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# Three Essays on Corporate Takeovers

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## **Abstract**

Within the research area of corporate takeover, understanding the drivers of the choice of payment method is significantly important. This is accrued to the fact that the choice of payment method can affect various aspects of the transaction including shareholders' value. The choice of payment method in takeovers is mainly a function of both the asymmetric information between the acquirer and the target and the acquirer's financial capability. This dissertation aims at advancing our knowledge with respect to the effects that different sources of information can have on the choice of payment method in takeovers. More specifically, I first develop two related studies examining the extent to which two important sources of information, firms' annual reports and firms' corporate social responsibility performance (CSR) ratings, influence the choice of payment method in takeovers. The first study aims to capture the effect of a more general and publicly available information and the second study aims to shed light on how a more specific and difficult to comprehend set of information affects the choice of payment method in takeovers. Furthermore, motivated by the fact that the choice of payment method has a material impact on the performance of the takeovers and therefore shareholders' value, I develop the third paper investigating the potential influence that the acquirer's board of directors and institutional ownership as monitoring mechanisms can have on the choice of payment method in takeovers.

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## **Introduction**

Takeovers represent one of the most important and informationally demanding forms of investment decisions made by a firm. In addition to regulatory challenges, an acquirer needs to accurately value the target, estimate the expected synergy, and decide the terms of the transaction including the choice of payment method. Most of these factors depend upon the amount and the quality of information that the acquirer has at its disposal regarding the target firm. Within the research area of corporate takeover, factors affecting the choice of payment method through the mechanisms of information asymmetry have long been and still are in the spotlight for empirical analysis (Karampatsas, Petmezas, & Travlos, 2014; Luypaert & Van Caneghem, 2014, 2017; Raman, Shivakumar, & Tamayo, 2013; Renneboog & Zhao, 2014; Reuer & Ragozzino, 2008; Reuer, Shenkar, & Ragozzino, 2004). This is accrued to the fact that the choice of payment method can affect various aspects of the transaction including shareholders' value.

Much of the literature in corporate takeover devoted to the performance effect of the choice of payment method have shown that cash offers, on average, tend to create more value for acquirer compared with stock swaps, as is reflected in both short-term announcement and long-term post-acquisition returns (Amihud, Lev, & Travlos, 1990; Brown & Ryngaert, 1991; Fu, Lin, & Officer, 2013; Linn & Switzer, 2001; Loughran & Vijh, 1997; Martynova & Renneboog, 2008; Travlos, 1987; Wansley, Lane, & Yang, 1987). In addition, cash offers tend to preempt rival bidders, lower the probability of rejection by target management, and eliminate any unnecessary delay in the process of the transaction (Berkovitch & Narayanan, 1990; Fishman, 1989).

Since acquirer shareholders' wealth is at least partially a function of the strategic choice of payment method in takeovers, corporate governance mechanisms at the acquirer level are expected to intervene in such a decision. Indeed, Martin (1996) argues that, given the negative association between stock swaps and takeover performance, outside monitors should encourage acquirers to opt for cash offers. The author finds that the acquirer institutional ownership reduces the probability of stock swaps as the choice of payment method in takeovers. In a similar spirit, Karampatsas et al., (2014) report a positive association between acquirer block holders and the probability of cash offers in takeovers. Daher & Ismail, (2018) document that acquirers with debt covenants tend to use a lower fraction of equity as the medium of exchange in takeovers.

Given this background and motivated by several pending questions within the field of corporate takeover, I first develop two related studies examining the extent to which two important sources

of information, firms' annual reports and firms' corporate social responsibility performance (CSR) ratings, influence the choice of payment method in takeovers. The first study aims to capture the effect of a more general and publicly available information and the second study aims to shed light on how a more specific and difficult to comprehend set of information affects the choice of payment method in takeovers. Acquirers usually base their initial assessments of the potential benefits associated with acquiring a firm on the publicly available information (Skaife & Wangerin, 2013). However, to the best of my knowledge, how the quality of annual report and the firm's CSR performance ratings relate to various aspects of the takeover transaction remains largely unanswered and warrants the necessity for further studies.

Furthermore, motivated by the fact that the choice of payment method has a material impact on the performance of the takeovers and therefore shareholders' value, I develop the third paper investigating the potential influence that the acquirer board of directors and institutional ownership as monitoring mechanisms can have on the choice of payment method in takeovers.

In sum, I developed three papers to answer the following questions:

- 1. Do textual properties of the target firm's annual report have any effect on takeover outcomes?*
- 2. Do CSR performance ratings of acquirer and target firms affect the choice of payment method in takeovers?*
- 3. Do board of directors and institutional ownership at the acquirer level influence the choice of payment method in takeovers?*

The first study examines how the vague language in the target firm's annual report relates to the choice of payment method and acquirer returns around the takeover announcement. Firm's annual reports are one of the important means through which corporates convey information to the market participants and are not only relevant for individual investors, but also for more sophisticated and experienced market participants such as financial analysts, banks, and auditors (Ertugrul, Lei, Qiu, & Wan, 2017; Lawrence, 2013; Lehavy, Li, & Merkley, 2011; Loughran & McDonald, 2014; You & Zhang, 2009). Several studies highlight the use of vague language in firms' annual reports and show how it negatively influences the information environment and thus fosters greater uncertainty with respect to the firm valuation. In the context of corporate takeover, the information uncertainty stemmed from textual properties of annual reports can influence various aspects of the deal including the choice of payment method and the acquirer announcement returns. Following previous studies (Ertugrul et al., 2017; Loughran & McDonald, 2011), I define the vague language

as the percentage of uncertainty and weak modal words in the firm's annual report. The results of the study show that acquirers are more likely to opt for cash as the choice of payment method in deals involving targets with a relatively higher percentage of uncertainty and weak modal words in their annual reports. Further, I document that vague language in the target firm's annual report leads to wealth loss for acquirer shareholders around the announcement of the takeover transaction. These results suggest that although the acquirer may mitigate part of the information asymmetry regarding the value of the target during the due diligence process and strategically exploit it by using cash as the choice of payment method, it seems that the market does not acknowledge it.

The key contribution of this study is establishing the fact that not only the numeric dimension of financial reports, which is the main focus of the prior studies, affects the takeover outcomes, but also the textual properties of such reports are of significant importance. Further, the study shows that an increase in the target firm's annual report tone ambiguity, and therefore reduced valuation-relevant information available for the acquirer, explains at least part of the wealth loss realized, on average, by acquirer shareholders.

In the second study, I delve deeper and explore how a specific set of information, CSR performance ratings, affects the choice of payment method in takeovers. Acquirers increasingly consider the CSR performance of target firms in their decision making (Menz, 2010). Ghosal & Sokol, (2013) hold that acquirers' failure to detect problems related to social and environmental issues can lead to a negative post-acquisition outcome for acquirers. However, given the lack of a specific standard for firms in reporting their CSR performances, even after long due diligence, the acquirer may not be able to discover if the target firm behaves irresponsibly in a given dimension of its CSR. This could, in turn, increase the litigation risks faced by the acquirer in the post-acquisition period.

One example is the case of the Bayer acquisition of Monsanto. In September 2016 Bayer, a German multinational pharmaceutical and life sciences firm announced its intent to acquire Monsanto an American agrochemical and agricultural biotechnology firm. Bayer paid \$128 in cash for each share of Monsanto (44% premium) with a total deal value of \$66 billion. The transaction completed approximately two years later in June 2018. It looked like a winner transaction for Bayer at the beginning, however, now it is an example of a disaster. After the completion of the deal, Bayer faced Roundup (Monsanto's product) cancer lawsuits by more than 13,000 plaintiffs. Bayer terribly underestimated the litigation risks associated with Monsanto and since the deal, Bayer's share price dropped by more than 40%. This is a clear example showing that even after long due



diligence, the acquirer is not able to discover fully the litigation risks associated with a potential target. This, in turn, would potentially make the acquirers act differently when it comes to the decision regarding the choice of payment method and they would prefer using a higher fraction of equity as the choice of payment method in order to share the risk with the target's shareholders.

The literature has reported that firm's high CSR performance is associated with lower information asymmetry (Benlemlih, 2017; Cheng, Ioannou, & Serafeim, 2014; Cui, Jo, & Na, 2018; Dhaliwal, Li, Tsang, & Yang, 2011; Wu & Shen, 2013) and better access to finance (Cheng et al., 2014; El Ghoul, Guedhami, Kwok, & Mishra, 2011; Ge & Liu, 2015; Oikonomou, Brooks, & Pavelin, 2014). I examine whether increased transparency and better access to finance induced by high CSR performance ratings are associated with the choice of payment method in takeovers. With regard to the target firm, the results suggest that the existence of CSR performance ratings is positively associated with the probability of cash offers, whereas I find a negative relationship with CSR concerns (low CSR performance) and no effect for CSR strengths (high CSR performance). On the acquirer side, the existence of CSR performance ratings and CSR strengths both increase the probability of cash offers, whereas CSR concerns have no impact. I infer that the existence of CSR performance ratings and their level, by reducing information asymmetry on both the acquirer and the target sides and enhancing financing capability on the acquirer side, affect the choice of payment method in takeovers.

The key contribution of this study is the fact that, differently from previous studies, I draw my attention to nonfinancial information and extend the literature by documenting that firms' CSR performance is an additional determinant of the method of payment in takeovers.

In the third paper, I examine whether the acquirer board of directors and institutional ownership have any influence on the choice of payment method in takeovers. Several studies document that better-quality governance by board are associated with lower cost of borrowing: independent directors (Anderson, Mansi, & Reeb, 2004; Bhojraj & Sengupta, 2003; Fields, Fraser, & Subrahmanyam, 2012), female on board (Fields et al., 2012), multiple directorship (Chakravarty & Rutherford, 2017; Huang, Lobo, Wang, & Zhou, 2018), and institutional ownership (Bhojraj & Sengupta, 2003). The reasons behind such association is that better quality governance reduces the agency costs, increases the integrity of accounting and financial reports and therefore reduces the information risk, and finally, higher quality governance mechanisms are associated with better firm performance and thus better access to and lower cost of borrowing (Graham, Li, & Qiu, 2008).

These findings suggest that in the context of corporate takeovers, better governance mechanisms at the acquirer level would lead to a higher probability of cash offers. In line with this notion, I document that board size is negatively and board independence, the fraction of female on board, multiple directorships, and institutional ownership positively associated with the likelihood of cash offers in takeovers. These findings are consistent with the argument that board of directors and institutional ownership, by exerting better quality monitoring, enhancing firm information environment, and inducing better access to capital, pave the way for acquirers to use cash as the method of payment and reap the benefits associated with such payment method.

The key contribution of this study is the fact that differently from previous studies, I focus on the internal corporate governance mechanism and establish that acquirer board of directors influence the choice of payment method and it can be considered as a back-door mechanism through which board of directors and institutional ownership increase shareholders' wealth.

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# Study 1: Target's Annual Report Tone Ambiguity and Takeover Outcomes

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## **Abstract**

This study examines how the tone ambiguity of the target firm's annual report relates to takeover decision and outcome. We define the tone ambiguity as the percentage of uncertainty and weak modal words in the firm's annual report. Using a sample of 691 US completed takeovers from 1995 to 2014, we show that acquirers are more likely to choose cash as the choice of payment method in deals involving targets with relatively higher percentage vague terms in their annual reports. Further, we document that tone ambiguity in the target firm's annual report leads to wealth loss for acquirer shareholders around the announcement of the takeover transaction. These results suggest that although the acquirer may mitigate part of the information asymmetry regarding the value of target during the due diligence process and strategically exploit it by using cash as the choice of payment method, it seems that the market does not acknowledge it.

**Keywords:** takeovers; method of payment; announcement return; annual report, tone ambiguity

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## **1. Introduction**

Takeovers are one of the most important and informationally demanding forms of investment decisions that a firm can make in its life. In addition to regulatory challenges, an acquirer needs to accurately value the target, estimate the expected synergy, and decide the terms of the transactions including the method of payment. These aspects of a takeover transaction and also acquirer returns around the announcement of the deal significantly depend upon the quality of information that the acquirer has at its disposal regarding the target firm. Several studies have examined how the quality of target firm accounting information affects various aspects of a takeover: deal premium and renegotiation/withdrawal of the deal (Skaife & Wangerin, 2013), takeover type, deal premium, and the choice of payment method (Raman, Shivakumar, & Tamayo, 2013), takeover type, speed of the transaction, and likelihood of deal completion (Marquardt & Zur, 2015), and acquirer and target announcement returns (McNichols & Stubben, 2015). Despite these notable studies, we still know little on how one of the important and publicly available sources of information, the firm's annual reports, affects takeovers. More specifically, a pending question to answer is how the textual properties of the target firm's annual report affect the takeover process and outcome.

Acquirers usually base their initial assessments of the potential benefit associated with acquiring a firm on the publicly available information (Skaife & Wangerin, 2013). One such publicly available source of information is the firm's annual reports. Skaife & Wangerin (2013) argue that when negotiating the terms of a deal, acquirers rely extensively on the target's financial report. These reports are one of the important means through which corporates convey information to market participants and are not only relevant for individual investors, but also for more sophisticated and experienced market participants like financial analysts, banks, and auditors (Ertugrul, Lei, Qiu, & Wan, 2017; Lawrence, 2013; Lehavy, Li, & Merkley, 2011; Loughran & McDonald, 2014; You & Zhang, 2009). Despite its importance and relevance, to the best of our knowledge, there is no academic evidence showing how the textual properties of these reports affect takeover deals. In this study, we address this issue and investigate how the tone ambiguity of the target's annual reports affects the acquisition outcome across two important dimensions: the choice of payment method and acquirer returns around the takeover announcement.

Several studies highlight the growing complexity of firms' annual reports and show that it negatively influences the information environment and thus fosters greater uncertainty concerning the firm valuation. In particular, the ambiguous tone in corporate disclosures is considered as a

source of information risk that makes it difficult for investors to comprehend the report. Loughran & McDonald (2011) develop lists of uncertainty words (e.g., uncertain, approximate, unclear, depend, indefinite, and contingency) and weak modal words (e.g., might, possibly, depend, could and approximate) specifically for firm's financial report. The authors find that the use of uncertain and weak modal terms in the annual report is negatively and significantly associated with the filing date excess returns and are positively and significantly associated with the stock returns volatility in the year after filing of the annual report. Loughran & McDonald (2013) investigate how the tone of information contained in the Form S-1 and effects the ability of investors to value an IPO. The authors find that a large amount of ambiguous text in the Form S-1 lead to higher first-day returns, absolute offer price revisions, and subsequent returns volatility. In a similar spirit, Ertugrul et al. (2017) argue that the tone ambiguity of the annual report can make it difficult even for sophisticated creditors such as banks to assess a firm's risk characteristics and its value properly. In line with this argument, the authors find that the higher percentage of uncertain and weak modal text in business disclosures increases bank loan spreads and the likelihood of security requirements. They further find that the frequency of uncertain and weak modal words also positively associated with the firm's future stock price crash risk. The authors argue that annual report tone ambiguity is related to a firm's information hoarding activities that increase its information risk. In sum, these results suggest that the ambiguous tone in corporate disclosures increases valuation uncertainty, which in the takeover context where such disclosures are integral input in the information set of the acquirer can potentially affect various aspects of the transaction.

We take a chronological approach and begin our analysis by first, examining how the relative tone ambiguity of the target firm's annual report affects the choice of payment method in takeovers. Uncertainty concerning the value of the target is likely to increase the misvaluation risk for the acquirer. One way for the acquirer to mitigate such risk is to opt for stock swaps as the method of payment (Eckbo, Giammarino, & Heinkel, 1990; Fishman, 1989; Hansen, 1987). This is driven by the fact that in stock swaps, the acquirer shares any mispricing risk with the target shareholders. On the contrary, however, (Luypaert & Van Caneghem, 2017) maintain that during an extensive due diligence process, acquirers of more opaque targets obtain information regarding the value of target that is not available for other market participants. This gap between acquirers as informed investors and other market participants as uninformed investors put the acquirers in a superior bargaining position. Acquirers can exploit this opportunity and offer cash to avoid sharing the potential gain from the acquisition with target shareholders. Given these inconclusive findings by

previous studies, we posit somewhat opposite conjectures with respect to the association between the target's annual report tone ambiguity and the choice of payment method in takeovers.

In the second test, we examine the association between the tone ambiguity of the target firm's annual report and acquirer abnormal returns around the announcement date of the takeover. Prior studies have shown that acquirer access to valuation-relevant information about the target firm is positively associated with the acquirer announcement returns. A better-quality information environment of the target firm is likely to lead the acquirer to discover less obvious forms of synergy and design high-synergy transactions. It further puts the acquirer in a safer position in terms of being subject to the winner's curse. In other words, the acquirer would be able to evaluate the target firm with more precision and therefore be less vulnerable to the overpayment risk (Dionne, La Haye, & Bergerès, 2015; X. Martin & Shalev, 2017; McNichols & Stubben, 2015; Uysal, Kedia, & Panchapagesan, 2008). In contrast, limited access to valuation-relevant information about the target makes acquirer less accurate in determining the value of target firm and future expected synergy, which in turn would reflect in lower announcement returns for the acquirer. In this regard, McNichols & Stubben (2015) find that takeovers in which the target value is uncertain are characterized by higher premium which leads to lower announcement returns for the acquirer. Therefore, we expect that the target firm's annual report tone ambiguity to be negatively associated with the acquirer returns around the takeover announcement date.

To examine our predictions, we use a sample of 691 US completed takeover transactions that took place between publicly held firms over the period of 1995 to 2014. Controlling for the various acquirer, target, and transaction-related variables, we find consistent results with the argument that acquirers gather valuable information regarding the value of an opaque target and strategically exploit it by using cash as the choice of payment method. More specifically, we show that the target firm's annual report tone ambiguity (measured by the percentage of uncertainty and weak modal words) has a positive and statistically significant effect on the likelihood that the acquirer use cash as the choice of payment method in takeovers. Further, although the acquirer may mitigate part of the information asymmetry regarding the value of target during the due diligence process, which in turn affects the takeover transaction terms such as the method of payment, it seems that the market does not acknowledge it. In other words, even if that information advantages that acquirer gains during due diligence matters for correctly estimating the expected synergy and value creation, it is not captured by the market participants. We document that vague language in the target firm's annual report has a negative and statistically significant influence on the acquirer's



abnormal returns around the announcement of the takeover transaction. These results hold under different specifications and are robust to controlling for various measures of readability.

This study contributes to the existing literature in the following ways. To the best of our knowledge, this is the first study to investigate how vague language in the target firm's annual report relates to the takeover outcomes. Raman et al. (2013) find that the target firm's accounting quality influences the takeover decision across three dimensions of takeover type, method of payment, and premium paid for the target. McNichols & Stubben (2015) document that acquisitions of opaque targets are characterized by higher premium which in turn leads to wealth loss for acquirer shareholders. Our study complements this literature on financial reporting quality, of which textual properties are a particular dimension. The results of the study reveal that not only the numeric dimension of financial reports, which is the main focus of the prior studies, affects the takeover outcomes, but also the textual properties of such reports are of significant importance.

Second, the vast majority of the literature agreed upon the fact that takeovers do not create value for acquirers' shareholders (Martynova & Renneboog, 2008; Moeller, Schlingemann, & Stulz, 2005; Renneboog & Zhao, 2014). Contributing to this literature, the current study sheds more light on the negative returns realized, on average, by acquirers at the takeover announcement date. More specifically, we document that an increase in the target firm's annual report tone ambiguity, and therefore reduced valuation-relevant information available for the acquirer, explains at least part of the variation in the wealth loss for acquirer shareholders.

Lastly, a growing body of the literature relates the textual properties of business disclosures to firm investment efficiency (Biddle, Hilary, & Verdi, 2009), analyst following and dispersion (Lehavy et al., 2011), stock returns volatility (Loughran & McDonald, 2011), individual investors investment decisions (Lawrence, 2013), IPO valuation (Loughran & McDonald, 2013), and cost of bank loan (Ertugrul et al., 2017). This study adds to this literature by establishing that textual properties of business disclosures are not only important for less-sophisticated individual investors, sophisticated investors, and experienced creditors, but also affect one of the most important investment decisions that a firm makes in its life, that is a corporate takeover.

The rest of the paper proceeds as follows. Section 2 reviews the relevant prior literature and develops the hypotheses. Section 3 describes the data sources and the main variables. Section 4 reports the results of the study. Section 5 concludes.

## **2. Literature Review and Hypotheses Development**

### **2.1. Choice of Payment Method in Takeovers**

An acquirer is usually up against the fundamental problem of information asymmetry when valuing a target. This information asymmetry gives rise to the concern of overpayment. The higher the information asymmetry regarding the value of a target, the higher would be the misvaluation risk that the acquirer faces. One way for the acquirer to mitigate such risk is to opt for stock swaps as the method of payment. This is because the value of stock swaps is contingent upon the ex-post performance of the combined firm (Eckbo et al., 1990; Fishman, 1989; Hansen, 1987). In other words, any losses or gains occurring after the acquisition would be shared between the acquirer and target shareholders. Several empirical findings provide support for this argument. For instance, Reuer, Shenkar, & Ragozzino (2004) document that acquirers in cross-border takeovers tend to use stock swaps when buying a target in high-tech or service industries. Raman et al. (2013) find that acquirers prefer stock as the medium of exchange when buying a target with a poor financial report. In a similar spirit, Reuer & Ragozzino (2008) find that target and acquirer prior alliances and targets' IPOs reduce the likelihood of stock swaps in takeovers. (Luypaert & Van Caneghem, 2014) share the same conclusion by showing that acquirers are less likely to use stock swaps when the target firms are audited by big N auditors.

However, there are some empirical findings to suggest that acquirers are more inclined to use cash as the method of payment when asymmetric information concerning the target value is high. Luypaert & Van Caneghem (2017) maintain that during an extensive due diligence process, acquirers of more opaque targets obtain information regarding the value of target that is not available for other market participants. This gap between acquirers as informed investors and other market participants as uninformed investors put the acquirers in a superior bargaining position. Acquirers can exploit this opportunity and offer cash as the method of payment to avoid sharing the potential gain from the acquisition with target shareholders. Chemmanur, Paeglis, & Simonyan (2009) maintain that when the target information asymmetry is high, the acquirer faces a trade-off between overpayment risk and a successful bid. The authors find that when the target firm's information asymmetry is higher, acquirers are more likely to choose cash offers as the method of payment and preempt rival bidders. Renneboog & Zhao (2014) find that the connection between acquirer and target through common directors leads to higher use of stock swaps. The authors attribute this result to the target's trust that is resulted from reduces information asymmetry.

We now consider the role of the target firm's annual report tone ambiguity in this setting. Acquirers usually base their initial assessments of the potential benefit associated with acquiring a firm on the publicly available information (Skaife & Wangerin, 2013). One such publicly available source of information is the firm's annual reports, tone ambiguity of which interferes with the effective communication of valuation-relevant information. This could potentially affect the acquirer's decision regarding the choice of payment method. Based upon the above-reviewed literature, an acquirer can choose stock as the method of payment and protect itself against any overpayment risk. However, if the acquirer can gather relevant information during the due diligence, then cash offers would be more likely given that the acquirer would want to take full advantage of the deal and not share it with the target shareholders. Based upon this mixed prediction, we posit the following two competing hypotheses:

***Hypothesis 1a.** The ambiguous tone in the target firm's annual report decreases the probability that the acquirer choose cash as the method of payment.*

***Hypothesis 1b.** The ambiguous tone in the target firm's annual report increases the probability that the acquirer choose cash as the method of payment.*

## **2.2. Acquirer Announcement Returns**

The next question this study aims to answer is to see how the variation in the tone ambiguity of the target firm's annual report which is one of the main sources of information for the acquirer, explains the variation in the acquirer returns around the takeover announcement date. Prior studies have shown that acquirer access to valuation-relevant information about the target firm can increase the acquirer announcement returns through two main channels. First, the better-quality information environment of the target firm makes able the acquirer to discover less obvious forms of synergy and design high-synergy transactions. Second, low information asymmetry regarding the value of the target is likely to put the acquirer in a safer position in terms of being subject to the winner's curse. In other words, the acquirer would be able to evaluate the target firm with more precision and therefore be less vulnerable to the overpayment risk. Several empirical studies provide supporting evidence for this argument: geographic proximity of acquirer and target (Uysal et al., 2008), target firm high-quality accounting information (McNichols & Stubben, 2015), target firm stock return informativeness (X. Martin & Shalev, 2017), high informed trading in the target firm stock (Adra & Barbopoulos, 2018).

On the contrary, limited access to valuation-relevant information about the target firm makes the acquirer less accurate in determining the value of target and future expected synergy, which in turn would reflect into lower announcement returns for the acquirer. Indeed, McNichols & Stubben (2015) document that takeovers in which the target value is uncertain are characterized by higher takeover premium which translates into lower announcement returns for the acquirer. Acquirer may mitigate part of the information asymmetry regarding the value of the target firm during the due diligence process which in turn potentially affects the acquisition terms such as the method of payment. However, the information advantage, that acquirer gains through negotiation with an opaque target, may not be captured by the market. In other words, the market may not acknowledge the fact that information advantage that acquirer gains matters in terms of expected value creation. This would in turn results in lower acquirer announcement returns. In this regards, Renneboog & Zhao (2014) find that although directors interlock between acquirer and target reduce information asymmetry and affect various aspects of the transaction, market participants do not take this connection into account when they evaluate the takeover transaction as it is reflected in no association between directors interlock and acquirer announcement returns.

Previous studies have established that the tone ambiguity in the firm's annual report interferes with the effective communication of valuation-relevant information to the market and therefore, increases the information risk of investors. Concentrating on the context of a takeover, valuation uncertainty regarding the target firm, driven by the tone ambiguity in its annual reports, can potentially lead to less profitable acquisitions for the acquirer. This is due to the fact that in such a case, the acquirer would be less able to accurately discover potential synergies that can be realized in the event of a takeover. In addition, the acquirer would be subject to the winner's curse buying a target with relatively a higher fraction of vague terms in its annual report. In other words, the acquirer would not be able to evaluate the target accurately and therefore would be highly vulnerable to the overpayment risk. These conditions are more likely to lead towards a wealth loss for acquirer shareholders around the announcement of the takeover. Therefore, formally, we hypothesize:

***Hypothesis 2.*** *The ambiguous tone in the target firm's annual report is negatively associated with the acquirer's returns around the acquisition announcement date.*

### 3. Data Sources, Variables, and Models' Specification

#### 3.1. Sample

The sample in this study consists of U.S. domestic completed takeover transactions between publicly held firms over the period of 1995 to 2014 that are recorded in Thomson Reuters' EIKON M&A database.<sup>1</sup> We include only those transactions that are in the form of a merger, acquisition of assets, acquisition of major assets, and acquisition of certain assets. We further limit the sample to the transactions that meet the following criteria: 1) Both the target and the acquirer are publicly held firms. This is to ensure that relevant firm-specific financial and market data on both sides of the transaction are available. 2) Acquirer owns less than 5% of the target firm's shares before the announcement of the transaction. This criterion is to isolate the effect of the target firm's annual report tone ambiguity on the outcome variables, given that acquirer block holding in target firm can mitigate acquirer information disadvantage concerning the value of the target firm.<sup>2</sup> 3) Acquirer owns more than 50% of the target firm's shares after the acquisition. Further, following previous studies (Chemmanur et al., 2009; Faccio & Masulis, 2005; Luybaert & Van Caneghem, 2017), we eliminate the transactions whose method of payment is not reported in the Thomson Reuters' EIKON M&A database or it is not in the form of cash, stock, or a mix of cash and stock. After imposing these restrictions, an initial sample, consist of 3,965 transactions, is obtained.

Next, we collected accounting data from COMPUSTAT and stock price data from the Center for Research in Security Prices (CRSP) for both the acquirer and the target firms. COMPUSTAT and CRSP databases are accessed via Wharton Research Data Service (WRDS). After eliminating the transactions with missing data, we obtained a sample of 812 transactions.

In the last stage, we merge this data with a comprehensive database that McDonald and Loughran have created. The database is available at The Notre Dame Software Repository for Accounting and Finance (SRAF).<sup>3</sup> The database contains the detail textual properties of all firms' filing with SEC (e.g., 10-K, 10-K/A, 10-K405, 10-KSB, 10-Q, etc.) from 1993 to 2018. More specifically, the dataset provides the number of uncertain and weak modal words, among other textual properties, for each filing. We collect the target firm's annual report (10-Ks, 10-K405s) textual

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<sup>1</sup> The starting date of our sample is driven by the fact that the SEC data is available from 1993 and only from 1995 we start to have targets that have SEC filing.

<sup>2</sup> Dionne et al. (2015) document that those acquirers that own at least 5% of the target firm's shares before the takeover announcement are informed bidders and pay relatively lower premium compare to uninformed bidders.

<sup>3</sup> For more details, see: <https://sraf.nd.edu/>. We thank Tim Loughran and Bill McDonald for making this database available.

properties prior to the acquisition announcement date with applying at least two months lag. The two months lag is to make sure that the acquirer has access to the most updated information about the target firm and also have enough time to access, process, and comprehend the report before it announces the takeover transaction. This final stage leaves us with 691 takeover transactions available for our analyses.

### **3.2. Main Variables**

#### *Choice of Payment Method*

The first outcome variable of the study is the choice of payment method in takeover transactions. We define this variable as a binary variable that equals 1 if the method of payment is cash, and 0 otherwise. Based on the data collected from the Thomson Reuters EIKON M&A database, the method of payment can be cash, stock, or a combination of cash and stock. The percentage of cash and stock used as the method of payment is not available in the database, and this is the reason we are obliged to define our dependent variable as a binary variable.

#### *Acquirer Announcement Returns*

Acquirer announcement return is the next outcome variable of the study. Much of the prior studies have measured the takeover performance using acquirer cumulative abnormal returns (CAR) around the takeover announcement date. The main advantage of such a measure over the long-term performance measures is the fact that the latter can be a noisy one. Further, previous studies have shown that short-term announcement returns are positively associated with subsequent takeover success (Kaplan & Weisbach, 1992). Therefore, we focus on the acquirer short-term announcement return of acquisition in this study.

Fuller, Netter, & Stegemoller (2002) document that for a random sample of 500 takeovers, the announcement date recorded in the SDC database was correct for 92.6% of the transactions and the remaining are off by no more than 2 days. Therefore, the 5-day event window potentially captures most, if not all, of the announcement effect. Masulis, Wang, & Xie (2007) also follow the same approach. Following these studies, we use event study methodology and compute the acquirer's CAR measured over the five-day window  $[-2, +2]$  surrendering the takeover announcement date, which is the event day. The announcement dates are from the Thomson Reuters EIKON M&A database. To calculate the CAR, first abnormal returns are needed to be

computed. Abnormal return is the idiosyncratic part of the stock returns that is attributable to the takeover announcement. It can be obtained using the following formula:

$$AR_{it} = R_{it} - ER_{it} \quad (1)$$

where  $AR_{it}$  is firm  $i$  abnormal stock return at time  $t$ ,  $R_{it}$  is firm  $i$  realized return at time  $t$ , and  $ER_{it}$  is firm  $i$  expected return at time  $t$ .

