.0149 (0.0551)	-0.00658 (0.0594)	-0.0148 (0.0516)	-0.0179* (0.0103)	-0.0288* (0.0159)	-0.0514** (0.0216)
Tender offer dummy	-0.0357 (0.0417)	-0.0196 (0.0437)	-0.00751 (0.0494)	-0.00786 (0.00661)	-0.0254** (0.0124)	-0.0253 (0.0158)
Number of bidders	-0.0322 (0.0875)	0.0625 (0.125)	0.0964 (0.122)	-0.0152 (0.0174)	-0.00413 (0.0472)	-0.00115 (0.0529)
Poison pill dummy	-0.0587 (0.0467)	-0.0600 (0.0654)	-0.0519 (0.0817)	0.00994 (0.0135)	-0.0467* (0.0276)	0.0114 (0.0367)
Constant	0.361*** (0.0821)	0.304** (0.131)	0.274** (0.125)	-0.00456 (0.0274)	-0.0115 (0.0515)	-0.0716 (0.0587)
Observations	432	432	432	432	432	432
R-squared	0.193	0.209	0.192	0.177	0.123	0.147

Table 14. Payment method effects on premiums and division of dollar abnormal returns in horizontal mergers

Payment elasticity takes the value of 1 if the deal is settled in cash, 0.5 if the deal is settled in stock with a collar agreement and 0 if the deal is settled in stock without a collar agreement. The sample includes deals either settled in cash only or stock only. Industry interdependency variables are constructed according to Ahern (2009). Toehold measures the percentage of toehold ownership by the acquirer prior to the announcement date. Relative value is the transaction value divided by the market capitalization of the acquirer. Payment method tracks whether the acquisition was settled in cash only, cash & stock or only stock. Poison pill dummy reflects whether the company has takeover defenses or not. Termination fees dummy reflect whether there were any termination fees involved in the deal. Tender offer dummy tracks whether there was a tender offer. The regressions involve time and industry fixed effects. Standard errors in parentheses. Asterisks indicate significance at 10%, 5%, 1% level.

	(2) Premiums	(1) \$RCAR (-2,+2)	(2) \$RCAR (-5,+5)	(3) \$RCAR (-10,+10)
Payment elasticity	-0.116 (0.191)	-0.0244* (0.0127)	-0.0388*** (0.0108)	-0.0334** (0.0149)
Market share of Acquirer	-0.343 (0.418)	-0.0873*** (0.0294)	0.161** (0.0681)	0.112** (0.0433)
Market share of Target	0.467 (0.661)	0.0932** (0.0422)	-0.123*** (0.0397)	-0.183*** (0.0652)
Market share of Acquirer x Relative Value	-0.717 (1.927)	0.176 (0.146)	0.295 (0.207)	0.603* (0.325)
Market share of Target x Relative Value	-0.890 (1.358)	-0.619*** (0.0966)	-0.859*** (0.204)	-0.750*** (0.250)
Relative value	-0.138 (0.123)	0.0304* (0.0157)	0.0233* (0.0124)	0.0300* (0.0154)
Toehold	-0.0322** (0.0130)	-0.000702 (0.000442)	-0.00137* (0.000687)	-0.00216** (0.000806)
Acquirer termination fees dummy	0.0203 (0.0568)	0.00834 (0.00951)	0.00544 (0.0137)	0.00385 (0.0172)
Target termination fees dummy	-0.113 (0.123)	0.00763 (0.00843)	0.0210 (0.0172)	0.0183 (0.0219)
Tender offer dummy	0.339 (0.525)	0.00129 (0.00855)	-0.0151 (0.0129)	-0.0247 (0.0213)
Number of bidders	0.00685 (0.135)	0.00123 (0.00882)	0.00980 (0.0110)	-0.00158 (0.0145)
Poison pill dummy	0.278 (0.270)	0.00768 (0.0163)	0.0135 (0.0192)	0.0159 (0.0199)
Constant	1.389*** (0.140)	0.0211 (0.0155)	0.0110 (0.0234)	0.0251 (0.0256)
Observations	574	586	586	586
R-squared	0.116	0.204	0.201	0.168