The expected return ( $ER_{it}$ ) is the returns that obtained if the takeover were not announced. The expected return in this study is computed applying the market model on daily returns over the period of 210 days to 11 days before the takeover announcement date. We employ the CRSP equal-weighted return as the market return. A similar approach has been used by previous studies (see e.g., Masulis et al., 2007). Following is the formula for computing the expected return:

$$ER_{it} = \alpha_i + \beta_i R_{mt} + \varepsilon_i \quad (2)$$

where  $ER_{it}$  is firm  $i$  expected return at time  $t$ ,  $R_{mt}$  is market return at time  $t$ ,  $\alpha_i$  is estimated for firm  $i$ ,  $\beta_i$  is estimated for firm  $i$ .

After obtaining the abnormal returns, the 5-day CAR is simply the summation of abnormal returns over the event window [-2, +2]. As an alternative, we also compute the acquirer's CAR over the 3-day window [-1, +1] surrendering the takeover announcement date.

#### *Target's Annual Report Tone ambiguity*

The main explanatory variable of the study is the tone ambiguity of the target firm's annual report. Loughran & McDonald (2011) maintain that measuring financial document tone using word classifications derived from nonbusiness disciplines may lead to an imprecise conclusion. Indeed, the authors find that such word classifications substantially misclassify words when examining the tone in the financial context. To overcome this issue, the authors compile categories of word lists including uncertain and weak modal words to accurately reflect the ambiguous tone of financial disclosures. Examples of uncertainty words in their list are: uncertain, unclear, indefinite, and contingency which indicate imprecision. Examples of weak modal words in their list are: might, possibly, depend, could and approximate which represent the lack of confidence. In this study,

tone ambiguity for firm  $i$  at time  $t$  is defined as the ratio of uncertainty and weak modal words to the total number of words. The formulas are as follow:

$$Uncertainty_{it} = \text{Uncertainty Words}_{it} / \text{Total Number of Words}_{it} \quad (3)$$

$$Weak Modal_{it} = \text{Weak Modal Words}_{it} / \text{Total Number of Words}_{it} \quad (4)$$

A similar approach is used by Ertugrul et al. (2017) in measuring the tone ambiguity of a firm's annual report. We use these ratios to first, investigate the influence of the target firm's annual report tone ambiguity on the choice of payment method in takeovers and second, examine how the market reacts to the announcement of a takeover involving a target with a high percentage of ambiguous text in its annual report.

### 3.3. Models' Specification

We examine the influence of the target firm's annual report tone ambiguity on the choice of payment method in takeovers (hypotheses 1a and 1b) by estimating the following probit model:<sup>4</sup>

$$\begin{aligned} Pr(\text{cash offers} = 1)_i & \\ & = \alpha + \beta \mathbf{X}_i + \gamma \mathbf{Z}_i + \eta \text{Industry.FE} + \eta \text{Year.FE} + \varepsilon_i \end{aligned} \quad (5)$$

Probability of cash offers, the dependent variable, is a binary variable that takes the value of 1 if the method of payment is cash only and 0 otherwise.  $\mathbf{X}_i$  is a vector of our variables of interest. These variables are the percentage of uncertainty words (*uncertainty*) and weak modal words (*weak*) in the target firm's annual report prior to the takeover announcement date.

$\mathbf{Z}_i$  is a vector of control variables that prior studies have shown to influence the choice of payment method in takeovers. These variables are attributed to the acquirer, target, and transaction, and we report them following this order, while the definitions and measures of these variables are given in Table 1. According to pecking order theory (Myers & Majluf, 1984), in takeover context, acquirers with enough cash available or sufficient cash flow, are more likely to use cash offers rather than stock swaps as the choice of payment method (Karampatsas, Petmezas, & Travlos, 2014; Martynova & Renneboog, 2009). Therefore, we control for acquirer free cash flow (*A.FCF*).

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<sup>4</sup> Using a logit model does not change our conclusion regarding the effect of the target firm's annual report tone ambiguity on the choice of payment method in takeover transactions.



Acquirers with high growth opportunities may prefer financing their investments with equity rather than cash (K. J. Martin, 1996), and as such we include acquirer market-to-book ratio (*A.MB*). Large firms have a higher level of diversification and lower bankruptcy costs (Faccio & Masulis, 2005). They also have higher debt capacity, which makes them more likely to opt for cash offers as the method of payment in takeovers. Thus, we control for acquirer size (*A.Size*). Further, highly levered acquirers are more likely to be in a financially constrained situation and not able to use cash to finance a takeover (Faccio & Masulis, 2005). We control for such effect by including acquirer leverage (*A.Leverage*). We also control for acquirer analysts (*A.Analyst*), as financial analysts act as information intermediaries in the market and reduce the information asymmetry of firms they follow (Chang, Dasgupta, & Hilary, 2006; Chung & Jo, 1996; Derrien & Kecskés, 2013). If analyst coverage reduces information asymmetry, an acquirer would have fewer incentives to use stock swaps given that their stocks are less likely to deviate from their fundamental values (Chang et al., 2006). The probability of stock swaps as the method of payment increases when the acquirer stocks are overvalued (Shleifer & Vishny, 2003). Following prior studies (Faccio & Masulis, 2005; Karampatsas et al., 2014), we control for such effect by including the acquirer's pre-acquisition stock run-up (*A.Stock>Returns*).

Target M/B ratio is positively related to capital gains tax liability of the target firm (Chemmanur et al., 2009) and therefore M/B ratio of the target is likely to be negatively associated with the likelihood of cash offers, and as such target M/B ratio (*T.MB*) is included in the model. We control for the target relative size to the acquirer (*R.Size*) given that raising cash for a large target relative to the acquirer is more difficult (Karampatsas et al., 2014), the acquirer's information disadvantage with respect to the target's value becomes more severe and problematic if the relative size is large (Hansen, 1987). Moreover, using stock swaps for a relatively large target may result in dilution of the dominant shareholder's control (Amihud, Lev, & Travlos, 1990). The benefit of stock swaps as contingent payment increases, the higher the equity of the target firm relative to the acquirer (Hansen, 1987). In addition, financially constrained targets are more likely to prefer cash offers rather than stock swaps. To control for such effect, we control for target leverage (*T.Leverage*). We also control for target analysts (*T.Analyst*), as financial analysts act as information intermediaries in the market and reduce the information asymmetry of firms they follow (Chang et al., 2006; Chung & Jo, 1996; Derrien & Kecskés, 2013). Targets with poor past performance and therefore fragile financial health might prefer cash offers relative to other methods of payment. We control for the target past performance by including target sales growth (*T.Sales.Growth*). We

further control for target R&D (*T.RD*) which is usually considered as one of the main factors that contribute to the information asymmetry regarding the value of a firm (see e.g., Officer, Poulsen, & Stegemoller, 2009). Further, target high-tech (*T.Hi.Tech*) is included in the model since, firms in high-tech industries are characterized by a high level of human capital and intangible assets, making it more difficult to appraise their value (Reuer et al., 2004).

We include related industry (*Related*) control variable as targets are more likely to accept stock swaps from an acquirer in the same industry. This is because target shareholders are well acquainted with the industry risks and prospects (Faccio & Masulis, 2005; Karampatsas et al., 2014). Same state (*Same.State*) is an indicator variable that controls for geographical proximity of the acquirer and target given that this proximity can mitigate the information asymmetry (Bick, Crook, Lynch, & Walkup, 2017; Dhaliwal, Lamoreaux, Litov, & Neyland, 2016; Uysal et al., 2008). Lastly, we also control for the industry- and year-fixed effects.

We examine the influence of the target firm's annual report tone ambiguity on the acquirer announcement returns (hypothesis 2) by estimating the following OLS model:

$$\text{Acquirer } CAR_i = \alpha + \beta X_i + \gamma Z_i + \eta \text{Industry.FE} + \eta \text{Year.FE} + \varepsilon_i \quad (6)$$

Acquirer CAR, the dependent variable, is the 5-day [-2; +2] cumulative abnormal returns to the acquirer shareholders around the announcement date of the takeover transaction.  $X_i$  is a vector of our variables of interest and are percentage of uncertainty words (*uncertainty*) and weak modal words (*weak*) in the target firm's annual report prior to the takeover announcement. We expect  $\beta$  to be negative, consistent with the notion that high information asymmetry regarding the value of the target firm makes it difficult for the acquirer to accurately estimate the expected synergy and therefore, expose to the high premium payment.

$Z_i$  is a vector of control variables that prior studies have documented to influence the acquirer announcement returns. These variables are attributed to the acquirer, target, and transaction, and we report them following this order, while the definitions and measures of these variables are given in Table 1. Higher available free cash flow allows the self-interested managers to use the cash for empire building instead of returning them to the shareholders (Jensen, 1986). Harford (1999) shows that cash-rich acquirers experience negative announcement returns. Therefore, we control for acquirer free cash flow (*A.FCF*). Dong, Hirshleifer, Richardson, & Teoh (2006) find that acquirers with higher M/B ratios earn lower returns around the takeover announcement date. We

include the acquirer market-to-book ratio (*A.MB*) in the model to control for such effect. Moeller, Schlingemann, & Stulz (2004) find a negative association between the acquirer size and the acquirer announcement returns. Thus, we control for acquirer size (*A.Size*). Masulis et al. (2007) document that the acquirer leverage ratio has some power to prevent the acquirer from bad acquisitions. Therefore, we control for such effect by including acquirer leverage (*A.Leverage*). Masulis et al. (2007) find that the acquirer stock price run-up has a negative effect on the acquirer announcement return. Thus, we include the acquirer stock price run-up before the takeover announcement (*A.Stock>Returns*). Dong et al. (2006) show that the target M/B ratio is negatively correlated with acquirer announcement returns. Therefore, the target M/B ratio (*T.MB*) is included in the model. Mixed results have been documented concerning the effect of the relative size of the target to the acquirer on the acquirer announcement returns. Whereas, Travlos (1987) documents a negative effect, Moeller et al. (2004) show a positive effect of relative size on the acquirer returns. Therefore, we control for the target relative size to the acquirer (*R.Size*). Luypaert & Van Caneghem (2017) find that target low analyst coverage positively affects the acquirer announcement returns. Therefore, we control for target analyst coverage (*T.Analyst*). Morck, Shleifer, & Vishny (1990) find that acquirers experience a negative return when buying a rapidly growing target. We control for such effect by including the target past sales growth (*T.Sales.Growth*). Laamanen (2007) finds that the market reacts positively to the R&D of the target firm. Therefore, we control for target R&D expenditure (*T.RD*).

Morck et al. (1990) find that diversifying takeovers generate negative returns for the acquirer shareholders. We include related industry (*Related*) control variable to control for such effect. Same state (*Same.State*) is an indicator variable that controls for geographical proximity of the acquirer and target given that this proximity can mitigate the information asymmetry between the acquirer and the target. Uysal et al. (2008) find that geographically proximate acquirers earn higher returns around the takeover announcement. Travlos (1987) finds that acquirers experience negative abnormal returns when using stock swaps and normal returns when using cash offers as the method of payment. Therefore, we control for the choice of payment method by including (*Cash.Only*) and (*Stock.Only*) that are dummy variables. Lastly, we also control for the industry- and year-fixed effects. The definitions of the rest of the variables are consistent with equation 5.

## 4. Empirical Results

### 4.1. Descriptive Statistics

Table 2 represents the annual distribution of the sample. For each year, the total number of takeover transactions, average percentages of uncertainty and weak modal words in target firm's annual report, the number of transactions settled in cash, stock, and mixed of both, and the number of industry-related takeover transactions according to two-digit SIC code, are reported. Table 2 reveals that relative to the other methods of payment (stock swaps and mix of both), cash-only offers have increased over time. The percentage of both uncertainty and weak modal words in the target firm's annual report shows a steady increase over the years. Further, a larger fraction of the deals took place between acquirers and targets belonging to the same two-digit industry.

*[insert Table 2 about here]*

Table 3 displays descriptive statistics of acquirer, target, and transaction-related variables. The sample includes 691 US completed domestic takeover transactions that involve publicly held acquirers and targets over the period of January 1<sup>st</sup>, 1995 to December 31<sup>st</sup>, 2014. All the continuous variables are winsorized at the 1<sup>st</sup> and 99<sup>th</sup> percentiles to mitigate the effect of any outliers. Table 3 shows that the average percentage of uncertainty words is 1.29% and that of weak modal words is 0.55% which are similar to those reported by prior studies (see e.g., Ertugrul et al., 2017; Loughran & McDonald, 2011).

To capture the short-term wealth effect of a takeover for an acquirer's shareholders, we compute the acquirer's CARs around the takeover announcement date. Table 3 indicates that the mean 5-day CAR [-2; +2] in the sample is -0.42% with the median of -0.32% and for 3-day CAR [-1; +1] are -0.57% and -0.39%, respectively. This is suggestive of the fact that, on average, takeover transactions do not create value for the acquirer's shareholders which is in line with previous studies (see e.g., Moeller et al., 2005; Renneboog & Zhao, 2014). A comprehensive review of short and long-term takeover returns for acquirers can be found in a study by Martynova & Renneboog (2008). Table 3 further reveals that on average 49% of the takeover transactions are in the form of cash offers, 27% are stock swaps, and the remaining 24% are a mix of both. Cash offers being the dominant method of payment in takeover transactions is reported by prior studies both for US and European deals (see e.g., Faccio & Masulis, 2005; Luypaert & Van Caneghem, 2017).

With respect to other explanatory variables, the mean (median) M/B ratio of the acquirers is 3.91 (2.50) whereas the corresponding ratio for targets is 2.90 (1.98), showing that acquirers, on average, have higher M/B ratios than do targets. Expectedly, targets are smaller than acquirers. On average, targets are about 27% of the size of acquirers. The debt structure of acquirers and targets turned out to be quite similar, with acquirers having a mean (median) of 0.16 (0.13) and targets having a mean (median) of 0.13 (0.05). This finding is comparable to a study by Dionne et al. (2015), who report that acquirers' and targets' leverage ratios are similar, which makes the financial synergy less probable. Unsurprisingly, on average, acquirers are followed by a higher number of analysts compared to targets. The mean (median) analyst coverage for acquirers is 14.18 (12) while the corresponding number for targets is only 5.99 (4). This is similar to the findings of Chang et al. (2006), who report that larger firms attract a higher number of analysts. Further, acquirers yield free cash flow, with a mean (median) of 0.064 (0.068), and the mean (median) of stock returns of acquirers prior to the deal announcement is 0.09 (0.05). Moreover, targets exhibit sales growth with a mean (median) of 0.22 (0.08). The mean (median) R&D expenditure of targets is 0.07 (0.003), and 24% of the targets are in high-tech industries. Finally, 67% of the takeover transactions took place between acquirers and targets that were in the same industries based on their two-digit SIC code (according to the Thomson Reuters EIKON M&A database), and in 24% of cases the acquirer and target are in the same state in the US (according to the same database).

*[insert Table 3 about here]*

Table 4 documents the Pearson correlations between various variables that we used in the empirical analyses. Table 4 reveals several significant correlations among variables. The highest correlation among the explanatory variables is between uncertainty and weak modal words (0.74), which is significant at the 1% level. This is not surprising given that the weak modal words are a sub-set of uncertainty words. Indeed, this is the reason that we do not include both of these variables simultaneously in one regression model. A similar approach is used by previous studies (see e.g., Ertugrul et al., 2017; Loughran & McDonald, 2011, 2013). Further, the correlation between acquirer's CARs [-2; +2] and the percentage of uncertainty and weak modal words is negative but not statistically significant. This result is similar to the findings of McNichols & Stubben (2015) and following them, we base the inferences concerning this association on the multivariate tests reported in the next section.

Given that we were concerned about the multicollinearity in our analyses, we examined the variance inflation factor (VIF) for all models. The VIF for each model is reported at the bottom of each regression table. It turned out that all the VIFs are within the acceptable range. The highest VIF is 6.24, which is well below the conventional rule of thumb of 10 (Neter, Kutner, Nachtsheim, & Wasserman, 1996). Thus, we conclude that multicollinearity is not a concern for the results.

*[insert Table 4 about here]*

#### **4.2. Target's Annual Report Tone Ambiguity and The Choice of Payment Method**

Table 5 reports the estimates of five alternative versions of the binary probit regression model (equation 5) to examine the effect of the target firm's annual report tone ambiguity on the probability of cash offers in takeovers. In order to separately assess the effect of each variable of interest, we build a hierarchical regression analysis. Model 1 includes the control variables only. In Model 2, we add the percentage of uncertainty words (uncertainty) in the target firm's annual report, and in Model 4, we insert the percentage of weak modal words (weak modal) in the target firm's annual report. Because the weak modal words list is a sub-set of uncertainty words list, we do not include them simultaneously in one model. Further, in Model 3 and 5, we include the annual report file size (in megabyte) to control for the overall readability of the annual report. Loughran & McDonald (2014) document that the corporate disclosures (10-K) file size is a robust and relevant measure of the overall readability of the report. The dependent variable in all specifications equals 1 if the method of payment is cash, and 0 otherwise. We run all the regressions in our study using White's (1980) heteroscedasticity-consistent standard errors.

Model 1 provides supporting evidence for several control variables that prior studies have documented to affect the likelihood of cash offers. More specifically, consistent with pecking order theory, acquirers are more likely to opt for cash offers when they have high free cash flow, as the corresponding variable carries a positive and significant coefficient at the 1% level. In line with the investment opportunity hypothesis, the acquirer M/B ratio carries a negative and significant coefficient at the 5% level. This suggests that acquirers with high market-to-book ratio are less likely to use cash as the method of payment in takeovers. Further, the acquirer size is positive and significant at the 1% level. Whereas acquirer analyst coverage does not affect the likelihood of cash offers, target analyst coverage has a negative and significant effect. In addition, the target M/B ratio has a negative effect on the likelihood of cash offers, which is significant at the 1% level. Consistent with Hansen (1987) theory and findings of Karampatsas et al. (2014), the

coefficient of relative size is negative and significant at the 1% level, indicating that as the size of the target increases relative to the acquirer, the likelihood of cash offers decreases. We find that target sales growth is negatively associated with the probability of cash offers, which is significant at the 1% level. This suggests that targets with better past performance are less likely to receive cash offers. The target being in the high-tech industry has a positive and significant at the 10% level on the probability of cash offers.

The results in Model 2 and Model 4 provide partial support to hypothesis 1b stating that ambiguous tone in the target firm's annual report increases the probability that the acquirer choose cash as the choice of payment method in takeover transactions. More specifically, in Model 2, the coefficient of the variable uncertainty is positive, though, not significant. Whereas, in Model 4, the coefficient of the variable weak is positive and significant at the 5% level. The findings continue to hold even after controlling for the overall readability of the annual report in Models 3 and 5. These results suggest that acquirers pay more attention to those ambiguous terms that can be attributed to lack of confidence (Weak) rather than the lack of precision (Uncertainty) in the annual report of the target firm when deciding about the method of payment. Overall, these results are in line with the argument that the acquirers are more inclined to use cash as the method of payment when asymmetric information with respect to the target value is high. Perhaps during the due diligence process, acquirers obtain valuable information regarding the target firm that is not available for other market participants and as Luypaert & Van Caneghem (2017) argue, this gap between acquirers as informed investors and other market participants as uninformed investors, put the acquirers in a superior bargaining position. Acquirers exploit this opportunity and offer cash to avoid sharing the potential gain from the acquisition with target shareholders. These findings are also in line with the argument put forward by Chemmanur et al. (2009) who contend that when the target information asymmetry is high, the acquirer faces a trade-off between overpayment risk and a successful bid. Based on the above results, the acquirers seem to care more about the bid to be successful and its advantages outweigh the overpayment risk.

*[insert Table 5 about here]*

#### **4.3. Target's Annual Report Tone Ambiguity and Acquirer Announcement Returns**

Table 6 reports the estimates of five alternative versions of the OLS regression model (equation 6) to examine the effect of the target firm's annual report tone ambiguity on the acquirer announcement returns. In order to separately assess the effect of each variable of interest, we build

a hierarchical regression analysis. Model 1 includes the control variables only. In Model 2, we add the percentage of uncertainty words in the target firm's annual report (Uncertainty), and in Model 4, we insert the percentage of weak modal words in the target firm's annual report (Weak). Because the weak modal words list is a sub-set of uncertainty words list, we do not include them simultaneously in one model. The dependent variable in all specifications is acquirer 5-day [-2; +2] CAR around the takeover announcement date. We run all the models in our study using White's (1980) heteroscedasticity-consistent standard errors. Further, in Model 3 and 5, we include the annual report file size (in megabyte) to control for the overall readability of the annual report.

Model 1 provides supporting evidence for several control variables that prior studies have documented to affect the acquirer CAR around the takeover announcement date. Whereas, acquirer leverage has a positive and significant effect on the acquirer announcement returns, target M/B ratio and target analyst coverage are negatively associated with the acquirer CAR around the takeover announcement date. Consistent with prior studies (Fuller et al., 2002; Loughran & Vijh, 1997; Travlos, 1987; Wansley, Lane, & Yang, 1987), choosing cash as the choice of payment method generates greater value for acquirers shareholders compare with stock swaps.

Hypothesis 2 posits that ambiguous tone in the target firm's annual report is negatively associated with the acquirer's abnormal return around the takeover announcement date. Consistent with this hypothesis, in Model 2, the coefficient of the variable uncertainty is negative and statistically significant at the 10% level after having controlled for the various acquirer, target, and transaction-related factors that are reported influencing the acquirer CAR around the takeover announcement date. This result continues to hold even after controlling for the overall readability of the target annual report in Model 3. Furthermore, in Model 4, the variable weak carries a negative coefficient that is statistically significant at the 5% level which corroborates the result in Model 2. The finding continues to hold even after controlling for the overall readability of the annual report in Model 5. From an economic perspective, the result suggests, *ceteris paribus*, one standard deviation increase in Uncertainty (Weak) is associated with a 0.7% (4.7%) decrease in the acquirer CAR around the takeover announcement date.<sup>5</sup> The effect is substantially large given that for an acquirer worth \$100 million in equity, this represents a dollar loss of \$0.7 (\$4.7) million. Overall, these results imply that the ambiguous text (classified according to Loughran & McDonald, 2011) in the target

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<sup>5</sup> Given that the coefficient of Uncertainty is -2.2315 and Uncertainty has a standard deviation of 0.0031 (reported in Table 3), one standard deviation increase in Uncertainty is associated with a decrease of 0.7% ( $2.2315 \times 0.0031$ ) in the acquirer CAR around the takeover announcement date. The economic significance of Weak can be computed in the same way.



firm's annual report leads to acquirer shareholders' wealth loss around the takeover announcement date. One possible explanation for this finding is that although acquirers become informed investors after negotiating with target firm and to some extent uncover private information, the market participants continue remaining uninformed investors. In this situation, market reacts positive only when the choice of payment method is stock swaps (Officer et al., 2009).

The results are also consistent with the argument that limited access to valuation-relevant information with respect to the target firm, makes the acquirer less accurate in determining the value of target and future expected synergy, which in turn would reflect into lower announcement returns for the acquirer (McNichols & Stubben, 2015). These results are also in line with the findings of Renneboog & Zhao (2014) who report that reduced information asymmetry through directors interlock between acquirer and target is not taken into account by the market participants when they evaluate the takeover transaction. In other words, our results show that although the acquirer may mitigate part of the information asymmetry regarding the value of the target firm during the due diligence process and use cash as the choice of payment method to take full advantage of the deal, the market participants seem to not capture it.

*[insert Table 6 about here]*

#### **4.4. Robustness Check**

In this section, we report several supplemental analyses aimed at assessing the robustness of our earlier findings. As the first set of robustness check, we re-estimate our analyses controlling for an alternative measure of readability. Li (2008) uses the length of an annual report as a measure of readability and argues that lengthier reports are more deterring and require greater costs of information-processing. Following this study, we define the length of the annual report as the number of words in the document. The number of words is given in SRAF developed by McDonald and Loughran. The results of these analyses are reported in Table 7. Our results with respect to both the choice of payment method and acquirer announcement returns remain unchanged and corroborate the findings in Tables 5 and 6. This implies that irrespective of the measure of the overall readability of the annual report, the vague language in the target's annual report is positively (negatively) associated with the probability of cash offers (acquirer CAR) in takeovers.

*[insert Table 7 about here]*

Second, we re-estimate our analysis with respect to the acquirer return around the takeover announcement date using acquirer 3-day CAR. The results are documented in Table 8. The negative effects of uncertain and weak modal words on the acquirer returns around the takeover announcement continue to hold and are significant at the 1% level.

*[insert Table 8 about here]*

Third, we re-estimate our analyses after excluding those deals in which either targets or acquirers are in the financial industry. With respect to the choice of payment method, the results show that none of our variables of interest have any influence. Given that 24% of the firms in the sample are in the financial industry, this result might be due to the reduced sample size. Concerning the acquirer CAR, the results remained unchanged and we still find that the vague language in the target's annual report has a negative and significant effect on the acquirer return around the takeover announcement date.

Forth, we use acquirer and target market value of equity in the most recent fiscal year prior to the deal announcement as an alternative measure for firms' size (Chemmanur et al., 2009), to calculate the acquirer size and relative size in our analyses, and this alternative measure of firm size does not alter the significance of our estimates.

Finally, we address the possibility of missing control variables. The high fraction of vague terms in the firm's annual report might be linked to firm performance. That is poor performance would lead to more vague language in the annual report of the firm. To control for such effect, in addition to the target's sales growth, we introduce to the models, the target firm's return on assets (ROA) in the most recent fiscal year before the takeover announcement date. We find that target ROA has no effect either on the probability of cash offers or on the acquirer CAR. Further, the inclusion of this additional variable does not alter our conclusions in Tables 5 and 6 regarding the effect of target's annual report tone ambiguity on the choice of payment method and the acquirer CAR. The results of these extra analyses are not tabulated but are available upon request.

## **5. Summary and Conclusion**

We use a sample of 691 US completed takeover deals that took place between publicly held firms over the period of 1995 to 2014 to study how the tone ambiguity of the target firm's annual report relates to the takeover outcomes. We show that the target firm's annual report tone ambiguity has a positive and statistically significant effect on the likelihood that the acquirer use cash as the

choice of payment method in takeovers. Further, we document that vague language in the target firm's annual report leads to wealth loss for acquirer shareholders around the announcement of the takeover. Taken together, these results suggest that although acquirer may mitigate part of the information asymmetry regarding the value of target during the due diligence process, and strategically exploit it by using cash as the choice of payment method (Luypaert & Van Caneghem, 2017), it seems that the market does not acknowledge it. In other words, even if the information that acquirer gains during due diligence matters for correctly estimating the expected synergy and value creation, market participants react negatively to the announcement of such transactions.

To the best of our knowledge, this is the first study to investigate how vague language in the target firm's annual report relates to the takeover outcomes. Raman et al. (2013) find that the target firm's accounting quality influences the takeover decision across three dimensions of takeover type, method of payment, and premium paid for the target. McNichols & Stubben (2015) document that acquisitions of opaque targets (in terms of accounting information) are characterized by wealth loss for acquirer shareholders. Our study complements this literature on financial reporting quality, of which textual properties are a particular dimension. We show that not only the numeric dimension of financial reports, which is the main focus of the prior studies, affects the takeover transactions, but also the textual properties of such reports are of significant importance.

Second, the vast majority of the literature agreed upon the fact that acquisitions do not create value for acquirers' shareholders (Martynova & Renneboog, 2008; Moeller et al., 2005; Renneboog & Zhao, 2014). Contributing to this literature, this study sheds more light on the negative returns realized, on average, by acquirers at the takeover announcement, and documents that increase in the target firm's annual report tone ambiguity and therefore reduced valuation-relevant information, explains at least some of the variation in the wealth loss for acquirer shareholders.

Lastly, a growing body of the literature relates the textual properties of business disclosures to firm investment efficiency (Biddle et al., 2009), analyst following and dispersion (Lehavy et al., 2011), stock returns volatility (Loughran & McDonald, 2011), individual investors investment decisions (Lawrence, 2013), IPO valuation (Loughran & McDonald, 2013), and cost of bank loan (Ertugrul et al., 2017). This study adds to this literature by establishing that textual properties of business disclosures are not only important for less-sophisticated individual investors, sophisticated investors, and experienced creditors, but also affect one of the most important investment decisions that a firm makes in its life, that is a corporate takeover.

While we believe that the results of this study are noteworthy, we recognize that it is limited in some respects which in turn raises several intriguing research questions for the future. First, in this study, we focus on the association between the tone ambiguity of the target firm's annual report and the choice of payment method and acquirer announcement reruns. It would be interesting however, to examine how the tone ambiguity of the target firm's annual report influences other terms of a takeover deal like: the likelihood of receiving a bid, deal premium, and deal completion time among other relevant variables. Second, it would be equally insightful to examine how other textual properties of the target firms' disclosures, for instance: the percentage of positive, negative, and constraining words affect the acquisition. Finally, it would be worthwhile to explore the impact of the textual properties of the acquirer firm's annual reports on a takeover transaction.

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## Appendix

Table 1. Variables' Definitions/Measures

This table reports the definitions of the variables that are used in this study.

Variable	Definition/Measure
Log of file size	Log of the file size of the 10-K report in megabytes.
Uncertainty words	Ratio of uncertainty words to the total number of words.
Weak modal words	Ratio of weak modal words to the total number of words.
Acquirer free cash flow	Operating income before depreciation minus interest expenses, taxes, preferred dividend, and common dividend divided by book value of total assets in the fiscal year before the takeover announcement.
Acquirer M/B ratio	Acquirer number of common shares outstanding multiplied by its share price divided by its book value of equity in the fiscal year before the takeover announcement.
Acquirer size	Log of total assets in the fiscal year before the takeover announcement.
Acquirer leverage	Total long-term debt divided by total assets in the fiscal year before the takeover announcement.
Acquirer analyst coverage	Maximum number of analysts who provide an estimation of EPS in any month in the most recent fiscal year prior to the deal announcement in the year before the takeover announcement from I/B/E/S
Acquirer stock returns	Acquirer share price 28 business days before the deal announcement minus acquirer share price 154 business days before the deal announcement divided by acquirer share price 154 business days before the deal announcement.
Target M/B ratio	Number of common shares outstanding multiplied by share price divided by the book value of equity in the fiscal year before the takeover announcement.
Relative size	Target total assets divided by acquirer total assets in the fiscal year before the takeover announcement.
Target leverage	Total long-term debt divided by total assets in the fiscal year before the takeover announcement.
Target analyst coverage	Maximum number of analysts who provide an estimation of EPS in any month in the most recent fiscal year prior to the deal announcement in the year before the takeover announcement from I/B/E/S.
Target sales growth	$(\text{target sales in year } t \text{ minus target sales in year } t-1) / \text{target sales in year } t$ , where $t$ is the fiscal year prior to the deal announcement.
Target R&D	R&D investment divided by total assets in the fiscal year before the takeover announcement.
Target in high tech	Indicator variable that takes the value of 1 if the target firm is in the high-tech industry.
Related industry	Indicator variable that takes the value of 1 if the acquirer firm and target firm share the same two-digit SIC codes.
Same state	Indicator variable that takes the value of one if the acquirer and target are in the same state in the US. The state that acquirer and target are located are given in the Thomson Reuters Eikon M&A database.
Cash only	Indicator variable that takes the value of 1 if the method of payment is cash only.
Stock only	Indicator variable that takes the value of 1 if the method of payment is stock only.



Table 2. Sample Distribution

This table represents the annual distribution of the US completed domestic takeover transactions that involve publicly held acquirers and targets over the period of January 1<sup>st</sup>, 1995 to December 31<sup>st</sup>, 2014. For each year, the total number of takeover transactions, average percentages of uncertainty and weak modal words in target firm's annual report, the number of transactions settled in cash, stock, and mixed of both, and the number of industry-related takeover transactions according to two-digit SIC code, are reported.

Year	# Deals	% of sample	% Uncertainty	% Weak Modal	# Cash-Only	# Stock-Only	# Mixed	# Related
1995	1	0.001	0.0102	0.0019	1	0	0	0
1996	7	0.010	0.0083	0.0043	3	1	3	3
1997	16	0.023	0.0093	0.0039	4	8	4	7
1998	24	0.035	0.0095	0.0034	7	13	4	18
1999	39	0.056	0.0099	0.0046	12	20	7	18
2000	35	0.051	0.0112	0.0045	10	17	8	26
2001	29	0.042	0.0116	0.0049	11	14	4	22
2002	24	0.035	0.0127	0.0052	13	4	7	16
2003	31	0.045	0.0123	0.0050	13	11	7	23
2004	43	0.062	0.0119	0.0051	24	9	10	27
2005	50	0.072	0.0131	0.0056	26	9	15	36
2006	52	0.075	0.0128	0.0053	32	9	11	27
2007	46	0.067	0.0132	0.0056	28	9	9	27
2008	34	0.049	0.0140	0.0060	19	10	5	25
2009	36	0.052	0.0137	0.0060	16	6	14	23
2010	54	0.078	0.0147	0.0064	35	9	10	40
2011	26	0.038	0.0143	0.0058	11	5	10	20
2012	41	0.059	0.0151	0.0064	26	7	8	26
2013	43	0.062	0.0142	0.0064	26	7	10	33
2014	60	0.087	0.0144	0.0061	21	18	21	49
Total	691	1.000	0.0129	0.0055	338	186	167	466

Table 4. Correlation Matrix

This table displays the correlation coefficients for variables that are used in the regression models. The sample includes 691 US completed domestic takeover transactions that involve publicly held acquirers and targets over the period of January 1<sup>st</sup>, 1995 to December 31<sup>st</sup>, 2014. Log(FileSize) is log of the file size of the target annual report in megabytes. Percentages of uncertainty words (Uncertainty) and weak modal words (Weak) are measured using the available target annual reports before the takeover announcement, requiring at least two months lag. Acquirer's 5-day cumulative abnormal return (5-Day CAR), acquirer's 3-day cumulative abnormal return (3-Day CAR) are computed around the announcement date. Acquirer free cash flow (A.FCF), acquirer market-to-book ratio (A.MB), acquirer size (A.Size), acquirer leverage (A.Leverage), acquirer analyst coverage (A.Analyst), target market-to-book ratio (T.MB), relative size (R.Size), target leverage (T.Leverage), target analyst coverage (T.Analyst), and target R&D expenditure (T.R&D) are measured at the end of the most recent year prior to takeover announcement date. Acquirers' stock run-up before the acquisition (A.Stock>Returns) is measured as acquirer buy and hold cumulative stock returns over the period of -154 business days to -28 business days prior to the deal announcement. Target sales growth (T.Sales.Growth) is measured over the two years before the deal announcement. Dummy variables are target being in the high-tech industry (T.Hi-Tech), acquirer and target being in the same industry (Related), and target and acquirer being in the same state in the US (Same.State). All the continuous variables are winsorized at the 1<sup>st</sup> and 99<sup>th</sup> percentile. The symbols \*, \*\*, \*\*\* indicates significance at the 10%, 5%, and 1% levels, respectively.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1) Log(FileSize)	1.00																			
2) Uncertainty	0.31***	1.00																		
3) Weak	0.24***	0.74***	1.00																	
4) 5-Day CAR	0.11**	-0.04	-0.05	1.00																
5) 3-Day CAR	0.12**	-0.06	-0.05	0.89***	1.00															
6) A.FCF	0	0.04	0.07	0.07	0.07	1.00														
7) A.MB	-0.16***	-0.05	0.06	-0.06	-0.04	0.23***	1.00													
8) A.Size	0.29***	0.10**	0.01	0.02	0.04	0.11**	0	1.00												
9) A.Leverage	0.08*	-0.15***	-0.08*	0.10**	0.10**	0.06	0.15***	0.03	1.00											
10) A.Analyst	0.09*	0.12**	0.20***	0.01	0.02	0.31***	0.31***	0.64***	-0.06	1.00										
11) A.Stock>Returns	-0.09*	-0.05	-0.02	-0.08*	-0.10**	-0.02	0.13***	-0.07	0.03	0.03	1.00									
12) T.MB	-0.12**	0.08*	0.17***	-0.14***	-0.15***	0.14***	0.34***	-0.06	-0.03	0.14***	0.17***	1.00								
13) R.Size	0.09*	-0.11**	-0.11**	0	0	-0.10**	-0.02	-0.38***	0.07	-0.31***	-0.03	-0.07	1.00							
14) T.Leverage	0.12**	-0.19***	-0.15***	0.01	0.03	0.03	-0.03	0.10*	0.41***	-0.04	-0.01	-0.04	0.17***	1.00						
15) T.Analyst	0.23***	0.13***	0.15***	-0.06	-0.05	0.21***	0.08*	0.39***	0.07	0.50***	0.01	0.11**	0.11**	0.14***	1.00					
16) T.Sales.Growth	-0.10**	0.06	0.15***	-0.02	-0.03	0.09*	0.21***	-0.04	0.06	0.08*	0.09*	0.18***	-0.03	0.04	0.01	1.00				
17) T.R&D	-0.14***	0.28***	0.45***	0.02	0	0.05	0.16***	-0.13***	-0.13***	0.16***	0.02	0.29***	-0.15***	-0.20***	0.02	0.10*	1.00			
18) T.Hi.Tech	-0.12**	0.23***	0.26***	-0.08*	-0.07	0.09*	0.14***	-0.14***	-0.13***	0.13**	0.15***	0.15***	-0.11**	-0.21***	0.09*	0.05	0.28***	1.00		
19) Related	0.12**	0.02	0	0	0.01	-0.14***	-0.08*	-0.07	0.01	-0.11**	0	-0.03	0.13***	0.06	-0.01	0.03	0.02	-0.05	1.00	
20) Same.State	0.05	0.01	-0.02	0	-0.03	-0.18***	-0.08*	-0.04	-0.08*	-0.11**	0	-0.08*	0.13***	-0.07	-0.02	-0.08*	-0.04	-0.04	0.07	1.00

Computed correlation used pearson-method with listwise-deletion.

Table 3. Descriptive Statistics

This table displays descriptive statistics of acquirer, target, and transaction-related variables. The sample includes 691 US completed domestic takeover transactions that involve publicly held acquirers and targets over the period of January 1<sup>st</sup>, 1995 to December 31<sup>st</sup>, 2014. Log(FileSize) is log of the file size of the target annual report in megabytes. Percentages of uncertainty words (Uncertainty) and weak modal words (Weak) are measured using the available target annual reports before the takeover announcement, requiring at least two months lag. Acquirer's 5-day cumulative abnormal return (5-Day CAR), acquirer's 3-day cumulative abnormal return (3-Day CAR) are computed around the announcement date. Acquirer free cash flow (A.FCF), acquirer market-to-book ratio (A.MB), acquirer size (A.Size), acquirer leverage (A.Leverage), acquirer analyst coverage (A.Analyst), target market-to-book ratio (T.MB), relative size (R.Size), target leverage (T.Leverage), target analyst coverage (T.Analyst), and target R&D expenditure (T.R&D) are measured at the end of the most recent year prior to takeover announcement date. Acquirers' stock run-up before the acquisition (A.Stock>Returns) is measured as acquirer buy and hold cumulative stock returns over the period of -154 business days to -28 business days prior to the deal announcement. Target sales growth (T.Sales.Growth) is measured over the two years before the deal announcement. Dummy variables are target being in the high-tech industry (T.Hi-Tech), acquirer and target being in the same industry (Related), target and acquirer being in the same state in the US (Same.State), cash-only deals (Cash.Only), and stock-only deals (Stock.Only). All the continuous variables are winsorized at the 1<sup>st</sup> and 99<sup>th</sup> percentile.

Variable	N	Mean	St. Dev.	Min	Pctl(25)	Median	Pctl(75)	Max
Log(FileSize)	691	6.1693	0.6277	5.087	5.641	6.096	6.514	7.579
Uncertainty	691	0.0129	0.0031	0.0064	0.0107	0.013	0.0152	0.0198
Weak	691	0.0055	0.0019	0.0017	0.0041	0.0052	0.0067	0.0106
5-Day CAR	686	-0.0042	0.0719	-0.2146	-0.0397	-0.0032	0.0265	0.2213
3-Day CAR	686	-0.0057	0.0656	-0.2064	-0.0348	-0.0039	0.0202	0.2122
A.FCF	691	0.0642	0.0778	-0.2369	0.0102	0.0688	0.113	0.2657
A.MB	691	3.9122	4.3338	0.5196	1.6763	2.5036	4.1084	26.1513
A.Size	691	3.6058	0.8626	1.6613	2.986	3.5992	4.2416	5.4403
A.Leverage	691	0.1644	0.1597	0	0.0368	0.1301	0.2329	0.6937
A.Analyst	691	14.1867	10.4468	0	6	12	21	44
A.Stock>Returns	691	0.0959	0.2763	-0.469	-0.0682	0.0559	0.205	1.2178
T.MB	691	2.9047	3.229	-3.7319	1.1726	1.9811	3.3657	17.982
R.Size	691	0.2705	0.4022	0.0009	0.0277	0.1053	0.3403	2.3218
T.Leverage	691	0.1367	0.1884	0	0.00005	0.0568	0.1971	0.8598
T.Analyst	691	5.9928	6.3749	0	1	4	9	30
T.Sales.Growth	691	0.2205	0.6593	-0.5742	-0.0173	0.0857	0.2282	4.771
T.R&D	691	0.0706	0.1161	0	0	0.0038	0.1013	0.5975
T.Hi.Tech	691	0.246	0.431	0	0	0	0	1
Related	691	0.6744	0.4689	0	0	1	1	1
S.State	691	0.246	0.431	0	0	0	0	1
Cash.Only	691	0.4891	0.5002	0	0	0	1	1
Stock.Only	691	0.2692	0.4439	0	0	0	1	1

Table 5. Target's Annual Report Tone Ambiguity and The Choice of Payment Method

This table documents the results of probit regression models. The sample includes 691 US completed domestic takeover transactions that involve publicly held acquirers and targets over the period of January 1<sup>st</sup>, 1995 to December 31<sup>st</sup>, 2014. The dependent variables in all specifications is a binary variable that takes the value of 1 if the method of payment is cash and 0 otherwise. Independent variables include percentages of uncertainty words (Uncertainty) and weak modal words (Weak) and are measured using the available target annual reports before the takeover announcement, requiring at least two months lag. Control variables that are measured at the end of the most recent fiscal year prior to the takeover announcement date include acquirer free cash flow (A.FCF), acquirer market-to-book ratio (A.MB), acquirer size (A.Size), acquirer leverage (A.Leverage), acquirer analyst coverage (A.Analyst), target market-to-book ratio (T.MB), relative size (R.Size), target leverage (T.Leverage), target analyst coverage (T.Analyst), and target R&D expenditure (T.R&D). Log(FileSize) is log of the file size of the target annual report in megabytes. Acquirers' stock run-up before the acquisition (A.Stock>Returns) is measured as acquirer buy and hold cumulative stock returns over the period of -154 business days to -28 business days prior to the deal announcement. Target sales growth (T.Sales.Growth) is measured over the two years before the deal announcement. Dummy variables are target being in the high-tech industry (T.Hi-Tech), acquirer and target being in the same industry (Related), and target and acquirer being in the same state in the US (Same.State). All the continuous variables are winsorized at the 1<sup>st</sup> and 99<sup>th</sup> percentile. The symbols \*, \*\*, \*\*\* indicates significance at the 10%, 5%, and 1% levels, respectively. z-statistics are calculated using White heteroscedasticity-consistent standard errors. p-values are presented in parentheses.

	<i>Probit Regression Models</i>				
	Model 1	Model 2	Model 3	Model 4	Model 5
Constant	-0.0672 (0.9065)	-0.3337 (0.5809)	1.0607 (0.2896)	-0.1609 (0.7818)	1.369 (0.1635)
log(FileSize)			-0.1404* (0.0884)		-0.1569* (0.0560)
Uncertainty		32.7882 (0.1081)	29.3479 (0.1479)		
Weak				87.0907** (0.0127)	89.5752** (0.0106)
A.FCF	5.0642*** (0.0000)	5.0711*** (0.0000)	5.0311*** (0.0000)	5.1690*** (0.0000)	5.1271*** (0.0000)
A.MB	-0.0363** (0.0186)	-0.0358** (0.0173)	-0.0340** (0.0229)	-0.0358** (0.0192)	-0.0337** (0.0243)
A.Size	0.2724*** (0.0079)	0.2751*** (0.0070)	0.3080*** (0.0030)	0.3108*** (0.0028)	0.3481*** (0.0011)
A.Leverage	0.1816 (0.6818)	0.2132 (0.6320)	0.161 (0.7169)	0.2326 (0.5978)	0.1811 (0.6808)
A.Analyst	-0.0099 (0.2333)	-0.0101 (0.2222)	-0.0106 (0.2020)	-0.0121 (0.1450)	-0.0126 (0.1285)
A.Stock>Returns	-0.2648 (0.2088)	-0.2603 (0.2083)	-0.2509 (0.2260)	-0.269 (0.1928)	-0.258 (0.2109)
T.MB	-0.0467*** (0.0093)	-0.0489*** (0.0069)	-0.0506*** (0.0049)	-0.0491*** (0.0064)	-0.0515*** (0.0040)
R.Size	-1.7322*** (0.0000)	-1.7309*** (0.0000)	-1.6579*** (0.0000)	-1.6754*** (0.0000)	-1.5946*** (0.0000)
T.Leverage	0.0151 (0.9657)	0.074 (0.8355)	0.1315 (0.7168)	0.0471 (0.8950)	0.1232 (0.7361)
T.Analyst	-0.0283*** (0.0032)	-0.0289*** (0.0026)	-0.0261*** (0.0073)	-0.0304*** (0.0017)	-0.0276*** (0.0050)
T.Sales.Growth	-0.2055*** (0.0017)	-0.2196*** (0.0010)	-0.2198*** (0.0011)	-0.2378*** (0.0004)	-0.2407*** (0.0004)
T.R&D	0.1486 (0.7647)	-0.0622 (0.9043)	-0.0451 (0.9302)	-0.2936 (0.5907)	-0.3071 (0.5758)
T.Hi.Tech	0.3824* (0.0831)	0.3375 (0.1234)	0.3312 (0.1383)	0.3334 (0.1273)	0.3181 (0.1528)
Related	-0.0296 (0.8037)	-0.0123 (0.9177)	-0.0006 (0.9961)	-0.0043 (0.9712)	0.0116 (0.9216)
Same.State	0.0348 (0.7909)	0.0291 (0.8229)	0.0247 (0.8494)	0.0252 (0.8459)	0.0203 (0.8760)
Industry Effect	Yes	Yes	Yes	Yes	Yes
Year Effect	Yes	Yes	Yes	Yes	Yes
Observations	691	691	691	691	691
Pseudo R-sq.	0.4062	0.4081	0.4103	0.4107	0.4135
Maximum VIF	4.45	4.47	4.57	4.55	4.65

Table 6. Target's Annual Report Tone Ambiguity and Acquirer Announcement Returns [-2; +2]

This table documents the results of ordinary least squares regression models. The sample includes 686 US completed domestic takeover transactions that involve publicly held acquirers and targets over the period of January 1<sup>st</sup>, 1995 to December 31<sup>st</sup>, 2014. The dependent variable in all models is the acquirer's 5-day cumulative abnormal return (5-Day CAR). Independent variables include percentages of uncertainty words (Uncertainty) and weak modal words (Weak) and are measured using the available target annual reports before the takeover announcement, requiring at least two months lag. Control variables that are measured at the end of the most recent fiscal year prior to the takeover announcement date include acquirer free cash flow (A.FCF), acquirer market-to-book ratio (A.MB), acquirer size (A.Size), acquirer leverage (A.Leverage), acquirer analyst coverage (A.Analyst), target market-to-book ratio (T.MB), relative size (R.Size), target leverage (T.Leverage), target analyst coverage (T.Analyst), and target R&D expenditure (T.R&D). Log(FileSize) is log of the file size of the target annual report in megabytes. Acquirers' stock run-up before the acquisition (A.Stock>Returns) is measured as acquirer buy and hold cumulative stock returns over the period of -154 business days to -28 business days prior to the deal announcement. Target sales growth (T.Sales.Growth) is measured over the two years before the deal announcement. Dummy variables are target being in the high-tech industry (T.Hi-Tech), acquirer and target being in the same industry (Related), target and acquirer being in the same state in the US (Same.State), cash-only deals (Cash.Only), and stock-only deals (Stock.Only). All the continuous variables are winsorized at the 1<sup>st</sup> and 99<sup>th</sup> percentile. The symbols \*, \*\*, \*\*\* indicates significance at the 10%, 5%, and 1% levels, respectively. t-statistics are calculated using White heteroscedasticity-consistent standard errors. p-values are presented in parentheses.

	<i>OLS Regression Models</i>				
	Model 1	Model 2	Model 3	Model 4	Model 5
Constant	0.0263 (0.3077)	0.0441* (0.0822)	0.0204 (0.6569)	0.0295 (0.2472)	-0.003 (0.9457)
log(FileSize)			0.0023 (0.5723)		0.0032 (0.4217)
Uncertainty		-2.2315* (0.0504)	-2.1844* (0.0576)		
Weak				-5.1563** (0.0130)	-5.1856** (0.0124)
A.FCF	0.0448 (0.4760)	0.0446 (0.4742)	0.0442 (0.4782)	0.0379 (0.5381)	0.0374 (0.5442)
A.MB	-0.0009 (0.3029)	-0.001 (0.2870)	-0.001 (0.2731)	-0.0009 (0.3040)	-0.0009 (0.2836)
A.Size	-0.0017 (0.7599)	-0.002 (0.7284)	-0.0024 (0.6748)	-0.0039 (0.5019)	-0.0045 (0.4390)
A.Leverage	0.0582** (0.0258)	0.0552** (0.0351)	0.0558** (0.0325)	0.0557** (0.0325)	0.0565** (0.0296)
A.Analyst	0.0005 (0.2344)	0.0005 (0.2384)	0.0005 (0.2280)	0.0006 (0.1229)	0.0006 (0.1132)
A.Stock>Returns	-0.0092 (0.5102)	-0.0093 (0.5070)	-0.0094 (0.4991)	-0.0094 (0.4997)	-0.0096 (0.4884)
T.MB	-0.0027** (0.0474)	-0.0026* (0.0556)	-0.0025* (0.0586)	-0.0026* (0.0546)	-0.0025* (0.0595)
R.Size	0.0001 (0.9914)	-0.0001 (0.9929)	-0.0005 (0.9637)	-0.0007 (0.9541)	-0.0013 (0.9121)
T.Leverage	-0.0149 (0.3822)	-0.0189 (0.2578)	-0.0196 (0.2429)	-0.0171 (0.3139)	-0.0182 (0.2869)
T.Analyst	-0.0011** (0.0390)	-0.0010* (0.0554)	-0.0010** (0.0471)	-0.0010* (0.0553)	-0.0010** (0.0433)
T.Sales.Growth	0.0013 (0.8092)	0.0024 (0.6687)	0.0024 (0.6606)	0.0032 (0.5673)	0.0033 (0.5520)
T.R&D	0.0860** (0.0131)	0.1004*** (0.0048)	0.1005*** (0.0048)	0.1130*** (0.0019)	0.1136*** (0.0019)
T.Hi.Tech	-0.0114 (0.3073)	-0.0093 (0.4090)	-0.0091 (0.4191)	-0.009 (0.4311)	-0.0086 (0.4495)
Related	0.0019 (0.7698)	0.001 (0.8748)	0.0009 (0.8976)	0.0009 (0.8871)	0.0006 (0.9230)
Same.State	0.0069 (0.2891)	0.0067 (0.3004)	0.0068 (0.2943)	0.007 (0.2747)	0.0071 (0.2664)
Cash.Only	0.0260*** (0.0014)	0.0274*** (0.0009)	0.0277*** (0.0008)	0.0280*** (0.0006)	0.0285*** (0.0005)
Stock.Only	0.0074 (0.3973)	0.0088 (0.3156)	0.0089 (0.3139)	0.008 (0.3573)	0.008 (0.3518)
Industry Effect	Yes	Yes	Yes	Yes	Yes
Year Effect	Yes	Yes	Yes	Yes	Yes
Observations	686	686	686	686	686
Adjusted R <sup>2</sup>	0.0943	0.0985	0.0974	0.1034	0.1027
F Statistic	1.8015***	1.8314***	1.8119***	1.8779***	1.8615***
Maximum VIF	3.98	3.98	6.24	4.05	6.20

Table 7. Robustness check: Alternative Measure of Readability (number of words)

This table documents the results of probit and ordinary least squares regression models. The sample includes 691 US completed domestic takeover transactions that involve publicly held acquirers and targets over the period of January 1<sup>st</sup>, 1995 to December 31<sup>st</sup>, 2014. The dependent variable in Models 1 and 2 is a binary variable that takes the value of 1 if the method of payment is cash and 0 otherwise and in Models 3 and 4 is the acquirer's 5-day cumulative abnormal return (5-Day CAR). Independent variables include percentages of uncertainty words (Uncertainty) and weak modal words (Weak) and are measured using the available target annual reports before the takeover announcement, requiring at least two months lag. Control variables that are measured at the end of the most recent fiscal year prior to the takeover announcement include acquirer free cash flow (A.FCF), acquirer market-to-book ratio (A.MB), acquirer size (A.Size), acquirer leverage (A.Leverage), acquirer analyst coverage (A.Analyst), target market-to-book ratio (T.MB), relative size (R.Size), target leverage (T.Leverage), target analyst coverage (T.Analyst), and target R&D expenditure (T.R&D). Log(N\_Words) is the log of the number of words in the target annual report. Acquirers' stock run-up before the acquisition (A.Stock>Returns) is measured as acquirer buy and hold cumulative stock returns over the period of -154 business days to -28 business days prior to the deal announcement. Target sales growth (T.Sales.Growth) is measured over the two years before the deal announcement. Dummy variables are target being in the high-tech industry (T.Hi-Tech), acquirer and target being in the same industry (Related), target and acquirer being in the same state in the US (Same.State), cash-only deals (Cash.Only), and stock-only deals (Stock.Only). All the continuous variables are winsorized at the 1<sup>st</sup> and 99<sup>th</sup> percentile. The symbols \*, \*\*, \*\*\* indicates significance at the 10%, 5%, and 1% levels, respectively. z- and t-statistics are calculated using White heteroscedasticity-consistent standard errors. p-values are presented in parentheses.

	<i>Probit Regression Models</i>		<i>OLS Regression Models</i>	
	Model 1	Model 2	Model 3	Model 4
Constant	0.6623 (0.6656)	1.5078 (0.2608)	0.0831 (0.2507)	0.007 (0.9123)
log(N_Words)	-0.1063 (0.4671)	-0.1897 (0.1529)	-0.0041 (0.5620)	0.0025 (0.6930)
Uncertainty	25.5914 (0.2451)		-2.5018** (0.0486)	
Weak		92.9991*** (0.0079)		-5.1966** (0.0125)
A.FCF	5.0809*** (0.0000)	5.2125*** (0.0000)	0.0455 (0.4636)	0.0373 (0.5458)
A.MB	-0.0354** (0.0186)	-0.0349** (0.0201)	-0.0009 (0.2979)	-0.0009 (0.2964)
A.Size	0.2866*** (0.0048)	0.3351*** (0.0013)	-0.0016 (0.7817)	-0.0041 (0.4726)
A.Leverage	0.1925 (0.6630)	0.2146 (0.6249)	0.0548** (0.0362)	0.0557** (0.0327)
A.Analyst	-0.0101 (0.2198)	-0.0123 (0.1365)	0.0005 (0.2454)	0.0006 (0.1204)
A.Stock>Returns	-0.2571 (0.2146)	-0.2623 (0.2037)	-0.0089 (0.5227)	-0.0096 (0.4909)
T.MB	-0.0497*** (0.0059)	-0.0519*** (0.0042)	-0.0026* (0.0530)	-0.0025* (0.0579)
R.Size	-1.6963*** (0.0000)	-1.6173*** (0.0000)	0.0004 (0.9750)	-0.001 (0.9327)
T.Leverage	0.0884 (0.8039)	0.1018 (0.7774)	-0.0184 (0.2717)	-0.0178 (0.2964)
T.Analyst	-0.0269*** (0.0064)	-0.0273*** (0.0052)	-0.0009* (0.0821)	-0.0010* (0.0511)
T.Sales.Growth	-0.2153*** (0.0013)	-0.2385*** (0.0005)	0.0024 (0.6660)	0.0033 (0.5578)
T.R&D	0.0114 (0.9826)	-0.2737 (0.6194)	0.1029*** (0.0038)	0.1127*** (0.0019)
T.Hi.Tech	0.3355 (0.1251)	0.3098 (0.1550)	-0.0093 (0.4088)	-0.0088 (0.4444)
Related	-0.0074 (0.9508)	0.0131 (0.9120)	0.0013 (0.8436)	0.0007 (0.9164)
Same.State	0.0328 (0.8003)	0.0298 (0.8176)	0.0067 (0.2969)	0.007 (0.2776)
Cash.Only			0.0273*** (0.0009)	0.0282*** (0.0006)
Stock.Only			0.009 (0.3081)	0.008 (0.3559)
Industry Effect	Yes	Yes	Yes	Yes
Year Effect	Yes	Yes	Yes	Yes
Observations	691	691	686	686
Pseudo R-sq.	0.4086	0.4126		
Adjusted R <sup>2</sup>			0.0974	0.1021
F Statistic			1.8127***	1.8561***
Maximum VIF	4.52	4.60	4.03	4.11

Table 8. Target's Annual Report Tone Ambiguity and Acquirer Announcement Returns [-1; +1]

This table documents the results of ordinary least squares regression models. The sample includes 686 US completed domestic takeover transactions that involve publicly held acquirers and targets over the period of January 1<sup>st</sup>, 1995 to December 31<sup>st</sup>, 2014. The dependent variable in all models is the acquirer's 3-day cumulative abnormal return (3-Day CAR). Independent variables include percentages of uncertainty words (Uncertainty) and weak modal words (Weak) and are measured using the available target annual reports before the takeover announcement, requiring at least two months lag. Control variables that are measured at the end of the most recent fiscal year prior to the takeover announcement include acquirer free cash flow (A.FCF), acquirer market-to-book ratio (A.MB), acquirer size (A.Size), acquirer leverage (A.Leverage), acquirer analyst coverage (A.Analyst), target market-to-book ratio (T.MB), relative size (R.Size), target leverage (T.Leverage), target analyst coverage (T.Analyst), and target R&D expenditure (T.R&D). Log(FileSize) is log of the file size of the target annual report in megabytes. Acquirers' stock run-up before the acquisition (A.Stock>Returns) is measured as acquirer buy and hold cumulative stock returns over the period of -154 business days to -28 business days prior to the deal announcement. Target sales growth (T.Sales.Growth) is measured over the two years before the deal announcement. Dummy variables are target being in the high-tech industry (T.Hi-Tech), acquirer and target being in the same industry (Related), target and acquirer being in the same state in the US (Same.State), cash-only deals (Cash.Only), and stock-only deals (Stock.Only). All the continuous variables are winsorized at the 1<sup>st</sup> and 99<sup>th</sup> percentile. The symbols \*, \*\*, \*\*\* indicates significance at the 10%, 5%, and 1% levels, respectively. t-statistics are calculated using White heteroscedasticity-consistent standard errors. p-values are presented in parentheses.