Table 15. Payment method effects on targets' and acquirers' cumulative abnormal returns in horizontal mergers

Payment elasticity takes the value of 1 if the deal is settled in cash, 0.5 if the deal is settled in stock with a collar agreement and 0 if the deal is settled in stock without a collar agreement. The sample includes deals either settled in cash only or stock only. Industry interdependency variables are constructed according to Ahern (2009). Toehold measures the percentage of toehold ownership by the acquirer prior to the announcement date. Relative value is the transaction value divided by the market capitalization of the acquirer. Payment method tracks whether the acquisition was settled in cash only, cash & stock or only stock. Poison pill dummy reflects whether the company has takeover defenses or not. Termination fees dummy reflect whether there were any termination fees involved in the deal. Tender offer dummy tracks whether there was a tender offer. The regressions involve time and industry fixed effects. Standard errors in parentheses. Asterisks indicate significance at 10%, 5%, 1% level.

	(1) Target CAR (-2,+2)	(2) Target CAR (-5,+5)	(3) Target CAR (-10,+10)	(4) Acquirer CAR (-2,+2)	(5) Acquirer CAR (-5,+5)	(6) Acquirer CAR (-10,+10)
Payment elasticity	0.0426 (0.0258)	0.0514 (0.0392)	0.0628 (0.0637)	0.0417** (0.0161)	0.0539** (0.0217)	0.0538 (0.0343)
Market share of Acquirer	0.198 (0.230)	0.234 (0.261)	-0.300 (0.249)	-0.0804 (0.0571)	-0.0453 (0.123)	-0.00396 (0.179)
Market share of Target	0.149 (0.134)	0.108 (0.154)	-0.0516 (0.279)	0.0401 (0.0343)	0.0797* (0.0443)	0.183* (0.0961)
Market share of Acquirer x Relative Value	-0.463 (0.347)	-0.598 (0.455)	0.731 (0.905)	0.0169 (0.196)	-0.173 (0.327)	-0.454 (0.444)
Market share of Target x Relative Value	-0.970 (0.579)	-0.984 (0.721)	0.254 (1.022)	0.830** (0.335)	0.767 (0.593)	0.740 (0.683)
Relative value	-0.00449* (0.00233)	-0.00454 (0.00287)	-0.00542* (0.00278)	0.000642* (0.000360)	0.00110* (0.000596)	0.00239*** (0.000806)
Toehold	-0.0516*** (0.0183)	-0.0633** (0.0251)	0.0114 (0.0805)	-0.0109 (0.0100)	0.00932 (0.0172)	0.00764 (0.0219)
Acquirer termination fees dummy	-0.0407 (0.0280)	-0.0471 (0.0298)	-0.116 (0.0790)	-0.00876 (0.0161)	0.00264 (0.0218)	0.0121 (0.0204)
Target termination fees dummy	0.00408 (0.0305)	0.0168 (0.0345)	0.0165 (0.0481)	-0.00647 (0.0112)	-0.0143 (0.0199)	-0.00376 (0.0216)
Tender offer dummy	0.0487 (0.0411)	0.0357 (0.0483)	-0.0335 (0.112)	0.00542 (0.0131)	0.0253 (0.0205)	0.0244 (0.0300)
Number of bidders	-0.0103 (0.0357)	0.00833 (0.0465)	-0.0762 (0.0897)	-0.0209 (0.0194)	-0.0118 (0.0279)	-0.0273 (0.0423)
Poison pill dummy	0.00561 (0.0546)	-0.0342 (0.0562)	-0.0896 (0.0883)	-0.00113 (0.0181)	-0.0181 (0.0245)	-0.0149 (0.0278)
Constant	0.176*** (0.0509)	0.139** (0.0566)	0.215** (0.0566)	0.0162 (0.0280)	-0.00345 (0.0401)	-0.00203 (0.0496)
Observations	586	586	586	586	586	586
R-squared	0.222	0.218	0.218	0.193	0.167	0.142