	<i>OLS Regression Models</i>				
	Model 1	Model 2	Model 3	Model 4	Model 5
Constant	-0.0346 (0.1954)	-0.0112 (0.6618)	-0.0175 (0.6782)	-0.0314 (0.2384)	-0.0493 (0.2473)
log(FileSize)			0.0006 (0.8618)		0.0018 (0.6168)
Uncertainty		-2.9402*** (0.0030)	-2.9275*** (0.0032)		
Weak				-5.1464*** (0.0050)	-5.1625*** (0.0048)
A.FCF	0.017 (0.7626)	0.0167 (0.7625)	0.0166 (0.7639)	0.0102 (0.8526)	0.0099 (0.8568)
A.MB	-0.0001 (0.8806)	-0.0002 (0.8523)	-0.0002 (0.8455)	-0.0001 (0.8950)	-0.0001 (0.8756)
A.Size	-0.002 (0.7040)	-0.0023 (0.6596)	-0.0025 (0.6486)	-0.0041 (0.4373)	-0.0045 (0.4051)
A.Leverage	0.0479** (0.0473)	0.0439* (0.0697)	0.0441* (0.0676)	0.0454* (0.0601)	0.0459* (0.0568)
A.Analyst	0.0005 (0.1397)	0.0005 (0.1422)	0.0005 (0.1407)	0.0007* (0.0604)	0.0007* (0.0569)
A.Stock>Returns	-0.0136 (0.2654)	-0.0136 (0.2588)	-0.0137 (0.2574)	-0.0137 (0.2530)	-0.0139 (0.2485)
T.MB	-0.0024** (0.0333)	-0.0022** (0.0430)	-0.0022** (0.0437)	-0.0022** (0.0391)	-0.0022** (0.0416)
R.Size	0.0035 (0.7603)	0.0032 (0.7768)	0.003 (0.7863)	0.0027 (0.8104)	0.0024 (0.8342)
T.Leverage	-0.0068 (0.6511)	-0.0122 (0.4104)	-0.0124 (0.4043)	-0.0091 (0.5478)	-0.0097 (0.5239)
T.Analyst	-0.0008 (0.1064)	-0.0007 (0.1610)	-0.0007 (0.1545)	-0.0007 (0.1478)	-0.0008 (0.1292)
T.Sales.Growth	-0.0001 (0.9926)	0.0013 (0.8243)	0.0013 (0.8223)	0.0018 (0.7630)	0.0018 (0.7544)
T.R&D	0.0512** (0.0496)	0.0702** (0.0105)	0.0702** (0.0104)	0.0781*** (0.0062)	0.0784*** (0.0062)
T.Hi.Tech	-0.0088 (0.4045)	-0.0059 (0.5688)	-0.0059 (0.5719)	-0.0063 (0.5561)	-0.0061 (0.5676)
Related	0.0046 (0.4334)	0.0034 (0.5587)	0.0034 (0.5638)	0.0036 (0.5366)	0.0034 (0.5545)
Same.State	0.0022 (0.6839)	0.002 (0.7133)	0.002 (0.7104)	0.0024 (0.6618)	0.0024 (0.6525)
Cash.Only	0.0319*** (0.0000)	0.0338*** (0.0000)	0.0338*** (0.0000)	0.0339*** (0.0000)	0.0342*** (0.0000)
Stock.Only	0.0073 (0.3505)	0.0092 (0.2372)	0.0092 (0.2368)	0.0078 (0.3094)	0.0079 (0.3067)
Industry Effect	Yes	Yes	Yes	Yes	Yes
Year Effect	Yes	Yes	Yes	Yes	Yes
Observations	686	686	686	686	686
Adjusted R <sup>2</sup>	0.1269	0.1373	0.1359	0.1381	0.137
F Statistic	2.1184***	2.2111***	2.1835***	2.2199***	2.1947***
Maximum VIF	3.98	3.98	6.24	4.05	4.14

## Supplementary Appendix

### List of Uncertainty words

ABEYANCE	CONCEIVABLY	IMPRECISIONS	PRESUMPTIONS	SEEMS	UNIDENTIFIED
ABEYANCES	CONDITIONAL	IMPROBABILITY	PROBABILISTIC	SELDOM	UNKNOWN
ALMOST	CONDITIONALLY	IMPROBABLE	PROBABILITIES	SELDOMLY	UNKNOWN
ALTERATION	CONFUSES	INCOMPLETENESS	PROBABILITY	SOMETIME	UNOBSERVABLE
ALTERATIONS	CONFUSING	INDEFINITE	PROBABLE	SOMETIMES	UNPLANNED
AMBIGUITIES	CONFUSINGLY	INDEFINITELY	PROBABLY	SOMEWHAT	UNPREDICTABILITY
AMBIGUITY	CONFUSION	INDEFINITENESS	RANDOM	SOMEWHERE	UNPREDICTABLE
AMBIGUOUS	CONTINGENCIES	INDETERMINABLE	RANDOMIZE	SPECULATE	UNPREDICTABLY
ANOMALIES	CONTINGENCY	INDETERMINATE	RANDOMIZED	SPECULATED	UNPREDICTED
ANOMALOUS	CONTINGENT	INEXACT	RANDOMIZES	SPECULATES	UNPROVED
ANOMALOUSLY	CONTINGENTLY	INEXACTNESS	RANDOMIZING	SPECULATING	UNPROVEN
ANOMALY	CONTINGENTS	INSTABILITIES	RANDOMLY	SPECULATION	UNQUANTIFIABLE
ANTICIPATE	COULD	INSTABILITY	RANDOMNESS	SPECULATIONS	UNQUANTIFIED
ANTICIPATED	CROSSROAD	INTANGIBLE	REASSESS	SPECULATIVE	UNRECONCILED
ANTICIPATES	CROSSROADS	INTANGIBLES	REASSESSED	SPECULATIVELY	UNREASONABLE
ANTICIPATING	DEPEND	LIKELIHOOD	REASSESSES	SPORADIC	UNSEASONABLY
ANTICIPATION	DEPENDED	MAY	REASSESSING	SPORADICALLY	UNSETTLED
ANTICIPATIONS	DEPENDENCE	MAYBE	REASSESSMENT	SUDDEN	UNSPECIFIC
APPARENT	DEPENDENCIES	MIGHT	REASSESSMENTS	SUDDENLY	UNSPECIFIED
APPARENTLY	DEPENDENCY	NEARLY	RECALCULATE	SUGGEST	UNTESTED
APPEAR	DEPENDENT	NONASSESSABLE	RECALCULATED	SUGGESTED	UNUSUAL
APPEARED	DEPENDING	OCCASIONALLY	RECALCULATES	SUGGESTING	UNUSUALLY
APPEARING	DEPENDS	ORDINARILY	RECALCULATING	SUGGESTS	UNWRITTEN
APPEARS	DESTABILIZING	PENDING	RECALCULATION	SUSCEPTIBILITY	VAGARIES
APPROXIMATE	DEVIATE	PERHAPS	RECALCULATIONS	TENDING	VAGUE
APPROXIMATED	DEVIATED	POSSIBILITIES	RECONSIDER	TENTATIVE	VAGUELY
APPROXIMATELY	DEVIATES	POSSIBILITY	RECONSIDERED	TENTATIVELY	VAGUENESS
APPROXIMATES	DEVIATING	POSSIBLE	RECONSIDERING	TURBULENCE	VAGUENESSES
APPROXIMATING	DEVIATION	POSSIBLY	RECONSIDERS	UNCERTAIN	VAGUER
APPROXIMATION	DEVIATIONS	PRECAUTION	REEXAMINATION	UNCERTAINLY	VAGUEST
APPROXIMATIONS	DIFFER	PRECAUTIONARY	REEXAMINE	UNCERTAINTIES	VARIABILITY
ARBITRARILY	DIFFERED	PRECAUTIONS	REEXAMINING	UNCERTAINTY	VARIABLE
ARBITRARINESS	DIFFERING	PREDICT	REINTERPRET	UNCLEAR	VARIABLES
ARBITRARY	DIFFERS	PREDICTABILITY	REINTERPRETATION	UNCONFIRMED	VARIABLELY
ASSUME	DOUBT	PREDICTED	REINTERPRETATIONS	UNDECIDED	VARIANCE
ASSUMED	DOUBTED	PREDICTING	REINTERPRETED	UNDEFINED	VARIANCES
ASSUMES	DOUBTFUL	PREDICTION	REINTERPRETING	UNDESIGNATED	VARIANT
ASSUMING	DOUBTS	PREDICTIONS	REINTERPRETS	UNDETECTABLE	VARIANTS
ASSUMPTION	EXPOSURE	PREDICTIVE	REVISE	UNDETERMINABLE	VARIATION
ASSUMPTIONS	EXPOSURES	PREDICTOR	REVISED	UNDETERMINED	VARIATIONS
BELIEVE	FLUCTUATE	PREDICTORS	RISK	UNDOCUMENTED	VARIED
BELIEVED	FLUCTUATED	PREDICTS	RISKED	UNEXPECTED	VARIES
BELIEVES	FLUCTUATES	PRELIMINARILY	RISKIER	UNEXPECTEDLY	VARY
BELIEVING	FLUCTUATING	PRELIMINARY	RISKIEST	UNFAMILIAR	VARYING
CAUTIOUS	FLUCTUATION	PRESUMABLY	RISKINESS	UNFAMILIARITY	VOLATILE
CAUTIOUSLY	FLUCTUATIONS	PRESUME	RISKING	UNFORECASTED	VOLATILITIES
CAUTIOUSNESS	HIDDEN	PRESUMED	RISKS	UNFORSEEN	VOLATILITY
CLARIFICATION	HINGES	PRESUMES	RISKY	UNGUARANTEED	
CLARIFICATIONS	IMPRECISE	PRESUMING	ROUGHLY	UNHEDGED	
CONCEIVABLE	IMPRECISION	PRESUMPTION	RUMORS	UNIDENTIFIABLE	

### List of Weak Modal Words

ALMOST	NEARLY
APPARENTLY	OCCASIONALLY
APPEARED	PERHAPS
APPEARING	POSSIBLE
APPEARS	POSSIBLY
CONCEIVABLE	SELDOM
COULD	SELDOMLY
DEPEND	SOMETIMES
DEPENDED	SOMEWHAT
DEPENDING	SUGGEST
DEPENDS	SUGGESTS
MAY	UNCERTAIN
MAYBE	UNCERTAINLY
MIGHT	



# Study 2: Corporate Social Responsibility Performance Ratings and the Choice of Payment Method in Takeovers

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## Abstract

Choice of payment method in takeovers is mainly driven by both the asymmetric information between the acquirer and the target and the acquirer financial capability. In this paper, we examine whether increased transparency and better access to finance induced by high corporate social responsibility (CSR) performance ratings are associated with payment considerations in takeovers. More specifically, we investigate how acquirer and target CSR coverage provided by Kinder, Lydenberg, and Domini (KLD) and different levels of CSR performance affect the likelihood of cash offers in a sample of 836 US takeovers over the period 1992-2014. With regard to the target, the results of binary probit and ordered probit regression models suggest that KLD coverage is positively associated with the probability of cash offers, whereas we find a negative relationship with CSR concerns and no effect for CSR strengths. On the acquirer side, KLD coverage and CSR strengths both increase the probability of cash offers, whereas CSR concerns have no impact. We infer that CSR performance ratings coverage and level, by reducing information asymmetry on both the acquirer and the target sides and enhancing financing capability on the acquirer side, affect the choice of payment method in takeovers. Our results are robust to different model specifications and sample selection bias.

**JEL Classification:** G34; M14

**Keywords:** takeovers, method of payment, corporate social responsibility, information asymmetry

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## **1. Introduction**

Within the research area of corporate takeover, a significant portion of the relevant theoretical and empirical literature has been devoted to the study of the determinants of the method of payment. Understanding the drivers of the choice of payment method in takeover is significantly important given that it is systematically related to and can affect various aspects of the transaction including acquirer shareholders' wealth (Amihud, Lev, & Travlos, 1990; Brown & Ryngaert, 1991; Fu, Lin, & Officer, 2013; Linn & Switzer, 2001; Loughran & Vijh, 1997; Martynova & Renneboog, 2008; Travlos, 1987; Wansley, Lane, & Yang, 1987), the probability of deal completion, determent of rival bidders, firm subsequent financing decisions, and the premium (Berkovitch & Narayanan, 1990; Faccio & Masulis, 2005; Fishman, 1989; Raman, Shivakumar, & Tamayo, 2013).

The choice of payment method in takeovers is mainly driven by both asymmetric information between the acquirer and the target and acquirer financial capability. With regard to the first aspect, acquirers are more inclined to opt for stock swaps when buying a target that is subject to high information asymmetry to protect themselves against the lemon problem (Eckbo, Giammarino, & Heinkel, 1990; Hansen, 1987; Raman, Shivakumar, & Tamayo, 2013; Reuer, Shenkar, & Ragozzino, 2004). In contrast, when the target information asymmetry is low, the acquirer is likely to feel less need for such contingent payment (Luypaert & Van Caneghem, 2014; Reuer & Ragozzino, 2008). According to the theories and models of Myers and Majluf (1984), Hansen (1987), Shleifer and Vishny (2003), and Rhodes-Kropf and Viswanathan (2004), high information asymmetry gives the acquirer the opportunity to engage in market-timing behavior; therefore, stock swaps would be more probable in the case of stock overvaluation. With regard to acquirer financial capability, acquirers that are financially healthier and have higher debt capacity tend to opt for cash offers, suggesting that their financing capability also plays an important role in determining the choice of payment method (Faccio & Masulis, 2005; Karampatsas, Petmezas, & Travlos, 2014). Several studies that have investigated factors affecting the method of payment through mechanisms of information asymmetry and financing capability of the firm, such as target industry (Reuer et al., 2004), target and acquirer prior alliances and targets' IPOs (Reuer & Ragozzino, 2008), earnings quality (Raman et al., 2013), financial auditors (Luypaert & Van Caneghem, 2014), credit ratings (Karampatsas et al., 2014), and directors networks (Renneboog & Zhao, 2014). Although financial information is not the only information source used in takeover decisions (Raman et al., 2013), these studies mostly focused on factors that capture financial

dimensions of a firm's performance. Scant attention has been devoted to understand how nonfinancial dimensions of a firm's performance affect the method of payment in takeover decisions (e.g. Luypaert & Van Caneghem, 2017).

This study builds on stakeholder theory (Freeman, 1984) and contributes to this debate by examining the effect of a specific set of nonfinancial aspects, that is a firm's corporate social responsibility (CSR) performance. CSR performance has been proven to be an important consideration in takeover transactions given that overlooking such aspect can potentially result in huge losses for the parties in the deal. For example, in the case of Bayer's acquisition of Monsanto which led to a disaster for Bayer. Several studies document the importance of CSR performance in takeover transactions. Aktas et al. (2011) find that target social and environmental performance is positively associated with acquirer abnormal returns. Deng et al. (2013) show that acquirers with higher CSR performances realize higher announcement returns. In more recent studies, Choi et al. (2015) and Gomes and Marsat (2017) find that acquirers value CSR performance, pay a higher premium for targets with high CSR performance, and consider it as a channel to reduce information asymmetry regarding the value of the target. Although these studies have investigated the effect of acquirer and target CSR performance on different aspects of takeovers, the effect on payment consideration is yet to be explored.

Previous studies have argued that firms with high CSR performance have low information asymmetry due to the fact that they tend to report their social and environmental performance to outsiders, conduct their business based on mutual trust, and have a good reputation in the market (Benlemlih, 2017; Cheng, Ioannou, & Serafeim, 2014; Dhaliwal, Li, Tsang, & Yang, 2011; Kim, Park, & Wier, 2012; Wu & Shen, 2013). Consistent with this argument, several studies have documented an inverse relationship between CSR performance and information asymmetry (see e.g., Cho, Lee, & Pfeiffer, 2013; Cui, Jo, & Na, 2016; Dhaliwal et al., 2011; Lopatta, Buchholz, & Kaspereit, 2016). Therefore, firms with high CSR performance have been reported to enjoy higher capital accessibility (Cheng et al., 2014), lower cost of bond (Ge & Liu, 2015; Oikonomou, Brooks, & Pavelin, 2014), lower cost of equity (El Ghouli, Guedhami, Kwok, & Mishra, 2011; Ng & Rezaee, 2015), lower sensitivity to investment cash flow (Attig, Cleary, El Ghouli, & Guedhami, 2014), and more efficient investment and innovation (Cook, Romi, Sanchez, & Sanchez, 2019; Samet & Jarboui, 2017). On the other hand, firms with low CSR performance are penalized, for instance, by less attractive bank loan packages (Goss & Roberts, 2011). These findings suggest that CSR performance may affect the method of payment in takeovers. More specifically, high

CSR performance, by reducing information asymmetry on both the acquirer and target sides and enhancing financing capability on the acquirer side, may determine the choice of payment method. To the best of our knowledge, this study is the first to examine such an association.

We use ratings provided by Kinder, Lydenberg, and Domini (KLD) on a firm's CSR performance to proxy information asymmetry and first investigate the impact of both the acquirer and target firms' mere KLD coverage on the likelihood of cash offers. Cho et al. (2013) find that firms that are covered by KLD have lower information asymmetry than firms that are not covered. This finding shows that irrespective of the levels of CSR performance, mere existence of coverage by KLD enhances the information environment of firms. Further, since different levels of CSR performance imply different consequences and financing capabilities, we investigate the effect of high CSR performance (CSR strengths) and low CSR performance (CSR concerns) on the probability of cash offers. We expect that the KLD coverage and CSR strengths(concerns) of both the acquirer and target are positively(negatively) associated with the likelihood of cash offers.

We adopt binary probit regression models and use a sample of 836 completed US takeover transactions that took place between 1992 to 2014. With respect to the target, we find that target KLD coverage increases the likelihood of cash offers while its CSR strengths do not have any effect. Further, our findings indicate that target CSR concerns negatively affect the probability of cash offers. With respect to the acquirer, we find that both acquirer KLD coverage and CSR strengths are positively associated with the likelihood of cash offers, while we do not find results supporting our prediction regarding acquirer CSR concerns. In addition to controlling for various acquirer, target, and the transaction-related controls, we employ the Heckman two-step model to control for the sample selection problem. We also check the robustness of our results by estimating ordered probit models. Inferences from these additional analyses confirm our main findings.

Our study contributes to three streams of literature. First, we contribute to those studies that focus on information asymmetry between targets and acquirers and financial capability of acquirers as the determinants of the method of payment in takeovers (see e.g., Chemmanur, Paeglis, & Simonyan, 2009; Faccio & Masulis, 2005; Karampatsas et al., 2014; Luypaert & Van Caneghem, 2014, 2017; Raman et al., 2013; Reuer & Ragozzino 2008; Reuer et al., 2004). We extend the literature documenting that CSR performance of the acquirer and target, by reducing information asymmetry and being associated with higher financing capability, is an additional nonfinancial determinant of the method of payment in takeovers.

Second, it contributes to the literature that examines the effects of CSR performance in takeovers (Aktas, De Bodt, & Cousin, 2011; Choi, Petra, & Guar, 2015; Deng, Kang, & Low, 2013; Gomes & Marsat, 2017). Unlike these studies, our focus is on the relationship between CSR performance and the payment consideration. Our results extend the literature by showing that CSR performance is beneficial for both target and acquirer shareholders. More specifically, better CSR performance, reducing information asymmetry and enhancing financing capability, make acquirers able to use cash offers, which are in turn, on average, associated with better deal outcomes, faster completion time, and deterring potential rival bidders. On the target side, the negative effect of CSR concerns on the likelihood of cash offers suggests that targets with low CSR performance have less flexibility in offers they receive from acquirers in terms of method of payment. This could be problematic especially for targets that are in a financially distressed situation. Firms can avoid such hazard by proactively adopting strategies that enhance CSR performance.

Third, by focusing on CSR performance as factor that reduces information asymmetry, our paper contributes to the literature that examines whether CSR voluntary disclosure and performance increase firm transparency (Cho et al., 2013; Cui et al., 2016; Dhaliwal et al., 2011; Lopatta et al., 2016) and firm value (Attig et al., 2014; Cheng et al., 2014; Cook et al., 2019; El Ghouli et al., 2011; Ge & Liu, 2015; Ng & Rezaee, 2015; Nguyen, Kecskés, & Mansi, 2017; Oikonomou et al., 2014; Samet & Jarboui, 2017). Our study reinforces the argument that in takeovers both the acquirer and the target carefully consider CSR-related information in their investment decisions.

The rest of the paper is organized as follows. In Section 2, we review the relevant literature and develop our hypotheses. Section 3 contains the description of data, variables, and the research design. In Section 4, we present our findings, and Section 5 concludes the paper.

## **2. Prior Studies and Hypothesis Development**

### **2.1. Choice of Payment Method in Takeovers**

It is well established in the mergers and acquisitions (M&A) literature that in takeover transactions both the target and the acquirer have information disadvantages regarding each other's value. Information asymmetry on the target side makes the acquirer vulnerable to overpayment for a target that might turn out to be a lemon. Whereas in cash offers acquirers bear all the risk associated with the deal, in stock swaps acquirers protect themselves against this adverse selection problem and share any mispricing in the value of the target with target shareholders. This is because the

value of stock swaps is contingent upon the ex post performance of the combined firm (Eckbo et al., 1990; Fishman, 1989; Hansen, 1987; Officer, Poulsen, & Stegemoller, 2009). In line with this argument, Reuer et al. (2004) show that acquirers in cross-border takeovers tend to use stock swaps when buying a firm in high-tech or service industries. These industries are associated with a relatively higher level of human capital and intangible assets, which makes them difficult to value. Raman et al. (2013) find that when targets' financial reports are of poor quality, acquirers prefer stock swaps to share the risk of overpayment with target shareholders. In line with these studies, when the information asymmetry regarding the value of the target is low, the acquirer should find less need for such contingent payment. Reuer & Ragozzino (2008) find that target and acquirer prior alliances and targets' IPOs reduce the likelihood of stock swaps in takeovers. Luypaert & Van Caneghem (2014), using a sample of Belgian takeovers, show that acquirers are less likely to opt for stock swaps when targets have their financial statements assured by external financial auditors. The study provides evidence that high-quality third-party auditing of a firm's financial statements mitigates the information asymmetry regarding the value of the target, which in turn reduces the need for the use of contingent payment (stock swaps).

In presence of information asymmetry between managers and shareholders, managers have high incentives to issue equity when they believe it is overvalued (Myers & Majluf, 1984). In the context of takeovers, this theory implies that when acquirer information asymmetry is high it can exploit the market. According to the models of Myers & Majluf (1984), Hansen (1987), Shleifer & Vishny (2003), and Rhodes-Kropf & Viswanathan (2004), stock swaps would be more probable in case of stock overvaluation. In this regard, Shleifer & Vishny (2003) show that both takeover waves of the 1960s and the 1990s occurred during a very high stock market overvaluation and the method of payment was mostly stock swaps. Several empirical studies provide supporting evidence for this argument (see e.g., Faccio & Masulis, 2005 and Chemmanur et al., 2009). In a recent study, Luypaert & Van Caneghem (2017) show that acquirers subject to high information asymmetry and uncertainty are more likely to use stock swaps. However, low information asymmetry leaves them fewer incentives for such market-timing behavior due to less mispricing in their stock prices (Chang, Dasgupta, & Hilary, 2006). In a similar vein, Luypaert & Van Caneghem (2014) use the acquirer average market-wide price to earnings ratio as a proxy for acquirer overvaluation and find that overvalued acquirers use stock swaps in a sample of public and private Belgian takeovers. However, this market-timing behavior decreases as high-quality audit of financial statements mitigates information asymmetry.

Additionally, the financial capability of acquirers can also significantly affect the choice of payment method in takeovers. Faccio & Masulis (2005) use bidder collateral, leverage ratio, size, and bank interlocks as proxies for acquirer financial condition and debt capacity. They find that acquirers with better financial conditions and easier access to debt tend to opt for cash offers. Martynova & Renneboog (2009) further distinguish between method of payment and the means of financing in takeovers and argue that cash offers in takeovers are financed both by internal and external sources. From externally funded cash offers, 70% are financed through issuing debt and 30% by issuing equity. In line with pecking order theory, the authors find that acquirers with enough cash choose the least expensive source of financing, which is internal funds. This choice is then followed by debt financing for acquirers with high debt capacity, and the last option is the issuance of equity. This evidence suggests that easy access to debt and equity markets can significantly affect the choice of payment method in takeovers. Karampatsas et al. (2014) document that acquirers with relatively higher credit ratings opt for cash offers. This implies that highly rated acquirers have a more transparent information environment and therefore better access to finance. These acquirers, in order to take advantages related to cash offers, prefer to use cash as the method of payment because, due to their low information asymmetry, they have lower financial constraints and thus can raise funds for their investment needs by issuing debt on short notice.

## **2.2. Hypothesis Development**

Stakeholder theory holds that firms should consider the interests of stakeholders in addition to the interests of shareholders (Freeman, 1984). After several scandals during the past decades, firms are increasingly forced to be more transparent and communicate their activities in a way that improves their relation with stakeholders and meet their conflicting needs (Dhaliwal et al., 2011; Jo & Harjoto, 2011). A mechanism that has been put forward by stakeholder theory to obtain this goal is the choice of CSR practices and related levels of CSR performance (Cui et al., 2016; Eccles, Ioannou, & Serafeim, 2014; Jo & Harjoto, 2011). According to stakeholder theory, an enhanced firm's CSR performance channelled by more transparent CSR disclosure is beneficial for market participants due to its effects in reducing information asymmetry between the firm and the market. Stakeholders face a difficult task to comprehend and evaluate CSR disclosure. Therefore, CSR performance rating agencies seek to make such performances more understandable and transparent for them (Chatterji, Levine, & Toffel, 2009). Among others, KLD is one of the oldest and most well-known agencies that provides firm CSR performance ratings. Ratings given by KLD have

been used frequently in the CSR literature (Cui et al., 2016; Dhaliwal et al., 2011; Ge & Liu, 2015; Jo & Harjoto, 2011; Kim et al., 2012), and their credibility has been confirmed by several scholars (Kim et al., 2012; Mattingly & Berman, 2006; Waddock & Graves, 1997, 2006). Waddock and Graves (2006) argue that ratings provided by KLD are in line with the accepted standard for measuring the CSR performances and stakeholder practices of firms.

KLD gathers information needed to evaluate the CSR performance of firms from different sources, such as financial statement information, the media, reports from mainstream surveys, government documents, and peer-reviewed legal journals, which are beyond just voluntary disclosures. Therefore, ratings given by KLD can reveal extra information about the firm given that in voluntary disclosures firms can withhold negative information about their CSR performances (Cho et al., 2013). In line with this argument, Cohen, Holder-Webb, Nath, and Wood (2011) find that retail investors prefer to gather information about a firm's CSR performance from third-party sources such as rating agencies. Cho et al. (2013) rely on CSR performance ratings given by KLD and argue that these ratings correspond to the actual firm CSR performances that motivate CSR performance disclosure, which in turn reduces information asymmetry. They argue that KLD CSR performance ratings are comparable to some extent to the function of other information intermediaries in the market such as financial analysts. The authors find that irrespective of firm CSR performance levels, the mere existence of KLD coverage is associated with lower information asymmetry measured by the bid–ask spread.

Motivated by the findings of Cho et al. (2013), we explore first the effect of the mere existence of KLD coverage on the choice of payment method in takeovers. On the target side, if KLD coverage reduces its information asymmetry, an acquirer would be better able to evaluate the target's value and thus feel less need for contingent payment. On the acquirer side, if KLD coverage reduces its information asymmetry, an acquirer would have fewer incentives for using stock swaps because stock prices are less likely to deviate from true fundamental values due to higher information availability. Therefore, based upon this argument on the effect of KLD coverage on information asymmetry, we postulate the following hypotheses:

***Hypothesis 1)*** *A target's KLD coverage increases the probability of the acquirer's use of cash as the method of payment in takeovers.*

***Hypothesis 2)*** *An acquirer's KLD coverage increases the probability of the acquirer's use of cash as the method of payment in takeovers.*



We then turn our attention to whether different levels of firm CSR performance can affect the choice of payment method in takeovers. The literature has reported that CSR performance mitigates information asymmetry through several channels. First, firms with high CSR performance tend to report their social and environmental performance to outsiders (Dhaliwal et al., 2011). These reports reveal insights to the market regarding firm value beyond just financial information, which in turn improve firm transparency (Cheng et al., 2014; Cui et al., 2016). Therefore, investors obtain a more complete picture of the firm and a sense of trust through CSR disclosures (Benlemlih, 2017; Wu & Shen, 2013). Cho et al. (2013) argue that because CSR-related information affects the firm's cost of equity, transparency with regard to this information is as important as financial information reported by firms. Indeed, prior research documents that CSR encompasses information that is value-relevant for investors (Ng & Rezaee, 2015; Nguyen et al., 2017). Second, firms with high CSR performance conduct their businesses based on mutual trust and cooperation with various stakeholders and are committed to ethical behavior. Thus, they tend to deliver more transparent and reliable financial information to market participants, which in turn reduces information asymmetry (Kim et al., 2012; Wu & Shen, 2013). Finally, firms usually use CSR to build a good reputation in the market. Firms that are associated with a good reputation are more likely to produce a high-quality information environment to maintain their good reputation (Cui et al., 2016). Consistent with the above arguments, several studies have documented an inverse relationship between CSR performance and information asymmetry (see e.g., Cho et al., 2013; Cui et al., 2016; Dhaliwal et al., 2011; Lopatta et al., 2016). These findings suggest that CSR performance of target and acquirer firms may affect the choice of payment method in takeovers by reducing information asymmetry.

What is the value relevance of a firm's CSR performance in takeover transactions? Investors in general and in particular acquirers increasingly consider CSR performance of target firms in their decision making (Menz, 2010). In this regard, Ghosal and Sokol (2013) hold that acquirers' failure to detect problems related to social and environmental issues can lead to a negative post-acquisition outcome for acquirers. On the one hand, high CSR performance can create value for firms through attracting more loyal and productive employees, higher customer loyalty, and lower litigation costs. On the other hand, low CSR performance can bring about difficulties including employee strikes, lower employee productivity, government sanctions, and high litigation risk (Hong & Kacperczyk, 2009; Huang, Duan, & Zhu, 2017; Oikonomou et al., 2014; Waddock & Graves, 1997). In addition, firms' reputations can be destroyed if they ignore the social and

environmental effect of their businesses (Menz, 2010), which can create a liquidity problem for the firm (Oikonomou et al, 2014). Therefore, investors tend to incorporate a firm's CSR performance in their decision making and tend to discount the value of firms in presence of low levels of CSR performance (Ge & Liu, 2015). More specifically, in the context of takeovers, Choi et al. (2015) and Gomes and Marsat (2017) find that acquirers value CSR performance and pay a higher premium for a target with high CSR performance and consider it as a channel to reduce information asymmetry regarding the value of the target. Gomes and Marsat (2017) argue that nonfinancial CSR-related information is especially of significant importance in cross-border transactions that are subject to higher information asymmetry. In addition, the market tends to react positively to deals announced by acquirers that have high CSR performance or seek to acquire targets that have high CSR performance (Aktas et al., 2011; Deng et al., 2013). Deng et al. (2013) further document that takeovers announced by high-CSR acquirers have a higher probability of completion and take less time to complete.

Based upon the above arguments, high CSR performance on the target side is likely to resolve, at least partially, its inherent information asymmetry problem. Therefore, acquirers would have a higher level of information at their disposal and would be better able to value the target. This condition would lead to less need for stock swaps as contingent payment. On the contrary, we expect that a target's low CSR performance, by being associated with high information asymmetry, generates the opposite effect. Therefore, we posit the following two hypotheses on the target side:

***Hypothesis 3)*** *A target's high CSR performance (CSR strengths) increases the probability of an acquirer's use of cash as the method of payment in takeovers.*

***Hypothesis 4)*** *A target's low CSR performance (CSR concerns) decreases the probability of an acquirer's use of cash as the method of payment in takeovers.*

On the acquirer side, CSR performance is likely to affect the method of payment through two channels of information asymmetry and access to finance. Regarding the first channel, if an acquirer's high CSR performance reduces information asymmetry to infer its value, there would be fewer incentives for an acquirer to time the market (Luybaert & Van Caneghem, 2014). This is because the misvaluation in the stock prices of the acquirer would be lower. Regarding the second channel, the literature indicates that high CSR performance is associated with better capital accessibility. This association is mostly attributed to the effect of CSR performance in mitigating information asymmetry (see e.g., Benlemlih, 2017). In this regard, Oikonomou et al. (2014) find a

negative relationship between high CSR performance and the cost of bonds. The authors attribute the results to the fact that firms with high CSR performance have better stakeholder engagement and lower agency cost. They further find that the cost of bonds is higher for firms with low CSR performance because these firms have a higher probability of facing a negative outcome, such as government sanctions, product boycotts, lower employee productivity, and litigation risks. Ge & Liu (2015) report similar results and argue that, having lower information asymmetry and a larger investor base, firms with better CSR performance enjoy higher credit ratings and a lower cost of corporate bonds. Focusing on bank borrowings, Goss and Roberts (2011) show that banks consider CSR concerns as risks and thus provide relatively less attractive loan packages to firms with low CSR performance. However, they do not find any relation between CSR strengths and the cost of bank loans. Focusing on the equity market, El Ghouli et al. (2011) and Ng & Rezaee (2015) find that firms with high CSR performance bear a lower cost of equity. Attig et al. (2014) investigate the relationship between CSR performance and investment-cash-flow sensitivity as a measure of market imperfection and report a negative association. They attribute this result to the greater coverage of high-CSR-performance firms on Wall Street, which leads to more media attention and a high number of investors that in turn binds such firms to produce a higher level of information. In recent studies, Samet and Jarboui (2017) and Cook et al. (2019) find that the transparency resulting from higher CSR performance leads firms to invest in a more efficient manner.

In the context of takeovers, easier access to finance is likely to make acquirers with high CSR performance opt for cash offers rather than stock swaps. This is because cash offers are associated with several advantages such as non-negative takeover return, low target manager resistance, faster completion, and deterring rival bidders. In addition, these firms would have lower constraints to raise funds in the future for their investment needs (Karampatsas et al., 2014). Furthermore, acquirers with inferior CSR performance may not have easy access to capital and therefore are less likely to be able to opt for cash offers. Based upon the above argument we posit the following hypotheses:

***Hypothesis 5)*** *An acquirer's high CSR performance (CSR strengths) increases the probability of its use of cash as the method of payment in takeovers.*

***Hypothesis 6)*** *An acquirer's low CSR performance (CSR concerns) decreases the probability of its use of cash as the method of payment in takeovers.*

### 3. Data Sources, Variables, and Models' Specification

#### 3.1. Sample

This study covers a sample of the US completed takeover transactions that took place over the period of January 1, 1992 to December 31, 2014. Data on takeovers are collected from Thomson Reuters' EIKON M&A database. We include transactions that are in the form of a merger, acquisition of assets, acquisition of major assets, and acquisition of certain assets. We further applied the following criteria for a transaction to be included in our sample: 1) Both the target and the acquirer are publicly traded. This is to make sure that we have access to accounting and market data. 2) Acquirers own less than 5% of shares of the target firm before the transaction. The rationale is to make sure that acquirers do not have an information advantage with respect to the value of the target before transaction and to capture the fine-grained effect of CSR in reducing information asymmetry.<sup>6</sup> 3) Acquirers own more than 50% of the target firm after the transaction since we need acquirers to take over the control of the target firm after the transaction. Further, following prior studies (Chemmanur et al., 2009; Faccio & Masulis, 2005; Luypaert & Van Caneghem, 2017), we eliminate transactions whose method of payment is not available or is not in the form of cash, stock, or a combination of cash and stock. We obtained an initial sample of 4,521 transactions satisfying these conditions.

Next, we collected accounting data from COMPUSTAT and stock price data from the Center for Research in Security Prices (CRSP) for both the acquirer and the target. After eliminating the transactions with missing data, we obtained a final sample of 836 transactions for which all the accounting and market data are available. We then obtained CSR performance ratings data from KLD for both targets and acquirers in our final sample of 836 transactions. In our sample, 579 acquirers and 316 targets are covered by KLD, and in 305 transactions, both acquirers and targets are covered by KLD. The starting date of our sample is driven by the fact that CSR performance ratings given by KLD are available from 1991, and in our tests, we use one-year-lag CSR performance ratings. The ending date is explained by the availability up to 2013 of the aggregate scores for each component of CSR performance.

COMPUSTAT, CRSP, and KLD are accessed via Wharton Research Data Service (WRDS).

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<sup>6</sup> Dionne et al. (2015) argue that acquirers that own at least 5% of the shares of the target firm before the transactions are informed bidders and pay lower premium compare to uninformed bidders.

## 3.2. Main Variables

### *Method of Payment*

Our dependent variable is the choice of payment method in takeover transactions. We define this variable as a binary variable that takes the value of 1 if the payment method is in the form of cash, and 0 otherwise. Based on the data collected from the Thomson Reuters EIKON M&A database, the method of payment can be cash, stock, or a combination of cash and stock. The percentage of cash and stock used as the method of payment is not available in the database, and this is the reason we are obliged to define our dependent variable as a binary variable.

### *KLD Coverage and CSR Performance*

The main independent variables are KLD coverage and CSR performance of both the target and the acquirer. KLD coverage is a binary variable that takes the value of 1 if the firm is covered by KLD in the year prior to the deal announcement, and 0 otherwise. KLD evaluates the firms' CSR performance in 13 dimensions of CSR, out of which seven are qualitative issue areas and six are controversial business issues. Qualitative issue areas include the environment, community, employee relations, diversity, product, governance, and human rights. KLD provides binary ratings for a set of concerns and strengths in each of these qualitative issue areas, where 1 means the presence of a specific strength or concern and 0 means the absence of such a strength or concern. Controversial business issues include alcohol, gambling, firearms, military, nuclear power, and tobacco. KLD provides a binary rating for the whole of these areas in a set of concerns only, with 1 meaning that a firm is involved in at least one of these areas and 0 meaning that the firm is not involved at all. Because the controversial business issue areas are assigned as concerns only and not strengths, and are different from qualitative issue areas, following prior research (Cui et al., 2016; Dhaliwal et al., 2011; Ge & Liu, 2015; Jo & Harjoto, 2011) in this study we only focus on qualitative issue areas. Further, the data on human rights are not available for the entire period because they were added in 2002 and there are many missing observations; therefore, we exclude human rights from our CSR performance computation in line with previous studies (Cho et al., 2013; Cui et al., 2016; Kim et al., 2012). Consequently, our CSR performance computation is based on the remaining six qualitative issue areas, namely environment, community, employee relations, diversity, product, and governance.

We use acquirer and target CSR performance in the year prior to the deal announcement to make sure that the CSR performance information is known by the market participants. Mattingly & Berman (2006) argue that CSR strengths and concerns should not be aggregated to build an overall CSR performance because they are two different constructs. Implementing this principle, we compute aggregate CSR strengths and aggregate CSR concerns for each firm separately. To do so, we first sum all ratings of the indicators for strengths or concerns in each qualitative issue area and scale them by the maximum possible number of strengths or concerns indicators in that specific CSR category. Then, to calculate the overall CSR aggregate strengths/concerns, we add all the strength/concern scores across all qualitative issue areas constructed before and divide it by six, the number of qualitative issue areas. A similar approach to calculate CSR performance has been used by several scholars (see e.g., Jo & Harjoto, 2011; Kim et al., 2012; Oikonomou, Brooks, & Pavelin, 2012; Oikonomou et al., 2014).

### **3.3. Control Variables**

In this section, we discuss the typical variables that, according to the literature, may affect the estimate of our dependent variable, the method of payment. They are attributed to the acquirer, target, and transaction, and we report them following this order, while definitions and expected signs are also summarized in Table 1.

*Acquirer free cash flow (FCF):* According to pecking order theory, firms follow a sequence in their financing decisions that is driven by the cost associated with each source of financing. Based on this theory, to finance their investment firms tend to prefer internal funds first, then debt, followed by equity issuance, which is the last preferable source of financing (Myers & Majluf, 1984). In a takeover context, if firms have cash available or sufficient cash flow, from this rationale we expect that they are more likely to use cash offers rather than stock swaps as choice of payment. Several studies provide supportive evidence for this prediction (see e.g., Karampatsas et al., 2014; Martynova & Renneboog, 2009). To capture this effect, we calculate the free cash flow of the acquirer as operating income before depreciation minus interest expenses, taxes, preferred dividend, and common dividend divided by book value of total assets. This variable is calculated at the end of the most recent fiscal year before the deal announcement. We expect this variable to positively affect the probability of cash offers.

*Acquirer market-to-book (M/B) ratio:* Firms with high growth opportunity prefer financing their investments with equity rather than borrowing. This is to avoid any underinvestment problem that

might happen in the future because of a high level of debt. Martin (1996) argues that debt financing is preferable for poor-growth-opportunity firms due to the fact that they have to pay out cash flow and this deters them from bad investments. Equity financing is preferable for good-growth-opportunity firms because it gives them more discretion over funds that are raised and makes the firm take full advantage of the investment opportunities. Consistent with this argument, Martin (1996) documents that an acquirer's high M/B ratio increases the probability of stock swaps. Karampatsas et al. (2014) also find supporting evidence for this argument. We calculate acquirer M/B ratio by dividing the market value of common equity by book value at the end of the fiscal year preceding the deal announcement. We expect a negative association between the acquirer M/B ratio and the probability of cash offers.

*Acquirer size:* Large firms are characterized by a high level of diversification and lower bankruptcy costs (Faccio & Masulis, 2005). They also have higher debt capacity, which makes them more likely to opt for cash offers as the method of payment in takeovers. Faccio and Masulis (2005), Luypaert and Van Caneghem (2014), and Luypaert and Van Caneghem (2017) find supportive evidence for this argument. Similarly to these studies, we use the logarithm of an acquirer's total assets at the end of the fiscal year preceding the deal announcement to control for this effect and expect that it positively affects the probability of cash offers in takeover transactions.

*Acquirer leverage:* Highly levered acquirers are more likely to be in a financially constrained situation and not able to use cash to finance a takeover (Faccio & Masulis, 2005). However, the results of empirical studies are mixed. Faccio and Masulis (2005) find a negative association between acquirer leverage ratio and the likelihood of cash offers, whereas Karampatsas et al. (2014) document a positive association. We calculate the leverage ratio of an acquirer by dividing its long-term debt by its total assets at the end of the fiscal year preceding the deal announcement. The sign of this variable is undetermined for empirical confirmation.

*Acquirer analyst coverage:* Analysts act as information intermediaries in the market and reduce the information asymmetry of firms they follow. They actively and continuously participate in acquisition and processing of information from firms, distributing it to current and potential investors in the market (Chang et al., 2006; Chung & Jo, 1996; Derrien & Kecskes, 2013). Therefore, if analyst coverage reduces information asymmetry, an acquirer would have fewer incentives to use stock swaps given that their stocks are less likely to deviate from their fundamental values (Chang et al., 2006). Hence, market-timing behavior would be less probable,

making cash offers more likely. However, Karampatsas et al. (2014) argue that a target's reluctance to accept stock as the method of payment decreases as acquirer information asymmetry decreases due to high analyst coverage. They find that acquirer analyst coverage negatively affects the probability of cash offers in takeovers. Following Chang et al. (2006), we consider analyst coverage as the maximum number of analysts who cover the acquirer and provide earnings forecasts in any month in the year before the takeover transaction's year. Analyst coverage is collected from the I/B/E/S database. If no forecast is reported by I/B/E/S in the year before the deal announcement for a firm, then analyst coverage is considered as zero (Bowen, Chen, & Cheng, 2008). The I/B/E/S database is accessed via WRDS. The sign of this variable is left for empirical confirmation.

*Acquirer stock return:* The probability of stock swaps as the method of payment increases when the acquirer stocks are overvalued. Shleifer and Vishny (2003) show that both merger waves of the 1960s and 1990s occurred during a very high stock market overvaluation, and the method of payment was mostly stock swaps. Faccio and Masulis (2005) and Karampatsas et al. (2014) rely on the acquirer's pre-acquisition stock run-up to measure the effect of stock overvaluation on the method of payment and find that this stock run-up has a significantly negative effect on the probability of cash offers. To control for the overvaluation effect, we calculate the bidder buy and hold cumulative stock returns over the period of -154 business days to -28 business days prior to the deal announcement. We expect this variable to be associated with the decrease in the likelihood of cash offers.

*Target M/B ratio:* Chemmanur et al. (2009) predict the M/B ratio of the target firm to be negatively associated with the likelihood of cash offers. This is because the target M/B ratio is positively related to capital gains tax liability of the target firm. Following Chemmanur et al. (2009) and Luypaert and Van Caneghem (2017), we compute this variable by dividing the market value of the target's common equity by its book value at the end of the fiscal year preceding the deal announcement. We expect the target M/B ratio to be inversely associated with the probability of cash offers.

*Relative size:* The larger the relative size of target to acquirer, the higher the probability of stock swaps. This is because the acquirer's information disadvantage with respect to the target's value becomes more severe and problematic when the relative size of the target to the acquirer is large (Hansen, 1987). In addition to this argument, Karampatsas et al. (2014) maintain that raising cash



for a large target relative to the acquirer is more difficult and decreases the likelihood of cash offers. Yet using stock swaps for a relatively large target may result in dilution of the dominant shareholder's control (Faccio & Masulis, 2005). Whereas Martin (1996) reports no evidence for the effect of relative size on the method of payment, most empirical studies have documented a negative effect of relative size on the likelihood of cash offers (Faccio & Masulis, 2005; Karampatsas et al., 2014; Martynova & Renneboog, 2009). In this study, following Luypaert and Van Caneghem (2014) and Luypaert and Van Caneghem (2017), we compute the relative size as the ratio of the target firm's total assets to the acquirer firm's total assets at the end of the most recent fiscal year prior to the deal announcement. We expect this variable to affect negatively the probability of cash offers.

*Target leverage:* Hansen (1987) argues that the likelihood of contingent payment decreases as the financial leverage of the target firm increases. This rationale stems from the fact that the benefit of stock swaps as contingent payment increases, the higher the equity of the target firm relative to the acquirer. In addition, financially constrained targets are more likely to prefer cash offers rather than stock swaps. However, empirical results regarding the effect of the target leverage ratio are not conclusive on this issue. For instance, Karampatsas et al. (2014) find that the target leverage ratio negatively affects the probability of cash offers. We calculate the leverage ratio of the target by dividing its long-term debt by its total assets at the end of the fiscal year preceding the deal announcement. The sign of this variable is left for empirical confirmation.

*Target analyst coverage:* If analyst coverage reduces information asymmetry regarding the value of the target, the acquirer would be less likely to feel the need for contingent payment, and therefore, ceteris paribus, cash offers would be more likely. However, Karampatsas et al. (2014) find that target analyst coverage negatively affects the probability of cash offers in takeovers. This finding is in line with the argument that the probability of cash offers is higher when target information asymmetry is high (Chemmanur et al., 2009; Luypaert & Van Coneghem, 2017). We measure the target analyst coverage similar to the acquirer analyst coverage. We leave the sign of this variable for empirical confirmation.

*Target sales growth:* The target's past performance may affect the method of payment in takeovers. Targets with poor past performance and therefore fragile financial health might prefer cash offers relative to other methods of payment. Officer (2007) finds that acquisitions of unlisted targets are more likely to be in the form of cash offers. Following Bange and Mazzeo (2004) and

Dionne, La Haye, and Bergerès (2015), we measure a target's past performance by sales growth in the most recent fiscal year prior to the deal announcement. More specifically, we calculate a target's past performance as follows:

$$\frac{\text{Target sales in year } t - \text{Target sales in year } t - 1}{\text{Target sales in year } t - 1} \quad (1)$$

where  $t$  is the fiscal year prior to the deal announcement. We predict a negative association between this variable and the likelihood of cash offers.

*Target R&D:* The R&D expenditure usually is considered as one of the main factors that contribute to the information asymmetry regarding the value of a firm (see e.g., Officer et al., 2009). According to the model proposed by Hansen (1987), an acquirer may choose to opt for stock swaps dealing with a target with high R&D and share the possible target mispricing with the target shareholders. Nevertheless, based on empirical findings of Chemmanur et al. (2009) and Luypaert and Van Caneghem (2017), acquirers can obtain detailed information regarding the target's R&D during the acquisition negotiation process and consequently use cash to take full advantage of the transaction and deter competing bids. Similarly to Luypaert and Van Caneghem (2017), we compute this variable by dividing the target's R&D expenditure by its total assets at the end of the most recent fiscal year before the deal announcement. We leave the sign of this variable for empirical confirmation.

*Target high-tech:* Firms in high-tech industries are characterized by a high level of human capital and intangible assets, making it more difficult to appraise their value. Reuer et al. (2004) find that acquirers in international acquisitions tend to use stock swaps as the method of payment when buying high-tech firms. However, high information asymmetry regarding the value of the target firm in high-tech industries may result in a high probability of cash offers by the acquirer to take full advantage of the transaction and deter competing bids (Chemmanur et al., 2009; Luypaert & Van Caneghem, 2017). We control for this variable by defining it equal to 1 when the target belongs to a high-tech industry, and 0 otherwise. We leave the sign of this variable for empirical confirmation.

*Related industry:* Targets are more likely to accept stock swaps from an acquirer in the same industry. This is because target shareholders are well acquainted with the industry risks and prospects (Karampatsas et al., 2014). Faccio and Masulis (2005) find that being in the same

industry is negatively associated with the likelihood of cash offers. They argue that a target is less risk averse when the acquirer firm is in the same industry as the target and therefore more likely to accept acquirer stock as the method of payment. Similar results are reported by Luypaert and Van Caneghem (2014). We control accordingly for this variable by defining it equal to 1 when the target and the acquirer are in the same two-digit SIC industry (according to the Thomson Reuters EIKON M&A database), and 0 otherwise. We expect this variable to affect negatively the probability of cash offers.

*Same state:* Previous studies have documented that the geographical distance between an acquirer and a target can affect various aspects of a takeover transaction. Ragozzino and Reuer (2011) argue that geographical distance is positively associated with the problem of adverse selection. The authors find that distance between an acquirer and an IPO target is lower in full acquisitions and it is greater in cases of partial acquisitions. In cases of greater distance, acquirers are hence more likely to share the risk with the target shareholders and make fewer investments. Bick, Crook, Lynch, and Walkup (2017) use geographical distance between the acquirer and the target as a proxy for information asymmetry and argue that geographical proximity can mitigate information asymmetry between the acquirer and the target. The authors find that small targets receive a lower premium, and the closer they are to their acquirers, the faster the completion time of the deal. These findings suggest that geographical proximity may affect the method of payment as well. The closer the acquirer to the target in terms of geographical distance, the better they are positioned to assess the value of the target (Bick et al., 2017), and thus there would be less need for contingent payment. It might be nonetheless possible that as in the case of a related industry, a target would be less reluctant to accept the stock of an acquirer given the information advantages that it has. We control for this effect by constructing a dummy variable that takes the value of 1 if a target and an acquirer are in the same state in the US, and 0 otherwise. The states that acquirers and targets are located in are given in the Thomson Reuters EIKON M&A database. We leave the sign of this variable for empirical confirmation.

*[insert Table 1 about here]*

### **3.4. Models' Specification**

To examine whether target and acquirer KLD coverage and CSR performance affect the choice of payment in takeovers, we conduct two sets of tests. In the first test, we examine the effect of the mere existence of KLD coverage for the target and acquirer on the probability of cash offers

(hypotheses 1 and 2). In the second test, we examine the effect of target and acquirer CSR strengths and concerns on the probability of cash offers (hypotheses 3, 4, 5, and 6). For both tests, we estimate the following binary probit model:

$$\Pr(\text{cash offers} = 1)_i = \alpha + \beta\mathbf{X}_i + \gamma\mathbf{Z}_i + \delta\text{Year.Index} + \varepsilon_i \quad (2)$$

where likelihood of cash offers is a dummy variable and equals 1 when the method of payment is cash, and 0 otherwise.  $\mathbf{X}_i$  is a vector of our variables of interest. In the first test, these variables are target KLD coverage (*T.KLD.Cov*) and acquirer KLD coverage (*A.KLD.Cov*). In the second test, these variables are target CSR strengths (*T.CSR.Strengths*), target CSR concerns (*T.CSR.Concerns*), acquirer CSR strengths (*A.CSR.Strengths*), and acquirer CSR concerns (*A.CSR.Concerns*).  $\mathbf{Z}_i$  is a vector of control variables that prior studies have documented to affect the method of payment in takeovers. These control variables are acquirer free cash flow (*A.FCF*), acquirer market-to-book ratio (*A.MB*), acquirer size (*A.Size*), acquirer leverage (*A.Leverage*), acquirer analyst coverage (*A.Analyst*), acquirer stock returns (*A.Stock>Returns*), target market-to-book ratio (*T.MB*), relative size (*R.Size*), target leverage (*T.Leverage*), target analyst coverage (*T.Analyst*), target sales growth (*T.Sales.Growth*), target R&D (*T.R&D*), target in high-tech industry (*T.Hi.Tech*), acquirer and target in the same two-digit SIC industry (*Related*), and target and acquirer in the same state in the US (*Same.State*). Finally, all models always include the year index (*Year.Index*). These control variables are included in all regression models. The definitions of all explanatory variables and their expected effects on the likelihood of cash offers in takeovers are summarized in Table 1.

In addition, to check the robustness of our findings from the aforementioned binary probit models, and following previous studies (Luypaert & Van Caneghem, 2017), we also estimate ordered probit models. In these models, we define our dependent variable as an ordinal variable that equals 1 if the payment method is stock, 2 if it is a combination of cash and stock, and 3 if it is cash. The test and control variables are all the same as in the binary probit models.

## 4. Empirical Results

### 4.1. Descriptive Statistics

Table 2 reports the distribution of the sample across years, the distribution of the three choices of payment method (cash, stock, and combination of cash and stock), acquirer and target coverage

by KLD, and industry relatedness of the deal according to two-digit SIC code. Table 2 reveals that relative to the other methods of payment (stock swaps and combination of cash and stocks), cash-only offers have increased over the last decade. This is the main reason why we include a year index in our regression models, to control for such a phenomenon.<sup>7</sup> The KLD coverage shows an increase from the year 2004. This is indeed due to the fact that KLD expanded its coverage to the largest 3,000 US firms by market capitalization in 2003. Further, Table 2 shows that a larger fraction of the deals took place between acquirers and targets belonging to the same two-digit industry.

*[insert Table 2 about here]*

Table 3 provides summary statistics for the variables associated with acquirer, target, and transaction for 836 takeovers during the period of 1992 to 2014. All continuous variables are winsorized at the 1st and 99th percentiles to reduce the effect of any outliers. High standard deviation in some variables necessitates reporting the medians of the variables as well. Table 3 shows that 46% of the transactions are in the form of cash offers, 31% are stock swaps, and the remaining 23% are a combination of cash and stock. Cash being the dominant method of payment in takeovers is reported by previous studies both for US and European deals (see e.g., Faccio & Masulis, 2005; Luypaert & Caneghem, 2017). Further, we can observe that 69% of acquirers and 38% of targets in our total sample are covered by KLD. This is in line with the findings of Kim et al. (2012) and Cho et al. (2013), who report that KLD tends to cover large firms. Regarding the levels of CSR performance, acquirers exhibit higher CSR strengths compared to the targets. Acquirers have the average (median) CSR strengths of 0.09 (0.05) while the average (median) CSR strengths of targets amount to only 0.02 (0). In addition, the average (median) measure of CSR concerns is 0.09 (0.06) for acquirers, and the corresponding measure is 0.07 (0.06) for targets. Regarding the control variables, the average (median) M/B ratio of the acquirers is 3.96 (2.67) whereas the corresponding ratio for targets is 2.88 (1.99), showing that acquirers have higher M/B ratios than do targets. Unsurprisingly, targets are smaller than acquirers. On average, targets are about 28% of the size of acquirers. The debt structure of acquirers and targets turned out to be very similar, with acquirers having an average (median) of 0.16 (0.13) and targets having an average (median) of 0.14 (0.05). This finding is comparable to Dionne et al. (2015), who report that acquirers' and targets' leverage ratios are similar, which makes the financial synergy less probable.

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<sup>7</sup> Including dummy year instead of year index does not change our main inferences.

Further, on average, acquirers are followed by a higher number of analysts compared to targets. The average (median) analyst coverage for acquirers is 13.9 (12) while the corresponding number for targets is only 5.78 (4). This is in line with the findings of Chang et al. (2006), who report that larger firms attract a higher number of analysts. Acquirers yield free cash flow, with an average (median) of 06 (07), and the average (median) of stock returns of acquirers prior to the deal announcement is 0.10 (0.05). Moreover, targets exhibit sales growth with an average (median) of 0.24 (0.09). The average (median) R&D expenditures of targets is 0.07 (0), and 24% of the targets are in high-tech industries. Finally, 68% of the transactions took place between acquirers and targets that were in the same industries based on their two-digit SIC code (according to the Thomson Reuters EIKON M&A database), and in 24% of cases the acquirer and target are in the same state in the US (according to the same database).

*[insert Table 3 about here]*

4 reports the correlations between various explanatory variables, which reveal a number of significant correlations among those variables. The highest correlation is between acquirer size and acquirer analyst coverage (0.64), which is significant at the 1% level. Given that we were concerned about the multicollinearity in our regression models, we examined the variance inflation factor (VIF) for probit regression models. We include the VIFs for each model at the bottom of the regression tables. It turned out that all the VIFs are within the acceptable range. The highest VIF is 3.92, which is well below the conventional rule of thumb of 10 (Neter, Kutner, Nachtsheim, & Wasserman, 1996) and also a more conservative factor of 5. We conclude that multicollinearity is not a concern for our results.

*[insert 4 about here]*

#### **4.2. KLD Coverage and the Choice of Payment Method in Takeovers**

Table 5 reports the estimates of four alternative versions of binary probit regression model (equation 2) to examine the effect of KLD coverage on the probability of cash offers in takeovers. In order to separately assess the effect of each variable of interest, we build a hierarchical regression analysis. Model 1 includes the control variables only. In Model 2 we add the targets' KLD coverage variable, and in Model 3 we insert the acquirers' KLD coverage. Finally, to examine the simultaneous effect of targets' and acquirers' KLD coverage on the probability of cash offers in takeovers, in Model 4 we include both of these variables. The dependent variable in

all specifications equals 1 if the method of payment is cash, and 0 otherwise. We run all the regressions in our study using White's (1980) heteroscedasticity-consistent standard errors.

Model 1 provides supporting evidence for several control variables that prior studies have documented to have effect on the likelihood of cash offers. More specifically, consistent with pecking order theory, acquirers are more likely to opt for cash offers when they have high free cash flow, as the corresponding variable carries a positive and significant coefficient at the 1% level. In line with the investment opportunity hypothesis, the acquirer M/B ratio carries a negative and significant coefficient at the 5% level. This suggests that acquirers with high market-to-book ratio are less likely to use cash as the method of payment in takeovers. Moreover, the coefficient of acquirer size is positive and significant at the 5% level, suggesting that the larger the acquirer size the higher the probability of cash offers. Further, acquirers' leverage ratio carries a positive and significant coefficient while the leverage ratio of targets has no effect on the likelihood of cash offers. Whereas acquirer analyst coverage has no effect on the likelihood of cash offers, target analyst coverage has a negative and significant effect. The coefficient of acquirer stock return is negative and significant at the 10% level, providing support for the market-timing behavior hypothesis, and indicates that acquirers with overvalued stocks are less likely to opt for cash offers. In addition, the target M/B ratio has a negative effect on the likelihood of cash offers, which is significant at the 1% level. Consistent with Hansen's (1987) theory, the coefficient of relative size is negative and significant at the 1% level, indicating that as the size of the target increases relative to the acquirer, the likelihood of cash offers decreases. We find that target sales growth is negatively associated with the probability of cash offers, which is significant at the 5% level. This suggests that targets with better past performance are less likely to receive cash offers. The coefficient of both variables of target R&D and target being in the high-tech industry are positive and significant at the 1% level. Considering that R&D and being in the high-tech industry are associated with high asymmetric information, the results are consistent with prior studies' argument that acquirers exploit the opportunity by using cash as the method of payment (Faccio & Masulis, 2005; Luypaert & Van Caneghem, 2017). Moreover, transactions in which both acquirers and targets are in the same industry are less likely to settle in cash. The coefficient of related industry is negative and significant at the 1% level. This is in line with the argument that target shareholders are less risk averse when the acquirer is in the same industry, therefore they are more willing to accept stock as the method of payment. Finally, we find that acquirer and target being in the same state is negatively associated with the probability of cash offers.

Hypothesis 1 states that the target KLD coverage is positively related to the likelihood of cash offers. As shown in Model 2, the coefficient of target KLD coverage is positive and significant at the 5% level, providing strong support for hypothesis 1. This finding is in line with the argument that ratings given by KLD provide incremental information regarding the firm (Cho et al., 2013) and therefore reduce acquirers' information disadvantages regarding target value. Having a higher level of information about the target, acquirers are better able to evaluate the target, and therefore there are fewer needs for contingent payment (Luypaert & Van Caneghem, 2014; Reuer & Ragozzino, 2008). Indeed, acquirers are more likely to use cash and enjoy the benefits associated with it: faster completion of the deal, deterring potential rival bidders, and non-negative abnormal return (Fishman, 1989; Karampatsas et al., 2014; Travlos, 1987). These results hold also when we include both acquirer and target KLD coverage in one model. As Model 4 shows, the coefficient of target KLD coverage is still positive and significant at the 10% level.

Hypothesis 2 states that the acquirer firm KLD coverage is positively associated with the probability of cash offers. In line with this conjecture, Model 3 indicates that the coefficient of acquirer KLD coverage is positive and significant at the 1% level, providing strong support for hypothesis 2. Corroborating the effect of KLD coverage in reducing information asymmetry, this finding is consistent with the fact that acquirers find less incentive for market-timing behavior when they have low information asymmetry (Luypaert & Van Caneghem, 2014). In addition, this result is in line with the argument that the acquirer low information asymmetry resulting from KLD coverage leads to low financial constraints and lower cost of capital, which overall makes cash offers more likely in takeovers. The coefficient of acquirer KLD coverage remains positive and significant at the 1% level when we consider the simultaneous effect of both target and acquirer KLD coverage in Model 4.

*[insert Table 5 about here]*

#### **4.3. CSR Strengths and Concerns and the Choice of Payment Method in Takeovers**

We document the results of the question of whether the CSR strengths and concerns of acquirers and targets can affect the method of payment in takeovers in Table 6 using binary probit models. Model 1 includes control variables only. In Model 2 we examine the effect of target CSR strengths and concerns on the probability of cash offers, and in Model 3 we investigate the effect of acquirer CSR strengths and concerns on the probability of cash offers. This is to examine how CSR strengths and concerns of acquirers and targets separately affect the method of payment in



takeovers. Finally, in Model 4 we include both target and acquirer CSR strengths and concerns to examine the simultaneous effects of these variables. The dependent variable in all specifications equals 1 if the method of payment is cash, and 0 otherwise. We run all the regressions in our study using White's (1980) heteroscedasticity-consistent standard errors. As mentioned in the sample formation section, in our sample of 836 takeover transactions, 579 of the acquirers and 316 of the targets are covered by KLD, and when we consider transactions where both the acquirer and the target are covered by KLD, we get the sample of 305 deals. The number of observations in regressions changes accordingly.

Hypothesis 3 states that the CSR strengths of targets are positively related to the likelihood of cash offers. Model 2 in Table 6 shows that the coefficient of target CSR strengths is positive but it is insignificant, failing to support hypothesis 3. Further, hypothesis 4 argues that the target CSR concerns are inversely associated with the probability of cash offers. In Model 2, the coefficient of target CSR concerns is negative and significant at the 5% level, supporting hypothesis 4. These findings are consistent with the findings of Goss and Roberts (2011) and show that acquirers are more sensitive to CSR concerns than CSR strengths of the target. Acquirers consider target CSR concerns as uncertainty and potential negative outcome in the future and are more likely to avoid taking all the risks by offering cash, and in fact, by offering stock, they are more likely to share the risks with the target shareholders. These findings hold as well when we investigate the simultaneous effect of acquirer and target CSR strengths and concerns. In Model 4 the coefficient of target CSR strengths is positive and remains insignificant, while the coefficient of target CSR concerns is negative and significant at the 5% level.

Hypothesis 5 posits that acquirer CSR strengths positively affect the likelihood of cash offers. Supporting this hypothesis, Model 3 shows that the coefficient of acquirer CSR strengths is positive and significant at the 5% level. This result holds when in Model 4 we include both CSR strengths and CSR concerns of acquirers and targets. This finding is consistent with the notion that higher CSR performance is associated with lower information asymmetry and easier access to finance, and thus, acquirers are more likely to offer cash as the method of payment. Finally, hypothesis 6 posits that acquirer firm CSR concerns are negatively associated with the likelihood of cash offers. In Model 3, the coefficient of the acquirer CSR concerns is positive and insignificant. The positive coefficient might be driven by the fact that targets are reluctant to accept the stock of an acquirer that has low CSR performance, and therefore they force the acquirer to use cash as the method of payment. Yet targets are more likely to be concerned about the premium

that they receive than the method of payment (Luypaert & Van Coneghem, 2014), which might be the reason for the weak positive association between acquirer CSR concerns and the probability of cash offers.

Regarding the control variables, acquirer free cash flow, acquirer M/B ratio, acquirer size, acquirer leverage, acquirer analyst, target M/B ratio, relative size, target analyst coverage, target sales growth, target R&D, target in high-tech industry, relatedness, and same state carry significant coefficients at conventional levels and are in line with the prior M&A literature.

*[insert Table 6 about here]*

#### **4.4. Self-Selection Issues**

The coverage by KLD is not randomly distributed. KLD coverage can be influenced by firm size and firm performance among other relevant factors. Therefore, the inferences from Table 6 could be biased. To address the potential selectin problem, we use the Heckman two-step selection model. In the first stage, we estimate a probit regression model in which the dependent variable is KLD coverage of acquirer/target and takes the value of one if the acquirer/target is covered by KLD, and zero otherwise. The determinants of KLD coverage that we consider for the target include: target market to book ratio (*T.MB*), target leverage (*T.Leverage*), target analyst coverage (*T.Analyst*), target sales growth (*T.Sales.Growth*), target R&D expenditure (*T.R&D*), target size (*T.Size*), and target being in a blue state in the US (*T.Blue State*) and for the acquirer include: acquirer free cash flow (*A.FCF*), acquirer book ratio (*A.MB*), acquirer size (*A.Size*), acquirer leverage (*A.Leverage*), acquirer analyst coverage (*A.Analyst*), acquirer stock returns (*A.Stock>Returns*), and acquirer being in the blue state in the US (*A.Blue.State*).<sup>8</sup> From these models, we construct the inverse Mills' ratio, which is then used in the second stage as an additional independent variable in the main specifications reported in Table 6.

Table 7 presents the results of the Heckman two-step selection model. The inverse Mills' ratio in Model 2, has a positive and significant coefficient, revealing that self-selection is an important consideration in this setting. Importantly, whereas we continue to find a negative association between target CSR concerns and the probability of cash offers, the association between target CSR strengths and probability of cash offers is not significant. From these results, it appears that

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<sup>8</sup> Blue state is a dummy variable that takes the value of one if target/acquirer is located in blue/democratic state, and zero otherwise. Following previous studies (Cook et al., 2019; Deng et al., 2013) we code a state as blue/democratic if it is listed as a blue state in [https://en.wikipedia.org/wiki/Red\\_states\\_and\\_blue\\_states](https://en.wikipedia.org/wiki/Red_states_and_blue_states).

self-selection is not a significant concern for our findings. In the case of acquirer-related estimations, in Model 4, the inverse Mills' ratio is not significant which rules out the possibility that our results in table 6 are subject to sample selection bias. The result in Model 4 shows that both acquirer CSR strengths and concerns increase the probability of cash offers in takeovers for which we provided possible explanation in the previous section.

#### **4.5. Further Analyses**

In this section, we report several supplemental analyses aimed at assessing the robustness of our earlier findings. In a first set of robustness checks, following previous studies (Chemmanur et al., 2009; Faccio & Masulis, 2005; Luypaert & Van Caneghem, 2017), we estimate ordered probit models for both the effects of KLD coverage and CSR performance levels of targets and acquirers on the probability of cash offers in takeovers. The results of these analyses are reported in Table 8 and 9. The dependent variable in all specifications equals 1 if the method of payment is stock, 2 if it is a combination of cash and stock, and 3 if it is cash offers. As exhibited in Table 8, the coefficients of target and acquirer KLD coverage remain positive and significant in all specifications, therefore confirming our main findings in Table 5. Moreover, Table 9 confirms our earlier results in Table 6 regarding the effect of target and acquirer CSR strengths and concerns on the probability of cash offers. Whereas target CSR concerns and acquirer CSR strengths have significant negative and positive effect on the probability of cash offers in takeovers, respectively, target CSR strengths and acquirer CSR concerns appear not significant.

*[insert Table 8 about here]*

*[insert Table 9 about here]*

Second, we run all our regressions once more using binary logit models and ordered logit models. The results of these extra analyses confirm our main findings in Table 5 and Table 6.

Third, KLD may cover a firm but the CSR performance ratings can be 0, which can mean no information (Cho et al., 2013). In our sample, however, only 6% of acquirers and 10% of targets have CSR performance ratings of 0. Although these percentages are low and are unlikely to affect our main results regarding KLD coverage, we re-estimate our analyses only with non-zero performance ratings in KLD. These analyses do not qualitatively change our earlier conclusions regarding the effect of target and acquirer KLD coverage on the likelihood of cash offers.

Fourth, we re-estimate our analyses after excluding those deals in which either targets or acquirers are in the financial industry. Apart from target KLD coverage, which is positive and insignificant, these inferences confirm our previous findings regarding the effect of KLD coverage and CSR performance levels on the probability of cash offers in takeovers.

Fifth, we use acquirer and target market value of equity in the most recent fiscal year prior to the deal announcement as an alternative measure for firms' size (Chemmanur et al., 2009) to calculate the acquirer size and relative size in our analyses, and it does not alter the significance of our estimates.

Finally, we introduce target return on assets (ROA) in the most recent fiscal year prior to the deal announcement as an alternative measure for target past performance. We find that target ROA has a positive but insignificant effect on the probability of cash offers in most of the specifications, and it does not alter our conclusions. The results of these extra analyses are not tabulated but are available upon request.

In a final set of robustness tests, we address the possibility of missing control variables. Raman et al. (2013) find that premium paid in transactions is negatively associated with the percentage of equity used as the method of payment in takeovers. Takeover premium is defined as the final price paid for shares of a target by an acquirer minus the share price of the target before the transaction divided by the share price of the target before transaction (Haunschild, 1994; Kim et al., 2011; Laamanen, 2007). Scholars commonly use one month prior to the transaction target share price and argue that it is short enough to avoid any contamination effects and is less subject to an information leakage problem than a shorter period (see e.g., Flanagan & O'Shaughnessy, 2003; Haunschild, 1994; Jory, Ngo, & Wang, 2016; Kesner, Shapiro, & Sharma, 1994; Kim, Halebian, & Finkelstein, 2011). Following these scholars, in this study we calculate the takeover premium as follows:

$$Takeover\ premium = \frac{Final\ price - Price_{-28}}{Price_{-28}} \quad (3)$$

where  $Price_{-28}$  represents the target share price on the 28<sup>th</sup> day prior to the deal announcement.

Inclusion of this control variable, takeover premium, in our analyses reduces our sample size to 810 deals. Our findings show that takeover premium does not have any effect on the probability of cash offers and including it in our regressions does not change our main conclusions regarding

the effect of target and acquirer KLD coverage and CSR performance on the likelihood of cash offers. The results of these analyses are not reported but are available upon request.

## **5. Summary and Conclusion**

Choice of payment method in takeovers is mainly driven by both the asymmetric information between the acquirer and the target and the acquirer financial capability. In this study we examine whether increased transparency and better access to finance induced by KLD coverage and high CSR performance ratings are associated with the choice of payment method in takeovers. Using binary probit and ordered probit regression models we document that on the target side, KLD coverage has a positive effect on the likelihood of cash offers. This finding suggests that ratings given by KLD provide incremental information and reduce information asymmetry regarding the value of targets. Therefore, the need for the use of contingent payment by acquirers decreases given that now they have more information about the target and face a lower adverse selection problem. Further, we find that target CSR strengths have no effect on the likelihood of cash offers, while target CSR concerns reduce such likelihood. We infer that acquirers are more sensitive to low CSR performance and are less willing to use cash offers given that by offering cash they bear the whole risk associated with the deal. On the acquirer side, it appears that both KLD coverage and CSR strengths increase the probability of cash offers. This finding is in line with the argument that acquirers find less incentive for market-timing behavior when they have low information asymmetry. In addition, acquirer low information asymmetry resulting from KLD coverage and better CSR performance brings them easier access to finance, which overall makes cash offers more likely. However, acquirer CSR concerns have no effect on the probability of cash offers. This might be due to the fact that targets are reluctant to accept the stock of an acquirer that has low CSR performance.

Our study adds to the previous literature by providing a novel insight into the effect of a specific set of nonfinancial performance aspects, that is CSR performance, on the choice of payment method in takeovers. We document that nonfinancial CSR-related information is an important determinant of the choice of payment method in takeovers. This further confirms the stakeholder theory perspective, that CSR-related information is value relevant for investors in a market with information frictions and more specifically in takeover market. Indeed, our findings suggest that acquirers carefully incorporate the target's CSR performance information in their decisions regarding the structure of the deal. More specifically, targets with low CSR performance have less

flexibility in offers they receive from acquirers in terms of method of payment. This could be problematic especially for targets that are in financially distressed situations. Firms can avoid such hazard by adopting strategies aimed at enhancing CSR practices and CSR-related performance. Further, findings on the acquirer side suggest that better CSR performance is beneficial for acquirer shareholders. More specifically, better CSR performance through reducing information asymmetry and enhancing financing capability makes acquirers able to use cash offers as the method of payment in takeovers, which is in turn associated with better deal outcomes, faster completion time, and deterring potential rival bidders.

Like in any empirical study, some limitations apply, which in turn present a number of additional avenues for future research. First, whereas in this study we focus on the firm aggregate CSR strengths and concerns, it would be interesting to examine how each component of CSR performance affects the method of payment in takeovers. It would shed additional light on which aspect of CSR performance is more important in takeovers. Second, we investigate the role of CSR performance ratings on the method of payment in takeovers that took place between US-based acquirers and targets. It would be equally insightful to examine the aforementioned relationship in countries other than the US, provided that investors can have different value perceptions of CSR performance in different countries. In fact, regulations, societal preferences, institutional variables, and financial sector development vary significantly from country to country (Wu & Shen, 2013; Liang & Renneboog, 2017), which in turn can bring heterogeneity in investment decisions and strategies. Therefore, evidence from other countries can contribute to better illustrate whether and how CSR performance impacts the decision regarding the choice of payment method in takeovers. Finally, it would be worthwhile to expand the results of this paper and examine how KLD coverage and the CSR performance of targets and acquirers affect other aspects of takeover transactions, such as probability of deal completion and time to completion among other relevant outcome variables.

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## Appendix

Table 1. Variables' Definitions/Measures

This table reports the definitions of the variables that are used in this study and the hypothesized effect of the explanatory variables on the probability of cash offers in takeovers.

Variable	Definition/Measure	Expected sign
Acquirer KLD coverage	Indicator variable that takes the value of 1 if the acquirer is covered by KLD.	+
Acquirer CSR strengths	Acquirer firm sum of all strengths score across all six categories of CSR divided by 6.	+
Acquirer CSR concerns	Acquirer firm sum of all concerns score across all six categories of CSR divided by 6.	-
Acquirer free cash flow	Operating income before depreciation minus interest expenses, taxes, preferred dividend, and common dividend divided by book value of total assets.	+
Acquirer M/B ratio	Acquirer number of common shares outstanding multiplied by its share price divided by its book value of equity.	-
Acquirer size	Log (total assets).	+
Acquirer leverage	Total long-term debt divided by total assets.	uncertain
Acquirer analyst coverage	Maximum number of analysts who provide estimation of EPS in any month in the most recent fiscal year prior to the deal announcement.	uncertain
Acquirer stock returns	Acquirer share price 28 business days before the deal announcement minus acquirer share price 154 business days before the deal announcement divided by acquirer share price 154 business days before the deal announcement.	-
Target KLD coverage	Indicator variable that takes the value of 1 if the target is covered by KLD.	+
Target CSR strengths	Target firm sum of all strengths score across all six categories of CSR divided by 6.	+
Target CSR concerns	Target firm sum of all concerns score across all six categories of CSR divided by 6.	-
Target M/B ratio	Number of common shares outstanding multiplied by share price divided by book value of equity.	-
Relative size	Target total assets divided by acquirer total assets.	-
Target leverage	Total long-term debt divided by total assets.	uncertain
Target analyst coverage	Maximum number of analysts who provide estimation of EPS in any month in the most recent fiscal year prior to the deal announcement.	uncertain
Target sales growth	$(\text{target sales in year } t \text{ minus target sales in year } t-1)/\text{target sales in year } t$ , where $t$ is the fiscal year prior to the deal announcement.	-
Target R&D	R&D investment divided by total assets.	uncertain
Target in high tech	Indicator variable that takes the value of 1 if target firm is in high-tech industry.	uncertain
Related industry	Indicator variable that takes the value of 1 if acquirer firm and target firm share the same two-digit SIC codes.	-
Same state	Indicator variable that takes the value of 1 if the acquirer and target are in the same state in the US according to Thomson Reuters EIKON M&A database.	Uncertain
Cash.Only	Indicator variable that takes the value of 1 if the method of payment is cash only.	
Stock.Only	Indicator variable that takes the value of 1 if the method of payment is stock only.	

Table 2. Sample Characteristics

This table reports the distribution of the deals year by year, the choice of payment method (cash, stock, and mixed), the coverage by KLD of acquirer and target, and industry relatedness of the deal according to two-digit SIC code.

Year	No. of Deals	Percent	Cash-Only	Stock-Only	Mixed	A-KLD-Cov	T-KLD-Cov	Related
1992	5	0.006	2	2	1	2	1	4
1993	7	0.008	2	5	0	2	0	6
1994	12	0.014	4	7	1	5	1	8
1995	20	0.024	7	11	2	4	1	14
1996	30	0.036	6	16	8	6	1	20
1997	27	0.032	8	14	5	9	1	14
1998	33	0.039	9	18	6	8	1	22
1999	51	0.061	19	22	10	27	2	24
2000	51	0.061	16	25	10	17	1	37
2001	44	0.053	18	18	8	14	1	34
2002	30	0.036	15	8	7	17	2	21
2003	34	0.041	15	12	7	18	1	26
2004	43	0.051	24	9	10	41	24	27
2005	50	0.060	26	9	15	42	31	36
2006	53	0.063	33	9	11	51	37	28
2007	47	0.056	28	9	10	45	34	28
2008	34	0.041	19	10	5	31	18	25
2009	37	0.044	16	6	15	32	25	23
2010	55	0.066	36	9	10	51	36	40
2011	27	0.032	11	5	11	23	20	21
2012	42	0.050	27	7	8	41	26	26
2013	44	0.053	26	8	10	39	27	34
2014	60	0.072	21	18	21	54	25	49
Total	836	1.000	388	257	191	579	316	567

Table 3. Descriptive Statistics

This table reports the descriptive statistics of acquirer, target, and transaction-related variables for the sample of 836 US completed takeovers that took place between publicly traded acquirers and targets over the period of 1992 to 2014. Acquirer KLD coverage (A.KLD.Cov), acquirer CSR strengths (A.CSR.Strengths), acquirer CSR concerns (A.CSR.Concerns), acquirer free cash flow (A.FCF), acquirer market-to-book ratio (A.MB), acquirer size (A.Size), acquirer leverage (A.Leverage), acquirer analyst coverage (A.Analyst), target KLD coverage (T.KLD.Cov), target CSR strengths (T.CSR.Strengths), target CSR concerns (T.CSR.Concerns), target market-to-book ratio (T.MB), relative size (R.Size), target leverage (T.Leverage), target analyst coverage (T.Analyst), and target R&D (T.R&D) are measured at the end of the most recent fiscal year prior to the deal announcement. Acquirers' stock run-up before the acquisition (A.Stock>Returns) is measured as acquirer buy and hold cumulative stock returns over the period of -154 business days to -28 business days prior to the deal announcement. Target sales growth (T.Sales.Growth) is measured over the two years before the deal announcement. Dummy variables are target in high-tech industry (T.Hi-Tech), industry relatedness (Related), target and acquirer being in the same state in the US (Same.State), cash-only deals (Cash.Only), and stock-only deals (Stock.Only).

Variable	N	Mean	St. Dev.	Min	Pctl(25)	Median	Pctl(75)	Max
A.KLD.Cov	836	0.69	0.46	0	0	1	1	1
A.CSR.Strengths	579	0.09	0.11	0	0	0.05	0.11	0.49
A.CSR.Concerns	579	0.09	0.08	0	0.03	0.06	0.12	0.33
A.FCF	836	0.07	0.09	-0.33	0.01	0.07	0.12	0.27
A.MB	836	3.96	4.23	0.43	1.72	2.67	4.26	26.15
A.Size	836	3.51	0.9	1.44	2.86	3.51	4.16	5.44
A.Leverage	836	0.16	0.16	0	0.03	0.13	0.24	0.69
A.Analyst	836	13.88	10.56	0	6	12	21	54
A.Stock>Returns	836	0.1	0.29	-0.54	-0.07	0.05	0.21	1.3
T.KLD.Cov	836	0.38	0.49	0	0	0	1	1
T.CSR.Strengths	316	0.02	0.04	0	0	0	0.03	0.17
T.CSR.Concerns	316	0.07	0.06	0	0.03	0.06	0.11	0.21
T.MB	836	2.88	3.14	-3.73	1.19	1.99	3.34	17.98
R.Size	836	0.28	0.42	0.001	0.03	0.11	0.35	2.44
T.Leverage	836	0.14	0.19	0	0	0.05	0.2	0.9
T.Analyst	836	5.78	6.29	0	1	4	8	42
T.Sales.Growth	836	0.24	0.67	-0.58	-0.01	0.09	0.24	4.77
T.R&D	836	0.07	0.12	0	0	0.004	0.1	0.61
T.Hi.Tech	836	0.24	0.43	0	0	0	0	1
Related	836	0.68	0.47	0	0	1	1	1
Same.State	836	0.24	0.43	0	0	0	0	1
Cash.Only	836	0.46	0.5	0	0	0	1	1
Stock.Only	836	0.31	0.46	0	0	0	1	1

#### 4. Correlation Matrix

This table reports the correlation coefficients for the explanatory variables that are used in the regression models. The sample consists of 836 US completed takeovers that took place between publicly traded acquirers and targets over the period of 1992 to 2014. Acquirer KLD coverage (A.KLD.Cov), acquirer free cash flow (A.FCF), acquirer market-to-book ratio (A.MB), acquirer size (A.Size), acquirer leverage (A.Leverage), acquirer analyst coverage (A.Analyst), target KLD coverage (T.KLD.Cov), target market-to-book ratio (T.MB), relative size (R.Size), target leverage (T.Leverage), target analyst coverage (T.Analyst), and target R&D (T.R&D) are measured at the end of the most recent fiscal year prior to the deal announcement. Acquirers' stock run-up before the acquisition (A.Stock>Returns) is measured as acquirer buy and hold cumulative stock returns over the period of -154 business days to -28 business days prior to the deal announcement. Target sales growth (T.Sales.Growth) is measured over the two years before the deal announcement. Dummy variables are target in high-tech industry (T.Hi-Tech), industry relatedness (Related), and target and acquirer being in the same state in the US (Same.State). The symbols \*, \*\*, \*\*\* indicate significance at the 10%, 5%, and 1% levels, respectively.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1.A.KLD.Cov	1.00															
2.A.FCF	0.16***	1.00														
3.A.MB	0.03	0.16***	1.00													
4.A.Size	0.58***	0.12***	-0.01	1.00												
5.A.Leverage	0	0.05	0.10**	0.06	1.00											
6.A.Analyst	0.48***	0.30***	0.28***	0.64***	-0.07*	1.00										
7.A.Stock>Returns	-0.14***	0	0.13***	-0.07*	0.03	0.03	1.00									
8.T.KLD.Cov	0.46***	0.13***	-0.06	0.40***	0.11**	0.24***	-0.05	1.00								
9.T.MB	-0.01	0.12***	0.38***	-0.04	-0.04	0.14***	0.13***	0.02	1.00							
10.R.Size	-0.23***	-0.17***	0	-0.41***	0.04	-0.31***	-0.01	0.05	-0.07	1.00						
11.T.Leverage	0.02	0.01	-0.07	0.07*	0.40***	-0.06	0.01	0.14***	-0.05	0.17***	1.00					
12.T.Analyst	0.25***	0.19***	0.08*	0.35***	0.05	0.46***	0	0.50***	0.12***	0.10**	0.11**	1.00				
13.T.Sales.Growth	-0.09*	0.01	0.24***	-0.07	0.04	0.06	0.08*	-0.09*	0.21***	0	0	0	1.00			
14.T.R&D	-0.02	0.01	0.17***	-0.13***	-0.15***	0.15***	0.02	-0.07	0.27***	-0.14***	-0.20***	0.02	0.08*	1.00		
15.T.Hi.Tech	-0.05	0.07*	0.13***	-0.12***	-0.14***	0.10**	0.13***	-0.04	0.14***	-0.09**	-0.20***	0.08*	0.08*	0.28***	1.00	
16.Related	-0.10**	-0.11**	-0.07*	-0.09**	0	-0.11***	0.01	-0.06	-0.02	0.13***	0.06	-0.01	0.04	0.03	-0.03	1.00
17.Same.State	-0.07*	-0.14***	-0.09*	-0.03	-0.09*	-0.08*	0.01	-0.05	-0.07*	0.11**	-0.06	-0.02	-0.08*	-0.03	-0.03	0.07*

Table 5. KLD Coverage and the Choice of Payment Method in Takeovers

This table reports the results of probit regression models where the dependent variable equals 1 if the method of payment is cash and 0 otherwise. Independent variables include target KLD coverage (T.KLD.Cov) and acquirer KLD coverage (A.KLD.Cov). Control variables that are measured at the end of the most recent fiscal year prior to the deal announcement include acquirer free cash flow (A.FCF), acquirer market-to-book ratio (A.MB), acquirer size (A.Size), acquirer leverage (A.Leverage), acquirer analyst coverage (A.Analyst), target market-to-book ratio (T.MB), relative size (R.Size), target leverage (T.Leverage), target analyst coverage (T.Analyst), and target R&D (T.R&D). Acquirers' stock run-up before the acquisition (A.Stock>Returns) is measured as acquirer buy and hold cumulative stock returns over the period of -154 business days to -28 business days prior to the deal announcement. Target sales growth (T.Sales.Growth) is measured over the two years before the deal announcement. Dummy variables are target in high-tech industry (T.Hi.Tech), industry relatedness (Related), and target and acquirer being in the same state in the US (Same.State). The symbols \*, \*\*, \*\*\* indicate significance at the 10%, 5%, and 1% levels, respectively. Z-statistics are calculated using White heteroscedasticity-consistent standard errors. P-values are presented in parentheses.

	<i>Probit Regression Models</i>			
	Model 1	Model 2	Model 3	Model 4
Constant	-1.0224*** (0.0024)	-0.8222** (0.0200)	-0.8683** (0.0113)	-0.7295** (0.0416)
T.KLD.Cov		0.3249** (0.0108)		0.2480* (0.0518)
A.KLD.Cov			0.5046*** (0.0013)	0.4533*** (0.0042)
A.FCF	6.1789*** (0.0000)	5.9885*** (0.0000)	6.1246*** (0.0000)	5.9852*** (0.0000)
A.MB	-0.0322** (0.0370)	-0.0308** (0.0455)	-0.0345** (0.0216)	-0.0332** (0.0276)
A.Size	0.2063** (0.0343)	0.1648 (0.1061)	0.144 (0.1595)	0.1184 (0.2620)
A.Leverage	0.7670** (0.0461)	0.7125* (0.0655)	0.8421** (0.0314)	0.7920** (0.0432)
A.Analyst	-0.0009 (0.9089)	0.0007 (0.9277)	-0.0073 (0.3467)	-0.0054 (0.4885)
A.Stock>Returns	-0.3258* (0.0768)	-0.3302* (0.0784)	-0.2726 (0.1511)	-0.2811 (0.1438)
T.MB	-0.0459*** (0.0044)	-0.0482*** (0.0031)	-0.0475*** (0.0028)	-0.0491*** (0.0023)
R.Size	-1.1885*** (0.0004)	-1.2524*** (0.0004)	-1.1839*** (0.0005)	-1.2348*** (0.0006)
T.Leverage	0.1769 (0.5168)	0.1781 (0.5198)	0.1476 (0.5987)	0.1502 (0.5947)
T.Analyst	-0.0314*** (0.0010)	-0.0415*** (0.0000)	-0.0297*** (0.0018)	-0.0375*** (0.0002)
T.Sales.Growth	-0.2125** (0.0128)	-0.2019** (0.0198)	-0.2019** (0.0137)	-0.1950** (0.0195)
T.R&D	1.8845*** (0.0002)	1.8691*** (0.0002)	1.9111*** (0.0002)	1.8934*** (0.0002)
T.Hi.Tech	0.3394*** (0.0059)	0.3486*** (0.0051)	0.3533*** (0.0039)	0.3589*** (0.0036)
Related	-0.3281*** (0.0013)	-0.3059*** (0.0029)	-0.3041*** (0.0027)	-0.2893*** (0.0046)
Same.State	-0.3698*** (0.0019)	-0.3454*** (0.0037)	-0.3383*** (0.0048)	-0.3223*** (0.0072)
Year.Index	0.0384*** (0.0002)	0.0291*** (0.0046)	0.0209* (0.0531)	0.0156 (0.1527)
Observations	836	836	836	836
Pseudo R squared	0.242	0.246	0.251	0.254
Maximum VIF	3.05	3.18	3.17	3.25



Table 6. CSR Strengths and Concerns and the Choice of Payment Method in Takeovers

This table reports the results of probit regression models where the dependent variable equals 1 if the method of payment is cash and 0 otherwise. Independent variables include target CSR strengths (T.CSR.Strengths), target CSR concerns (T.CSR.Concerns), acquirer CSR strengths (A.CSR.Strengths), and acquirer CSR concerns (A.CSR.Concerns). Control variables that are measured at the end of the most recent fiscal year prior to the deal announcement include acquirer free cash flow (A.FCF), acquirer market-to-book ratio (A.MB), acquirer size (A.Size), acquirer leverage (A.Leverage), acquirer analyst coverage (A.Analyst), target market-to-book ratio (T.MB), relative size (R.Size), target leverage (T.Leverage), target analyst coverage (T.Analyst), and target R&D (T.R&D). Acquirers' stock run-up before the acquisition (A.Stock>Returns) is measured as acquirer buy and hold cumulative stock returns over the period of -154 business days to -28 business days prior to the deal announcement. Target sales growth (T.Sales.Growth) is measured over the two years before the deal announcement. Dummy variables are target in high-tech industry (T.Hi-Tech), industry relatedness (Related), and target and acquirer being in the same state in the US (Same.State). The symbols \*, \*\*, \*\*\* indicate significance at the 10%, 5%, and 15 levels, respectively. Z-statistics are calculated using White heteroscedasticity-consistent standard errors. P-values are presented in parentheses.

	<i>Probit Regression Models</i>			
	Model 1	Model 2	Model 3	Model 4
Constant	-0.4777 (0.3507)	-1.3518* (0.0777)	0.2373 (0.6869)	-0.361 (0.6809)
T.CSR.Strengths		2.3441 (0.2961)		1.017 (0.6680)
T.CSR.Concerns		-3.1465** (0.0300)		-4.2382** (0.0226)
A.CSR.Strengths			1.4955** (0.0343)	2.0311** (0.0427)
A.CSR.Concerns			1.4646 (0.1061)	1.5011 (0.2935)
A.FCF	9.9583*** (0.0000)	10.7739*** (0.0000)	9.1959*** (0.0000)	12.0566*** (0.0000)
A.MB	-0.0415** (0.0414)	0.023 (0.5804)	-0.0389* (0.0509)	-0.0199 (0.5222)
A.Size	0.1037 (0.4257)	0.3538** (0.0379)	-0.1193 (0.4540)	0.0676 (0.7636)
A.Leverage	1.6017*** (0.0034)	0.5637 (0.5174)	1.6514*** (0.0029)	1.7016** (0.0292)
A.Analyst	-0.0123 (0.2365)	0.0252* (0.0827)	-0.01 (0.3439)	0.0366** (0.0352)
A.Stock>Returns	-0.2202 (0.5242)	0.4865 (0.3585)	-0.1826 (0.5962)	0.1906 (0.7203)
T.MB	-0.0314 (0.1087)	-0.0046 (0.8471)	-0.0288 (0.1607)	0.0005 (0.9857)
R.Size	-2.0173*** (0.0000)	-1.5679*** (0.0010)	-2.0360*** (0.0000)	-1.4030*** (0.0026)
T.Leverage	-0.4264 (0.2327)	0.1037 (0.8020)	-0.445 (0.2187)	-0.1304 (0.7689)
T.Analyst	-0.0271** (0.0167)	-0.0859*** (0.0000)	-0.0306*** (0.0067)	-0.1007*** (0.0000)
T.Sales.Growth	-0.2155* (0.0731)	0.1204 (0.6438)	-0.2303* (0.0605)	-0.065 (0.7574)
T.R&D	2.7276*** (0.0051)	2.4577** (0.0129)	2.2764** (0.0228)	1.9835* (0.0679)
T.Hi.Tech	0.5506*** (0.0014)	0.3854 (0.1657)	0.5200*** (0.0027)	0.5937** (0.0474)
Related	-0.2828** (0.0335)	-0.2611 (0.1638)	-0.2489* (0.0678)	-0.1118 (0.5792)
Same.State	-0.4455*** (0.0022)	-0.2652 (0.1809)	-0.3928*** (0.0066)	-0.1383 (0.5089)
Year.Index	0.0250* (0.0793)	0.0032 (0.9149)	0.02 (0.1728)	-0.0187 (0.5181)
Observations	579	316	579	305
Pseudo R squared	0.319	0.407	0.328	0.702
Maximum VIF	3	2.76	3.67	3.92

Table 7. CSR Strengths and Concerns and the Choice of Payment Method in Takeovers: Heckman two-step Selection Models

This table reports the results of Heckman two-step selection models. Model 1 (Model 3) estimates a probit regression model in which the dependent variable takes the value of one if the target (acquirer) is covered by KLD, and zero otherwise. Model 2 and Model 4 estimate probit regression models where the dependent variable equals 1 if the method of payment is cash and 0 otherwise. Independent variables include target CSR strengths (T.CSR.Strengths), target CSR concerns (T.CSR.Concerns), acquirer CSR strengths (A.CSR.Strengths), and acquirer CSR concerns (A.CSR.Concerns). Control variables that are measured at the end of the most recent fiscal year prior to the deal announcement include acquirer free cash flow (A.FCF), acquirer market-to-book ratio (A.MB), acquirer size (A.Size), acquirer leverage (A.Leverage), acquirer analyst coverage (A.Analyst), target market-to-book ratio (T.MB), relative size (R.Size), target leverage (T.Leverage), target analyst coverage (T.Analyst), and target R&D (T.R&D). Acquirers' stock run-up before the acquisition (A.Stock>Returns) is measured as acquirer buy and hold cumulative stock returns over the period of -154 business days to -28 business days prior to the deal announcement. Target sales growth (T.Sales.Growth) is measured over the two years before the deal announcement. Dummy variables are target being in a blue state in the US (T.Blue.State) and acquirer being in the blue state in the US (A.Blue.State), target being in high-tech industry (T.Hi-Tech), industry relatedness (Related), and target and acquirer being in the same state in the US (Same.State). The symbols \*, \*\*, \*\*\* indicate significance at the 10%, 5%, and 15 levels, respectively. Z-statistics are calculated using White heteroscedasticity-consistent standard errors. P-values are presented in parentheses.

	<i>Heckman two-step Selection Models</i>			
	Model 1	Model 2	Model 3	Model 4
Constant	-4.3894*** (0.0000)	-3.5396** (0.0122)	-4.3183*** (0.0000)	-0.7259 (0.4507)
T.CSR.Strengths		0.9085 (0.6958)		
T.CSR.Concerns		-3.1280** (0.0411)		
A.CSR.Strengths				1.3563* (0.0534)
A.CSR.Concerns				1.7415* (0.0635)
A.FCF		9.4682*** (0.0000)	1.5242* (0.0501)	8.2906*** (0.0000)
A.MB		0.0167 (0.6814)	0.0018 (0.9072)	-0.0312 (0.1421)
A.Size		0.4880** (0.0117)	0.6263*** (0.0000)	-0.0685 (0.7157)
A.Leverage		0.6274 (0.4789)	-0.2741 (0.5265)	1.5591*** (0.0092)
A.Analyst		0.0282* (0.0601)	0.0819*** (0.0000)	0.0041 (0.7471)
A.Stock>Returns		0.499 (0.2804)	-0.6690*** (0.0005)	-0.2578 (0.4255)
R.Size		-1.2850*** (0.0030)		-2.0785*** (0.0000)
T.MB	0.0361* (0.0910)	0.0053 (0.8529)		-0.0292 (0.1886)
T.Leverage	0.2419 (0.3944)	0.2705 (0.5279)		-0.4017 (0.2617)
T.Analyst	0.1185*** (0.0000)	-0.0470** (0.0343)		-0.0307*** (0.0067)
T.Sales.Growth	-0.097 (0.3300)	-0.1209 (0.5186)		-0.1941* (0.0722)
T.R&D	0.5625 (0.3368)	2.4145** (0.0175)		2.2701** (0.0257)
T.Size	0.6151*** (0.0000)			
T.Blue.State	-0.0662 (0.5794)			
A.Blue.State			0.0257 (0.8424)	
T.Hi.Tech		0.4066 (0.1244)		0.5000*** (0.0041)
Related		-0.2268 (0.2228)		-0.2567* (0.0559)
Same.State		-0.2719 (0.1689)		-0.4072*** (0.0041)
IMR		0.9240** (0.0483)		0.7096 (0.1049)
Year.Index	0.1169*** (0.0000)	0.0463 (0.2217)	0.1436*** (0.0000)	0.0471** (0.0266)
Observations	836	316	836	579
Pseudo R squared	0.4253	0.4054	0.537	0.3237

Table 8. KLD Coverage and the Choice of Payment Method in Takeovers

This table reports the results of ordered probit regression models where the dependent variable equals 1 if the method of payment is stock, 2 if it is a combination of cash and stock, and 3 if it is cash. Independent variables include target KLD coverage (T.KLD.Cov) and acquirer KLD coverage (A.KLD.Cov). Control variables that are measured at the end of the most recent fiscal year prior to the deal announcement include acquirer free cash flow (A.FCF), acquirer market-to-book ratio (A.MB), acquirer size (A.Size), acquirer leverage (A.Leverage), acquirer analyst coverage (A.Analyst), target market-to-book ratio (T.MB), relative size (R.Size), target leverage (T.Leverage), target analyst coverage (T.Analyst), and target R&D (T.R&D). Acquirers' stock run-up before the acquisition (A.Stock>Returns) is measured as acquirer buy and hold cumulative stock returns over the period of -154 business days to -28 business days prior to the deal announcement. Target sales growth (T.Sales.Growth) is measured over the two years before the deal announcement. Dummy variables are target in high-tech industry (T.Hi-Tech), industry relatedness (Related), and target and acquirer being in the same state in the US (Same.State). The symbols \*, \*\*, \*\*\* indicate significance at the 10%, 5%, and 1% levels, respectively. Z-statistics are calculated using White heteroscedasticity-consistent standard errors. P-values are presented in parentheses.

	<i>Ordered Probit Regression Models</i>			
	Model 1	Model 2	Model 3	Model 4
1  2	0.4871* (0.0704)	0.3136 (0.2532)	0.3023 (0.2660)	0.2013 (0.4657)
2  3	1.2154*** (0.0000)	1.0464*** (0.0002)	1.0415*** (0.0002)	0.9428*** (0.0008)
T.KLD.Cov		0.3102*** (0.0058)		0.2124* (0.0686)
A.KLD.Cov			0.5156*** (0.0000)	0.4621*** (0.0005)
A.FCF	4.5825*** (0.0000)	4.4650*** (0.0000)	4.5131*** (0.0000)	4.4374*** (0.0000)
A.MB	-0.0318** (0.0208)	-0.0303** (0.0262)	-0.0347*** (0.0098)	-0.0334** (0.0129)
A.Size	0.1677** (0.0361)	0.132 (0.1050)	0.0987 (0.2322)	0.081 (0.3306)
A.Leverage	0.9244*** (0.0057)	0.8757*** (0.0086)	1.0272*** (0.0023)	0.9833*** (0.0034)
A.Analyst	0.0024 (0.7350)	0.0038 (0.5858)	-0.0041 (0.5490)	-0.0024 (0.7256)
A.Stock>Returns	-0.3917** (0.0120)	-0.3932** (0.0122)	-0.3377** (0.0326)	-0.3440** (0.0305)
T.MB	-0.0342** (0.0257)	-0.0365** (0.0157)	-0.0355** (0.0174)	-0.0370** (0.0128)
R.Size	-0.4194*** (0.0006)	-0.4556*** (0.0002)	-0.4145*** (0.0007)	-0.4400*** (0.0004)
T.Leverage	0.4142* (0.0852)	0.4120* (0.0889)	0.3684 (0.1294)	0.3712 (0.1275)
T.Analyst	-0.0187** (0.0123)	-0.0281*** (0.0006)	-0.0172** (0.0196)	-0.0238*** (0.0033)
T.Sales.Growth	-0.2207*** (0.0049)	-0.2106*** (0.0074)	-0.2096*** (0.0066)	-0.2038*** (0.0085)
T.R&D	1.7909*** (0.0002)	1.7640*** (0.0002)	1.8243*** (0.0001)	1.7988*** (0.0001)
T.Hi.Tech	0.2903** (0.0112)	0.2951** (0.0104)	0.3047*** (0.0076)	0.3062*** (0.0075)
Related	-0.3484*** (0.0002)	-0.3275*** (0.0006)	-0.3227*** (0.0006)	-0.3108*** (0.0010)
Same.State	-0.2384** (0.0165)	-0.2208** (0.0269)	-0.2176** (0.0296)	-0.2074** (0.0385)
Year.Index	0.0441*** (0.0000)	0.0354*** (0.0000)	0.0267*** (0.0036)	0.0225** (0.0156)
Observations	836	836	836	836
Pseudo R squared	0.14	0.144	0.149	0.151

Table 9. CSR Strengths and Concerns and the Choice of Payment Method in Takeovers

This table reports the results of ordered probit regression models where the dependent variable equals 1 if the method of payment is stock, 2 if it is a combination of cash and stock, and 3 if it is cash. Independent variables include target CSR strengths (T.CSR.Strengths), target CSR concerns (T.CSR.Concerns), acquirer CSR strengths (A.CSR.Strengths), and acquirer CSR concerns (A.CSR.Concerns). Control variables that are measured at the end of the most recent fiscal year prior to the deal announcement include acquirer free cash flow (A.FCF), acquirer market-to-book ratio (A.MB), acquirer size (A.Size), acquirer leverage (A.Leverage), acquirer analyst coverage (A.Analyst), target market-to-book ratio (T.MB), relative size (R.Size), target leverage (T.Leverage), target analyst coverage (T.Analyst), and target R&D (T.R&D). Acquirers' stock run-up before the acquisition (A.Stock>Returns) is measured as acquirer buy and hold cumulative stock returns over the period of -154 business days to -28 business days prior to the deal announcement. Target sales growth (T.Sales.Growth) is measured over the two years before the deal announcement. Dummy variables are target in high-tech industry (T.Hi-Tech), industry relatedness (Related), and target and acquirer being in the same state in the US (Same.State). The symbols \*, \*\*, \*\*\* indicate significance at the 10%, 5%, and 1% levels, respectively. Z-statistics are calculated using White heteroscedasticity-consistent standard errors. P-values are presented in parentheses.

	<i>Ordered Probit Regression Models</i>			
	Model 1	Model 2	Model 3	Model 4
1 2	0.1154 (0.7910)	0.2489 (0.7035)	-0.5906 (0.2390)	-0.6219 (0.4132)
2 3	0.9381** (0.0326)	1.4086** (0.0320)	0.2432 (0.6282)	0.5582 (0.4591)
T.CSR.Strengths		2.6086 (0.2256)		1.3442 (0.5292)
T.CSR.Concerns		-2.9935** (0.0144)		-3.3137** (0.0137)
A.CSR.Strengths			2.0944*** (0.0016)	2.3600*** (0.0034)
A.CSR.Concerns			0.8081 (0.3408)	0.5186 (0.6730)
A.FCF	8.7396*** (0.0000)	10.1275*** (0.0000)	8.1326*** (0.0000)	9.5673*** (0.0000)
A.MB	-0.0369** (0.0351)	0.0011 (0.9631)	-0.0356** (0.0388)	-0.006 (0.7993)
A.Size	0.1674 (0.1385)	0.3121* (0.0559)	-0.0399 (0.7704)	0.0795 (0.6932)
A.Leverage	1.5330*** (0.0009)	1.2611** (0.0345)	1.5764*** (0.0008)	1.3609** (0.0231)
A.Analyst	-0.0166* (0.0647)	0.022 (0.1051)	-0.0161* (0.0799)	0.0257* (0.0749)
A.Stock>Returns	-0.2597 (0.3655)	0.2295 (0.5792)	-0.2102 (0.4610)	0.2264 (0.5877)
T.MB	-0.0276 (0.1353)	-0.0279 (0.2457)	-0.0234 (0.2199)	-0.0173 (0.4805)
R.Size	-0.7192*** (0.0001)	-0.5473** (0.0213)	-0.7407*** (0.0001)	-0.5228** (0.0323)
T.Leverage	-0.246 (0.4219)	0.0975 (0.7966)	-0.2636 (0.4015)	0.0643 (0.8665)
T.Analyst	-0.0157* (0.0765)	-0.0649*** (0.0000)	-0.0187** (0.0337)	-0.0669*** (0.0000)
T.Sales.Growth	-0.2480** (0.0483)	-0.1291 (0.5655)	-0.2612** (0.0389)	-0.1253 (0.5867)
T.R&D	3.2079*** (0.0004)	3.9982*** (0.0024)	2.7351*** (0.0028)	3.1084** (0.0193)
T.Hi.Tech	0.4462*** (0.0042)	0.3507 (0.1229)	0.4008** (0.0109)	0.3004 (0.2046)
Related	-0.3076*** (0.0081)	-0.2396 (0.1360)	-0.2758** (0.0196)	-0.1961 (0.2337)
Same.State	-0.2637** (0.0370)	-0.1266 (0.4855)	-0.2283* (0.0702)	-0.0809 (0.6590)
Year.Index	0.0264** (0.0266)	-0.0055 (0.7931)	0.0207* (0.0873)	-0.0154 (0.4732)
Observations	579	305	579	305
Pseudo R squared	0.183	0.611	0.192	0.617

## Study 3: Board of Directors, Institutional Ownership, and the Choice of Payment Method in Takeovers

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### **Abstract**

This paper examines whether the acquirer board of directors and institutional ownership have any influence on the choice of payment method in takeovers. Using a sample of 432 completed takeovers that took place between the US publicly traded firms, I demonstrate that board size is negatively and board independence, the fraction of female on board, multiple directorships, and institutional ownership are positively associated with the likelihood of cash offers in takeovers. These findings are consistent with the argument that board of directors and institutional ownership, by exerting better quality monitoring, enhancing firm information environment, and inducing better access to capital, incite acquirers to use cash as the choice of payment method and reap the benefits associated with such medium of exchange. These results are robust to controlling for the standard choice of payment determinants and hold under different model specifications.

**JEL Classification:** G34; G23

**Keywords:** takeovers; method of payment; board of directors; institutional ownership

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## **1. Introduction**

In takeover transactions, the acquirer can choose to pay for target's shares by cash, stocks, or a combination of cash and stocks. Such choice is systematically related to and can affect various aspects of takeover transaction including acquirer shareholders' wealth. Cash offers, on average, tend to create more value for acquirer compared with stock swaps, as is reflected in both short-term announcement and long-term post-acquisition returns (see e.g., Adra & Barbopoulos, 2018; Amihud, Lev, & Travlos, 1990; Brown & Ryngaert, 1991; Fu, Lin, & Officer, 2013; Fuller, Netter, & Stegemoller, 2002; Linn & Switzer, 2001; Loughran & Vijh, 1997; Travlos, 1987; Wansley, Lane, & Yang, 1987). In addition, cash offers tend to preempt rival bidders, lower the probability of rejection by target management, and eliminate any unnecessary delay in the process of the transaction (Berkovitch & Narayanan, 1990; Fishman, 1989).

Given that acquirer shareholders' wealth is at least partially a function of the strategic choice of payment method, corporate monitors at the acquirer level are expected to intervene in such a decision of acquirer. Indeed, Martin (1996) argues that, given the negative association between stock swaps and takeover performance, outside monitors should encourage acquirers to opt for cash offers. Consistent with the conjecture, the author finds that institutional ownership reduces the probability that acquirer use stock as the method of payment. Karampatsas, Petmezas, & Travlos (2014) maintain that large shareholders can take effective actions in an attempt to align the interest of managers and shareholders. One such action is the choice of payment method in takeovers. In line with their argument, the authors find a positive association between acquirer block holders and the probability of cash offers in takeovers. Daher & Ismail (2018) argue that since cash offers generate greater value for the acquirer, creditors should incite acquirer to use cash as the choice of payment. The authors find that acquirers with debt covenants tend to use a lower fraction of equity as the medium of exchange in takeovers.

Whereas the extant literature has examined the influence of external monitoring mechanisms, such as institutional investors and creditors, on the choice of payment method in takeovers, little is known on how internal governance mechanisms influence such decision. This study fills this void and examines whether characteristics of the board of directors at the acquirer level affect the decision regarding the choice of payment method in takeovers.

Prior studies have convincingly shown that the board of directors and institutional investors have a great incentive to get involved in various stages of a takeover decision, from initiation to

completion of the deal. This involvement stems from the fact that the outcome of a takeover transaction is at least partially a function of such deal terms undertaken at the pre-completion stage. For instance, Martin (1996) contends that institutional investors communicate directly with senior managers and affect the terms of a takeover bid. Kolasinski & Li (2013) show that strong independent directors help managers avoid initiating value-destroying acquisitions. Levi, Li, & Zhang (2014) find that the fraction of females on board is associated with fewer takeover initiation and lower premium paid for a target. Li, Liu, & Wu (2018) report that acquirer institutional investors are negatively associated with shareholders' vote avoidance. Vote avoidance is associated with lower acquirer abnormal return around the takeover announcement and higher premium paid for a target. However, to the best of my knowledge, this is the first study to investigate whether the board of directors influence the choice of payment method in takeovers. I expect that a better-quality board at the acquirer level to increase the probability of cash offers given that such choice is associated with higher value creation for the acquirer shareholders.

Since cash offers are mainly financed through debt and external borrowing (Harford, Klasa, & Walcott, 2009; Martynova & Renneboog, 2009; Uysal, 2011), one could argue that better monitoring by board of directors without having the required resources to fund cash offers, is not enough. However, a firm's governance quality seems to be of great importance for capital providers as well (Boubakri & Ghouma, 2010). For instance, the presence of a female on the board may send a positive signal to creditors, such as banks and thus may cause banks to have greater faith and trust in the internal governance of the firm and therefore lower the borrowing cost (Fields, Fraser, & Subrahmanyam, 2012). Accordingly, several studies document that better-quality governance by board are associated with lower cost of borrowing: independent directors (Anderson, Mansi, & Reeb, 2004; Bhojraj & Sengupta, 2003; Fields et al., 2012), female on board (Fields et al., 2012), multiple directorship (Chakravarty & Rutherford, 2017; Huang, Lobo, Wang, & Zhou, 2018), and institutional ownership (Bhojraj & Sengupta, 2003).

Better-quality governance by a board of directors tends to decrease the firm cost of borrowing through several channels. The first reason behind such association is that better quality governance reduces the default risk of the firm by decreasing its agency costs and therefore lowers the cost of raising capital (Bhojraj & Sengupta, 2003; Fields et al., 2012; Tran, 2014). The second reason is that higher quality governance mechanisms are more likely to ensure the integrity of accounting and financial reports which are crucial for creditors in the market (Ajinkya, Bhojraj, & Sengupta, 2005; Klein, 2002a; Srinidhi, Gul, & Tsui, 2011; Vafeas, 2000). The higher integrity of such

reports reduces the information risk of creditors and thus reduces the cost of borrowing. Finally, higher quality governance mechanisms are associated with better firm performance and thus better access to and lower cost of borrowing (Graham, Li, & Qiu, 2008).

Based upon the above arguments and findings, that is cash offers are associated with faster completion time, lower probability of rejection by target management, and non-negative announcement and long-term returns, I expect that board of directors and institutional investors, serving the interest of shareholders by exerting better-quality monitoring, enhancing firm information environment, and facilitating the access to debt, incite acquirers to use cash as the method of payment and reap the benefits associated with it.

Before moving to the tests of the study's hypotheses, I re-examine the relationship between the choice of payment method and acquisition completion time and acquisition wealth effect for acquirer shareholders. I measure the completion time of a takeover as the number of days from deal announcement to deal completion date, both as reported in the Thomson Reuters EIKON M&A database. Consistent with prior studies (Faleye, Hoitash, & Hoitash, 2011) the results confirm that cash-financed acquisitions take relatively less time than stock financed acquisitions to complete. Although, the extant literature does not provide a conclusive answer to whether shorter completion time is better than longer due diligence time, unnecessary delay in completion of acquisition may invite other potential bidders as they learn about the profitability of the deal and therefore, would make the process costlier for the initial bidder. In this regard, Faleye et al. (2011) find that less effective board at acquirer level is associated with a longer completion time of a takeover deal.

Further, I report results confirming prior studies' finding (Amihud et al., 1990; Brown & Ryngaert, 1991; Fuller et al., 2002; Travlos, 1987; Wansley et al., 1987) showing that cash offers are positively associated with five-day and three-day acquirer's cumulative abnormal return (CAR) around the takeover announcement date, whereas stock swaps has no effect. This result reaffirms that cash offers increase acquirers' shareholders' wealth whereas stock swaps do not.

Consistent with the prediction of the study, I provide evidence that better-quality corporate governance at the acquirer level increases the likelihood of cash offers in takeovers. More specifically, I find a negative and significant relation between board size and the probability of cash offers. Further, the results of the study reveal that board independence, presence of a female on board, directors' multiple directorship, and institutional ownership positively and significantly



affect the likelihood that acquirer use cash offers as the choice of payment method. The results are robust to the inclusion of different acquirer, target, and transaction-related control variables and hold under different specifications.

This study contributes to the extant literature in three main ways. First, it contributes to the literature that identifies the determinants of the choice of payment method in takeovers, specifically those related to acquirer level corporate governance (Amihud et al., 1990; Daher & Ismail, 2018; Faccio & Masulis, 2005; Karampatsas et al., 2014; Martin, 1996). Different from these studies, I focus on the internal corporate governance, the attributes of board of directors, and after having controlled for the directors' ownership, I draw a more fine-grained conclusion on the effect of the board of directors and institutional investors on the choice of payment in takeovers. The literature indicates that cash financed acquisitions tend to create more value for shareholders than stock financed acquisitions. Consistent with the literature, the findings of the study show that better-quality internal governance increases the probability of cash offers.

Second, it contributes to the literature that investigates the effect of the board of directors and institutional investors on the takeover performance (Ahn, Jiraporn, & Kim, 2010; Byrd & Hickman, 1992; L. Y. Chen, Lai, & Chen, 2015; X. Chen, Harford, & Li, 2007; Ferreira, Massa, & Matos, 2010; Field & Mkrtychyan, 2017; Gaspar, Massa, & Matos, 2005; Harris & Shimizu, 2004; Masulis, Wang, & Xie, 2007, 2012; Schmidt, 2015). Different from these studies I document that the board of directors and institutional investors influence the choice of payment method in takeovers which in turn has a material impact on the announcement and long-term performance of the takeovers. It can be considered as a back-door mechanism through which the board of directors and institutional investors increase shareholders' wealth.

Finally, by establishing that better-quality monitoring by board of directors and institutional investors increases the likelihood that acquirers use cash as the choice of payment method in takeovers, the study contributes to the literature that highlight the effect of better-quality governance mechanisms on cost of borrowing (Anderson et al., 2004; Bhojraj & Sengupta, 2003; Chakravarty & Rutherford, 2017; Fields et al., 2012; Huang et al., 2018).

The outline of the paper is as follows: Section 2 reviews the literature and develops the hypotheses, Section 3 outlines the sample, variables, and the models' specifications. Section 4 reports the result of the study. Section 5 concludes the study.

## **2. Literature Review and Hypothesis Development**

An important attribute of the board of directors is its size. Lipton & Lorsch (1992) and Jensen (1993) argue that large board suffers from poor communication and decision making and therefore they function less effectively. They suggest that the board should consist of seven to ten directors. Consistent with this argument, Yermack (1996) finds that there is a negative association between board size and firm value. The author argues that even though large board size can bring more knowledge and greater monitoring capacity, it would be outweighed by the costs such as slower communication and decision making, less-candid discussion of managerial performance, and biases against risk-taking. Cheng (2008) maintains that having a large board leads to greater agency problems. This is due to the fact that it takes more time for a larger board to organize board meetings and reach consensus. The author finds that relatively larger boards are associated with lower variability in stock returns, lower return on assets, and lower firm value.

In contrast, Chaganti, Mahajan, & Sharma (1985) argue that the large boards are valuable for the breadth of their services. Klein (2002b) maintains that relatively small boards limit the number of directors available to serve on the audit committee. The author finds a positive association between board size and audit committee independence.

Vafeas (2000) argues that in relatively smaller boards, directors are more likely to take responsibility and monitor the firm financial reports. Consistent with this argument, the author finds that a small board is associated with more informative earnings. In contrast, Anderson et al. (2004) argue that large boards are more effective monitors of the financial accounting process and find that board size is negatively associated with the cost of debt. Fields et al. (2012) find similar results and maintain that larger boards incorporate more combined expertise across members. Lorca, Sánchez-Ballesta, & García-Meca (2011) find a non-linear relationship between board size and cost of debt in a sample of Spanish firms. These findings are in line with the argument that larger boards do a better job in monitoring (Chaganti et al., 1985; Klein, 2002b) and in contrary to the findings of Yermack (1996) and Cheng (2008).

Given the inconclusive results regarding the board size, based upon the above argument I posit the following opposite conjectures concerning the association between board size and the choice of payment method in takeovers:

***Hypothesis 1a)** Board size at the acquirer level increases the probability that the acquirer use cash as the method of payment in takeovers.*

***Hypothesis 1b)** Board size at the acquirer level decreases the probability that the acquirer use cash as the method of payment in takeovers.*

Independent directors are considered to be more vigilant in monitoring than inside directors. One of the reasons is argued to be that independent directors have reputation concerns in the market (Fama & Jensen, 1983). Lipton & Lorsch (1992) maintain that to be optimal, a board should have at least two independent directors to ensure the effectiveness of the monitoring. In the context of a takeover, Byrd & Hickman (1992) find that acquirers that have a board consists of at least 50% outside director experience higher abnormal returns around the announcement of the takeover.

Several studies also agree upon the fact that board independence improves firm financial report transparency. In this regard, Klein (2002a) finds that the presence of independent directors on board is negatively associated with earnings management. Ajinkya et al. (2005) find that firms with a higher fraction of outside directors make more accurate and less optimistically biased earnings forecasts. Armstrong, Core, & Guay (2014) use the regulatory shock of 2003 that demand firms to increase the proportion of independent directors on their board and find that an increase in the fraction of independent directors on board leads to a decrease in information asymmetry, measured as information asymmetry component of the bid-ask spread.

In line with the above results, several studies find an inverse relation between board independence and the cost of borrowing. Bhojraj & Sengupta (2003) find that firms with a greater fraction of independent directors have higher credit ratings and enjoy lower bond yields. They argue that independent directors reduce management opportunistic behavior and promote firm value. Anderson et al. (2004) maintain that independent directors ensure delivering more credible and relevant accounting reports that are of great importance for creditors. The authors find that there is a negative relationship between board independence and the cost of debt financing. Focusing on the bank loans, Fields et al. (2012) document a negative relationship between board independence and the cost of bank loans.

Based upon the above argument, board independence increases board vigilant, improves information availability, and induces better access to finance. Further, mergers and acquisitions literature agree on the fact that stock swaps decrease shareholders' wealth. These conditions are

likely to make acquirer opt for cash offers rather than stock swaps and reap the benefits related to such a method. Therefore, I posit the following hypothesis:

***Hypothesis 2)** Board independence at the acquirer level increases the probability that the acquirer use cash as the method of payment in takeovers.*

Carter, Simkins, & Simpson (2003) argue that more diverse boards are better in monitoring management and are less likely to subvert the shareholders' interest. This is because more diverse boards are more independent as people with different gender, ethnicity, or cultural background are more likely to ask questions that a director with more traditional background might not. The authors find that the percentage of females on board positively and significantly associated with firm value. Adams & Ferreira (2009) examine how the presence of females on board can contribute to board inputs and firm outcomes. The authors find that board attendance record is better for female directors than male directors, the presence of females on board attenuates the male attendance problem, and female directors are more likely to join monitoring committees. In the context of a takeover, Levi et al. (2014) find that the fraction of female on board is negatively associated with the number of acquisitions a firm makes and further, it is associated with lower premium paid for a target. The authors conclude that the presence of females on board helps to create shareholders' wealth through their effect on acquisition decisions.

Srinidhi et al. (2011) document that the presence of females on board is positively associated with earnings quality. They attribute this result to the fact that the participation of females on board improves the oversight function of the board and increase the quality of the firm's reports.

In line with findings and arguments, Fields et al. (2012) argue that having a diverse board, measured as the percentage of female on board, may cause banks to have a sense of trust in the internal governance mechanism of the firm and therefore, decrease the cost of borrowing. The authors find supporting evidence for this argument that is female participation on board leads to fewer covenants and less need for collateral in banks loan.

Based upon the above argument, the presence of females on board increases board vigilant, improves information availability, and induces better access to finance. Further, mergers and acquisitions literature agree on the fact that stock swaps decrease shareholders' wealth. These conditions are likely to make acquirer opt for cash offers rather than stock swaps and reap the benefits related to such a method. Therefore, I posit the following hypothesis:

***Hypothesis 3)** The presence of female directors on board at the acquirer level increases the probability that the acquirer use cash as the method of payment in takeovers.*

Directors serving on multiple boards have been criticized to have limited time and attention which may negatively affect their effectiveness in monitoring and advising managers, “busyness hypothesis”. However, Fama & Jensen (1983) argue that outside directors usually serve on other boards and have reputation concerns. The value of their human capital depends on their performance outcomes in other organizations. These individuals use their directorship on different boards to signal to the market that they are decision experts, “reputation hypothesis”. In line with the reputation hypothesis, Ferris, Jagannathan, & Pritchard (2003) find no evidence that directors serve on multiple boards shirk their responsibilities. In the context of takeovers, Harris & Shimizu (2004) find that directors sitting on multiple boards are associated with higher abnormal returns around the takeover announcement. They argue that these directors draw on their experience and knowledge that they gain by serving on different boards.

Ashbaugh-Skaife, Collins, & LaFond (2006) document that multiple directorships of outside directors is associated with higher credit ratings. Focusing on the bank loans, Chakravarty & Rutherford (2017) find that multiple directorship reduces credit risk to lenders by being associated with lower takeover vulnerability. The authors further find that multiple directorship is associated with a lower bank loan. Huang et al. (2018) find that the presence of independent directors with multiple directorships is beneficial only for those firms that have more importance and prestige for such directors. They find that firms with a higher proportion of independent directors with multiple directorships for whom the firm is of importance have lower bank loan spreads, longer loan maturity, fewer loan covenants, lower syndicate concentration, lower probability of collateral requirement, lower annual loan fees, and higher bond ratings. Their findings indicate that the attention of the directors with multiple directorships is the main driver of the value for the firm.

Based upon the above argument, multiple directorships of directors on board increases board vigilant, improves information availability, and induces better access to finance. Further, mergers and acquisitions literature agree on the fact that stock swaps decrease shareholders’ wealth. These conditions are likely to make acquirer opt for cash offers rather than stock swaps and reap the benefits related to such a method. Therefore, I posit the following hypothesis:

***Hypothesis 4)** Multiple directorships at the acquirer level increases the probability that the acquirer use cash as the method of payment in takeovers.*

Shleifer & Vishny (1986) argue that unlike small shareholders, institutional investors are active in firm governance and by virtue of their large holdings have great incentive to monitor management and take corrective decisions. Institutional investors have greater expertise and have the ability to monitor managers at a lower cost than small shareholders. In line with this argument, McConnell & Servaes (1990) find a significant and positive relationship between institutional shareholdings and firm value measured by Tobin's Q. In the context of a takeover, Martin (1996) argues that institutional investors are effective monitors of managers and in some cases directly communicate with managers and therefore may influence the terms of takeovers. The author maintains that given that stock swaps are associated with a decrease in acquirer shareholders' wealth, the probability of an acquisition being financed in such a way should be lower when the percentage of institutional ownership is higher. The author finds supporting evidence for this argument. Li et al. (2018) maintain that acquirers can manipulate the choice of payment method and avoid shareholder vote. The authors find that vote avoidance is associated with lower acquirer abnormal return around the takeover announcement and higher premium paid for the target. They further find that institutional investors at the acquirer level are negatively associated with shareholders' vote avoidance. They conclude that high institutional investors are effective monitors of managers and reduce acquirer managers' tendency to avoid shareholder vote.

Ajinkya et al. (2005) find that firms with higher institutional investors are more likely to issue earnings forecasts and they tend to be specific, accurate, and less optimistically biased. In line with this finding, Bhojraj & Sengupta (2003) argue that effective monitoring by governance mechanisms reduce the conflict of interests between management and providers of capital. The authors find that firms with relatively higher institutional ownership have higher credit ratings and enjoy lower bond yields.

Based on the above argument, institutional investors effectively monitor managers, improve information availability, and induce better access to finance. Further, mergers and acquisitions literature agree on the fact that stock swaps decrease shareholders' wealth. These conditions are likely to make acquirer opt for cash offers rather than stock swaps and reap the benefits related to such a method. Therefore, I posit the following hypothesis:

***Hypothesis 5)** Institutional ownership at the acquirer level increases the probability that the acquirer use cash as the method of payment in takeovers.*

### **3. Data Sources, Variables, and Models' Specification**

#### **3.1. Sample**

This study covers a sample of the US completed takeover transactions that took place over the period of January 1, 1999 to December 31, 2014.<sup>9</sup> Data on takeovers are collected from Thomson Reuters' EIKON M&A database. I include transactions that are in the form of a merger, acquisition of assets, acquisition of major assets, and acquisition of certain assets. I further limit the sample to the transactions that meet the following criteria: 1) Both the target and the acquirer are publicly traded. This is to ensure that relevant firm-specific accounting and market data on both sides of the transaction are available. 2) Acquirers own less than 5% of shares of the target firm before the transaction. 3) Acquirers own more than 50% of the target firm after the transaction since I need acquirers to take over the control of the target firm after the transaction. Further, following prior studies on the determinants of choice of payment method in takeovers (see e.g., Chemmanur, Paeglis, & Simonyan, 2009; Faccio & Masulis, 2005; Luypaert & Van Caneghem, 2017), I eliminate transactions whose method of payment is not available or is not in the form of cash, stock, or a combination of cash and stock. A total of 2,555 transactions meets these criteria.

Next, accounting data and stock price data are collected from COMPUSTAT and Center for Research in Security Prices (CRSP), respectively. This data is collected for the most recent fiscal year prior to the transaction announcement date unless otherwise stated. After eliminating the transactions with missing data, a sample of 680 transactions for which all the accounting and market data are available is obtained.

I then collected the board of directors' data from Institutional Shareholder Service (ISS) and institutional ownership's data from Thomson Reuters Institutional (13F) Holdings databases. Given the purpose of the study, this data is collected only at the acquirer level. Board data is collected for the most recent fiscal year prior to the takeover announcement date and institutional ownership data is collected for the most recent quarter prior to the deal announcement date. After the elimination of the deals whose board and institutional ownership data are not available, I obtained the final sample of 432 deals with all the necessary data.

All the above-mentioned databases are accessed via Wharton Research Data Service (WRDS).

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<sup>9</sup> The starting date of the sample is driven by the availability of all the variables related to the board of directors and institutional ownership.

### **3.2. Main Variables**

#### *Method of Payment*

The dependent variable in this study is the choice of payment method in takeover transactions. It is defined as a binary variable that takes the value of 1 if the payment method is in the form of cash, and 0 otherwise. Based on the data collected from the Thomson Reuters EIKON M&A database, the method of payment can be cash, stock, or a combination of cash and stock. The percentage of cash and stock used as the method of payment is not available in the database, and this is the reason I am obliged to define my dependent variable as a binary variable.

#### *Board Characteristics*

The main independent variables are the board of directors' characteristics and institutional ownership. Board characteristics are: board size: is the number of directors that serve on the board of a firm, board independence: is the proportion of independent directors on the board of a firm, female on board: is the fraction of female directors on the board of a firm, multiple directorships: is the fraction of directors on board that hold more than four directorship in total. Board of directors' attributes are measured at the end of the most recent fiscal year prior to the announcement date of the takeovers. Further, Institutional ownership is the percentage of the firm's shares held by institutions. Institutional ownership is reported quarterly in Thomson Reuters Institutional (13F) Holdings and therefore it is measured in the most recent quarter prior to the takeover announcement date. A similar approach is used by prior studies (see e.g., Bhojraj & Sengupta, 2003; Harris & Shimizu, 2004; Levi et al., 2014; Li et al., 2018; Masulis et al., 2007; Yermack, 1996).

### **3.3. Control Variables**

In this section, I discuss the typical variables that, according to the literature, may affect the estimate of the dependent variable, the choice of payment method in takeovers. They are attributed to the acquirer, target, and transaction, and I report them following this order, while definitions and expected signs are also summarized in Table 1.

*Acquirer free cash flow (FCF)*. According to the pecking order theory, firms follow a sequence in their financing decisions that are driven by the cost associated with each source of financing. Based on this theory, to finance their investment, firms tend to prefer internal funds first, then debt,



followed by equity issuance, which is the last preferable source of financing (Myers & Majluf, 1984). In a takeover context, if firms have cash available or sufficient cash flow, from this rationale I expect that they are more likely to use cash offers rather than stock swaps as the choice of payment. Several studies provide supportive evidence for this prediction (see e.g., Karampatsas et al., 2014; Martynova & Renneboog, 2009). To capture this effect, I calculate the free cash flow of the acquirer as operating income before depreciation minus interest expenses, taxes, preferred dividend, and common dividend divided by the book value of total assets. This variable is calculated at the end of the most recent fiscal year before the deal announcement.

*Acquirer market-to-book (M/B).* Firms with high growth opportunities prefer financing their investments with equity rather than borrowing. This is to avoid any underinvestment problem that might happen in the future because of a high level of debt. Martin (1996) argues that debt financing is preferable for poor-growth-opportunity firms due to the fact that they have to pay out cash flow and this deters them from bad investments. Equity financing is preferable for good-growth-opportunity firms because it gives them more discretion over funds that are raised and makes the firm take full advantage of the investment opportunities. Consistent with this argument, Martin (1996) documents that an acquirer's high M/B ratio increases the probability of stock swaps. Karampatsas et al. (2014) document similar results. I calculate the acquirer M/B ratio by dividing the market value of common equity by book value at the end of the fiscal year preceding the deal announcement. I expect a negative association between the acquirer M/B ratio and the probability of cash offers.

*Acquirer size.* Large firms are characterized by a high level of diversification and lower bankruptcy costs (Faccio & Masulis, 2005). They also have higher debt capacity, which makes them more likely to opt for cash offers as the method of payment in takeovers. Faccio & Masulis (2005) and Luypaert & Van Caneghem (2017) find supportive evidence for this argument. Similarly to these studies, I use the logarithm of an acquirer's total assets at the end of the fiscal year preceding the deal announcement to control for this effect and expect that it positively affects the probability of cash offers.

*Acquirer leverage.* Highly levered acquirers are more likely to be in a financially constrained situation and not able to use cash to finance a takeover (Faccio & Masulis, 2005). However, the results of empirical studies are mixed. Faccio & Masulis (2005) find a negative association between the acquirer leverage ratio and the likelihood of cash offers, whereas Karampatsas et al.

(2014) document a positive association. I calculate the leverage ratio of an acquirer by dividing its long-term debt by its total assets at the end of the fiscal year preceding the deal announcement. The sign of this variable is undetermined for empirical confirmation.

*Acquirer analyst coverage.* It is well established that acquirer information asymmetry has a significant effect on the choice of payment method in takeovers. When acquirer information asymmetry is high it can exploit the market, and stock swaps would be more probable in case of stock overvaluation (Chemmanur et al., 2009; Faccio & Masulis, 2005; Hansen, 1987; Luypaert & Van Caneghem, 2017; Myers & Majluf, 1984; Shleifer & Vishny, 2003). However, low information asymmetry leaves them fewer incentives for such market-timing behavior due to less mispricing in their stock prices (Chang, Dasgupta, & Hilary, 2006). To control for this effect, I employ a variable acquirer analyst coverage which is the maximum number of analysts who cover the acquirer and provide earnings forecasts in any month in the year before the takeover transaction's year. Analysts act as information intermediaries in the market and reduce the information asymmetry of firms they follow. They actively and continuously participate in the acquisition and processing of information from firms, distributing it to current and potential investors in the market (Chang et al., 2006; Chung & Jo, 1996; Derrien & Kecskés, 2013). Therefore, if analyst coverage reduces information asymmetry, an acquirer would have fewer incentives to use stock swaps given that their stocks are less likely to deviate from their fundamental values (Chang et al., 2006). Hence, market-timing behavior would be less probable, making cash offers more likely. However, Karampatsas et al. (2014) argue that a target's reluctance to accept stock as the method of payment decreases as acquirer information asymmetry decreases due to high analyst coverage. They find that acquirer analyst coverage negatively affects the probability of cash offers in takeovers. Therefore, the sign of this variable is left for empirical confirmation. Analyst coverage is collected from the I/B/E/S database. If no forecast is reported by I/B/E/S in the year before the deal announcement for a firm, then analyst coverage is considered as zero (Bowen, Chen, & Cheng, 2008). The I/B/E/S database is accessed via WRDS.

*Acquirer stock return.* The probability of stock swaps as the method of payment increases when the acquirer stocks are overvalued. Shleifer & Vishny (2003) show that both merger waves of the 1960s and 1990s occurred during a very high stock market overvaluation, and the method of payment was mostly stock swaps. Faccio & Masulis (2005) and Karampatsas et al. (2014) rely on the acquirer's pre-acquisition stock run-up to measure the effect of stock overvaluation on the method of payment and find that this stock run-up has a significantly negative effect on the

probability of cash offers. To control for the overvaluation effect, I calculate the bidder buy and hold cumulative stock returns over the period of -154 business days to -28 business days prior to the deal announcement. I expect this variable to decrease the likelihood of cash offers.

*Acquirer director's ownership.* Insiders at the acquirer level that have high ownership prefer cash offers rather than stock swaps to retain their control at the firm (Amihud et al., 1990). Martin (1996) finds that dilution of control is more pronounced at middle-level insider ownership, which is 5% to 25% ownership. Faccio & Masulis (2005) also document similar results and conclude that dilution of control is important for insiders that have an intermediate level of voting power and weakens for relatively high or low ownership levels. I control for this effect by measuring the directors' ownership at the most recent fiscal year prior to the announcement date of the takeovers. The data is obtained from the ISS database. I expect a positive relationship between this variable and the probability of cash offers.

*Target M/B ratio.* Chemmanur et al. (2009) predict the M/B ratio of the target to be negatively associated with the likelihood of cash offers in takeovers. This is because the target M/B ratio is positively related to capital gains tax liability of the target firm. Following Chemmanur et al. (2009) and Luypaert & Van Caneghem (2017), I compute this variable by dividing the market value of the target's common equity by its book value at the end of the fiscal year before the deal announcement. I expect that this variable to affect negatively the probability of cash offers.

*Relative size.* Acquirers are more inclined to opt for stock swaps when buying a target that is subject to high information asymmetry to protect themselves against the lemon problem. The larger the relative size of the target to the acquirer, the higher the probability of stock swaps. This is because the acquirer's information disadvantage with respect to the target's value becomes more severe and problematic when the relative size of the target to the acquirer is large (Hansen, 1987). In addition to this argument, Karampatsas et al. (2014) maintain that raising cash for a large target relative to the acquirer is more difficult and decreases the likelihood of cash offers. Yet using stock swaps for a relatively large target may result in dilution of the dominant shareholder's control (Amihud et al., 1990; Faccio & Masulis, 2005). Whereas Martin (1996) reports no evidence for the effect of relative size on the method of payment, most empirical studies have documented a negative effect of relative size on the likelihood of cash offers (Faccio & Masulis, 2005; Karampatsas et al., 2014; Martynova & Renneboog, 2009). In this study, following Luypaert & Van Caneghem (2017), I compute the relative size as the ratio of the target firm's total assets to

the acquirer firm's total assets at the end of the most recent fiscal year prior to the deal announcement. I expect this variable to affect negatively the probability of cash offers.

*Target leverage.* Hansen (1987) argues that the likelihood of stock swaps decreases as the financial leverage of the target firm increases. This rationale stems from the fact that the benefit of stock swaps as contingent payment increases, the higher the equity of the target firm relative to the acquirer. In addition, financially constrained targets are more likely to prefer cash offers rather than stock swaps. However, empirical results regarding the effect of the target leverage ratio are not conclusive on this issue. For instance, Karampatsas et al. (2014) find that the target leverage ratio negatively affects the probability of cash offers. I calculate the leverage ratio of the target by dividing its long-term debt by its total assets at the end of the fiscal year preceding the deal announcement. The sign of this variable is left for empirical confirmation.

*Target analyst coverage.* Acquirers are more inclined to opt for stock swaps when buying a target that is subject to high information asymmetry to share any mispricing in the target firm value with target shareholders (Hansen, 1987). In contrast, when the target information asymmetry is low, the acquirer is likely to feel less need for such contingent payment (Luypaert & Van Caneghem, 2014; Reuer & Ragozzino, 2008). If analyst coverage reduces information asymmetry regarding the value of the target, the acquirer would be less likely to feel the need for contingent payment, and therefore, ceteris paribus, cash offers would be more likely. However, Karampatsas et al. (2014) find that target analyst coverage negatively affects the probability of cash offers in takeovers. This finding is in line with the argument that the probability of cash offers is higher when target information asymmetry is high (Chemmanur et al., 2009; Luypaert & Van Caneghem, 2017). I measure the target analyst coverage similar to the acquirer analyst coverage. I leave the sign of this variable for empirical confirmation.

*Target sales growth.* The target's past performance may affect the method of payment in takeovers. Targets with poor past performance and therefore fragile financial health might prefer cash offers relative to other methods of payment. Officer (2007) finds that acquisitions of unlisted targets are more likely to be in the form of cash offers. Following Bange & Mazzeo (2004) and Dionne, La Haye, & Bergerès (2015), I measure a target's past performance by sales growth in the most recent fiscal year prior to the deal announcement. More specifically, I calculate a target's past performance as follows:

$$\frac{\text{Target sales in year } t - \text{Target sales in year } t - 1}{\text{Target sales in year } t - 1} \quad (4)$$

where  $t$  is the fiscal year prior to the deal announcement. I predict a negative association between this variable and the likelihood of cash offers.

*Target R&D.* The R&D expenditure usually is considered as one of the main factors that contribute to the information asymmetry regarding the value of a firm (see e.g., Officer, Poulsen, & Stegemoller, 2009). According to the model proposed by Hansen (1987), an acquirer may choose to opt for stock swaps dealing with a target with high R&D and share the possible target mispricing with the target shareholders. Nevertheless, based on empirical findings of Chemmanur et al. (2009) and Luypaert & Van Caneghem (2017), acquirers can obtain detailed information regarding the target's R&D during the acquisition negotiation process and consequently use cash to take full advantage of the transaction and deter competing bids. Similarly to Luypaert & Van Caneghem (2017), I compute this variable by dividing the target's R&D expenditure by its total assets at the end of the most recent fiscal year before the deal announcement. The sign of this variable is left for empirical confirmation.

*Target high-tech.* Firms in high-tech industries are characterized by a high level of human capital and intangible assets, making it more difficult to appraise their value. Reuer, Shenkar, & Ragozzino (2004) find that acquirers in international acquisitions tend to use stock swaps as the method of payment when buying high-tech firms. However, high information asymmetry regarding the value of the target firm in high-tech industries may result in a high probability of cash offers by the acquirer to take full advantage of the transaction and deter competing bids (Chemmanur et al., 2009; Luypaert & Van Caneghem, 2017). I control for this variable by defining it equal to 1 when the target belongs to a high-tech industry, and 0 otherwise. I leave the sign of this variable for empirical confirmation.

*Related industry.* Targets are more likely to accept stock swaps from an acquirer in the same industry. This is because target shareholders are well acquainted with the industry risks and prospects (Karampatsas et al., 2014). Faccio & Masulis (2005) find that being in the same industry is negatively associated with the likelihood of cash offers. They argue that a target is less risk-averse when the acquirer is in the same industry as the target and therefore more likely to accept the acquirer's stock as the method of payment. Similar results are reported by Luypaert & Van Caneghem (2014). I control accordingly for this variable by defining it equal to 1 when the target

and the acquirer are in the same two-digit SIC industry (according to the Thomson Reuters EIKON M&A database), and 0 otherwise. A negative coefficient is expected for this variable.

*Same state.* Ragozzino & Reuer (2011) argue that geographical distance is positively associated with the problem of adverse selection. The authors find that distance between an acquirer and an IPO target is lower in full acquisitions and it is greater in cases of partial acquisitions. In cases of greater distance, acquirers are hence more likely to share the risk with the target shareholders and make fewer investments. Bick, Crook, Lynch, & Walkup (2017) argue that geographical proximity can mitigate information asymmetry between the acquirer and the target. The authors find that small targets receive a lower premium, and the closer they are to their acquirers, the faster the completion time of the deal. These findings suggest that geographical proximity may affect the method of payment as well. The closer the acquirer to the target in terms of geographical distance, the better they are positioned to assess the value of the target (Bick et al., 2017), and thus there would be less need for contingent payment. It might be nonetheless possible that as in the case of a related industry, a target would be less reluctant to accept the stock of an acquirer given the information advantages that it has. I control for this effect by constructing a dummy variable that takes the value of 1 if a target and an acquirer are in the same state in the US, and 0 otherwise. The states that acquirers and targets are located in are given in the Thomson Reuters EIKON M&A database. I leave the sign of this variable for empirical confirmation.

*[insert Table 1 about here]*

### 3.4. Models' Specification

I use a binary probit regression model to examine whether the board of directors' attributes and institutional ownership at the acquirer level affect the choice of payment in takeovers. The generic model is as follows:

$$Pr(\text{cash offers} = 1)_i = \alpha + \beta \mathbf{X}_i + \gamma \mathbf{Z}_i + \delta \text{Year.Index} + \varepsilon_i \quad (2)$$

where the probability of cash offers is a dummy variable and equals 1 when the method of payment is cash, and 0 otherwise.  $\mathbf{X}_i$  is a vector of my variables of interest. These variables are; board size (*BS*), board independence (*BINDP*), Female on board (*FOB*), multiple directorships (*MD*), and institutional ownership (*INSTO*).  $\mathbf{Z}_i$  is a vector of control variables that prior studies have documented to affect the method of payment in takeovers. These control variables are acquirer

free cash flow (*A.FCF*), acquirer market-to-book ratio (*A.MB*), acquirer size (*A.Size*), acquirer leverage (*A.Leverage*), acquirer analyst coverage (*A.Analyst*), acquirer stock returns (*A.Stock>Returns*), acquire insiders' ownership (*A.INSTO*), target market-to-book ratio (*T.MB*), relative size (*R.Size*), target leverage (*T.Leverage*), target analyst coverage (*T.Analyst*), target sales growth (*T.Sales.Growth*), target R&D (*T.R&D*), target in high-tech industry (*T.Hi.Tech*), acquirer and target in the same two-digit SIC industry (*Related*), and target and acquirer in the same state in the US (*Same.State*). Finally, all models always include the year index (*Year.Index*). These control variables are included in all regression models. The definitions of all explanatory variables and their expected signs on the likelihood of cash offers in takeovers are summarized in Table 1.

To further assess the robustness of my findings from the aforementioned binary probit regression models, and following previous studies (Luypaert & Van Caneghem, 2017), I also estimate ordered probit models. In these models, I define my dependent variable as an ordinal variable that equals 0 if the payment method is stock, 1 if it is a combination of cash and stock, and 2 if it is cash. The test and control variables are all the same as in the binary probit models.

## **4. Empirical Results**

### **4.1. Descriptive Statistics**

Table 2 presents a time profile of the sample showing the number of takeovers in each year, 1999-2014. The number of deals is highest in two years of 2007 and 2010. Further, Table 2 reports the distribution of the three choices of payment method, and industry relatedness of the takeover according to the two-digit SIC code. It can be noted that compared to other methods, cash offers show a steady increase over the years. This is the rationale behind the inclusion of the year index in all the regressions in this study. Moreover, Table 2 reveals that a larger fraction of the takeovers took place between acquirers and targets that belong to the same two-digit SIC code industry.

*[insert Table 2 about here]*

Table 3 reports the descriptive statistics of acquirer, target, and transaction-related variables for the sample of 432 US completed takeovers that took place between publicly traded acquirers and targets during the period of 1999 to 2014. All the continuous variables are winsorized at the 1st and 99th percentiles to reduce the effect of any outliers.

Table 3 reveals that 60% of the transactions are in the form of cash offers, 19% are in the form of stock swaps, and the remaining 21% are a combination of cash and stock. Cash being the dominant

choice of payment in takeovers is reported by prior studies both in the US and European transactions (see e.g., Faccio & Masulis, 2005; Luypaert & Van Caneghem, 2017).

Further, it can be noted that board size varies from 5 to 20 with an average of 10.8 directors on board. Board independence varies from 0.27 to 0.93 with a mean of 0.75. The fraction of females on board ranges from 0 to 0.33 with an average of 0.12. These findings are comparable with that of Levi et al. (2014) who report that board on average consists of 11.28 directors out of which 0.675 are independent and 0.107 are females. Further, it can be noted that the fraction of directors with four or more directorships ranges from 0 to 0.73 with an average of 0.11. Institutional ownership has an average of 0.71 with a minimum of 0.23 and a maximum of 0.98.

Regarding the control variables, on average acquirers have a higher M/B ratio than targets. Acquirers have a mean (median) M/B ratio of 4.07 (2.88) while targets have a mean (median) of 2.93 (2.04) for targets. Expectedly, acquirers are larger than targets. On average, targets are about 17% of the size of acquirers. The results reveal that the acquirer and target have a similar leverage ratio on average. This makes financial synergy less likely (Dionne et al., 2015). Acquirers have a mean (median) leverage ratio of 0.15 (0.14) and the corresponding ratio for targets is 0.14 (0.06). Unsurprisingly, acquirers are followed by a greater number of analysts compared to targets. The mean (median) number of acquirers' analyst coverage is 18.2 (17) while the corresponding number for the target is 6.94 (5). This is in line with the result of a study by Chang et al. (2006) who document that larger firms tend to attract a greater number of analysts. Further, acquirers yield free cash flow with a mean (median) of 0.08 (0.08). The mean (median) of acquirers' stock returns prior to the takeover announcement is 0.09 (0.06). The mean (median) stock ownership by acquirer directors is 0.04 (0.01). Targets have sales growth with a mean (median) of 0.17 (0.10) and R&D expenditure with a mean (median) of 0.07 (0.01). Moreover, in 25 percent of the transactions, targets are in the high-tech industry. Finally, 65% of the transactions took place between acquirers and targets that are in the same industries based on their two-digit SIC code (according to the Thomson Reuters EIKON M&A database), and in 17% of the transactions acquirers and targets are reported to be in the same state in the US (according to the same database).

*[insert Table 3 about here]*

Table 4 reports the correlations between various explanatory variables, which reveals a number of significant correlations among these variables. The highest correlation as expected exists between acquirer size and board size which is 0.64 and it is significant at the 1% level. The correlations



between the rest of the variables are suggestive of the fact that my models are unlikely to suffer from a multicollinearity problem. However, to make sure of this issue, I examine the variance inflation factor (VIF) for probit regression models. The VIF for each specification is reported at the bottom of the regression tables. The maximum VIF is 4.83 which is well below the conventional rule of thumb of 10 (Neter, Kutner, Nachtsheim, & Wasserman, 1996) and also a more conservative factor of 5. Thus, I conclude that multicollinearity is not a concern for the results.

*[insert Table 4 about here]*

#### **4.2. Multivariate Results**

Before moving to test the hypotheses of the study, I re-examine the results of prior research with regards to the relation between the choice of payment method and the completion time of a takeover and how different methods of payment are associated with the acquirer shareholders' wealth effect. I measure the completion time of a takeover as the number of days from deal announcement to deal completion date, both as reported in the Thomson Reuters EIKON M&A database. I then estimate the regression of completion time variable on the method of payment, cash offers and stock swaps. Models 1-3 in Table 5 present the results for this analysis. I run all the regressions using White (1980) heteroscedasticity-consistent standard errors. After having controlled for the various acquirer, target, and transaction-related variables that might affect the dependent variable, Model 1 shows that the coefficient of cash offers is negative and significant at the 1% level. Therefore, cash offers take less to complete. Model 2 shows that the coefficient of stock swaps is positive and significant at the 5% level suggesting that stock swaps take longer time to complete. Finally, in Model 3, I include both methods of payment. Whereas the coefficient of cash offers is still negative and significant at the 1% level, stock swaps carry an insignificant coefficient. These results are consistent with prior studies (see e.g., Faleye et al., 2011) and confirm that cash-financed acquisitions take relatively less time than stock financed acquisitions to complete. Although, the extant literature does not provide a conclusive answer to whether shorter completion time is better than longer due diligence time, unnecessary delay in completion of acquisition may invite other potential bidders as they learn about the profitability of the deal and therefore, would make the process costlier for the initial bidder. In this regard, Faleye et al. (2011) find that less effective board at acquirer level is associated with a longer completion time of a takeover deal.

To examine the wealth effect of a takeover for acquirer shareholders, I use event study methodology and compute the acquirer's CAR measured over the five-day window [-2, +2] surrounding the takeover announcement which is the event day. The announcement dates are from the Thomson Reuters EIKON M&A database. In order to calculate the CAR, first abnormal returns are needed to be computed. Abnormal return is the idiosyncratic part of the stock returns that is attributable to the takeover announcement. It can be obtained using the following formula:

$$AR_{it} = R_{it} - ER_{it} \quad (3)$$

where  $AR_{it}$  is firm  $i$  abnormal return at time  $t$ ,  $R_{it}$  is firm  $i$  realized return at time  $t$ , and  $ER_{it}$  is firm  $i$  expected return at time  $t$ .

The expected return ( $ER_{it}$ ) is the returns that obtained if the takeover were not announced. The expected return in this study is computed applying the market model on daily returns over the period of 210 days to 11 days before the takeover announcement date. We employ the CRSP equal-weighted return as the market return. A similar approach has been used by previous studies (see e.g., Masulis et al., 2007). Following is the formula for computing the expected return:

$$ER_{it} = \alpha_i + \beta_i R_{mt} + \varepsilon_i \quad (4)$$

where  $ER_{it}$  is firm  $i$  expected return at time  $t$ ,  $R_{mt}$  is market return at time  $t$ ,  $\alpha_i$  is estimated for firm  $i$ ,  $\beta_i$  is estimated for firm  $i$ .

After obtaining the abnormal returns, the CAR is simply the summation of abnormal returns over the event window [-2, +2]. As an alternative, acquirer's CAR over the three-day window [-1, +1] surrounding the takeover announcement date is also calculated.

Models 4 and 5 in Table 5 present the regression results where the dependent variable is five-day and three-day acquirer CAR, respectively. Independent variables include stock swaps and cash offers. I also control for various standard variables that the literature suggests affecting the acquirer announcement returns. I run all the regressions using White (1980) heteroscedasticity-consistent standard errors. Whereas in both of the models the coefficient of cash offers is positive and significant at the 5% level, stock swaps carry insignificant coefficients. This result is similar to those reported by prior studies (see e.g., Amihud et al., 1990; Brown & Ryngaert, 1991; Fuller et

al., 2002; Travlos, 1987; Wansley et al., 1987) and reveals that cash offers tend to increase acquirers' shareholders' wealth whereas stock swaps do not.

Next, I turn to the main analyses of the study. Table 6 documents the estimates of seven alternative versions of the binary probit regression model (equation 2) to examine the effect of various characteristics of the board of directors and institutional ownership at the acquirer level on the likelihood of cash offers in takeovers. In order to investigate the effect of each variable of interest, I build a hierarchical regression analysis. Model 1 includes the standard choice of payment determinants reported by prior studies. I then add board size, board independence, female on board, multiple directorship, and institutional ownership separately in models 2-6, respectively. Finally, in model 7, I include all the variables of interest in order to examine how these variables simultaneously influence the probability of cash offers in takeovers. The dependent variable in all the specifications equals 1 if the method of payment is cash and zero otherwise. I run all the regressions using White (1980) heteroscedasticity-consistent standard errors.

Model 1 documents supporting evidence for several variables that prior studies have reported influencing the probability of cash offers in takeovers. More specifically, the coefficient acquirer free cash flow is positive and significant at 1% level. This is in line with the pecking order theory that states firms prefer internal funding as the first choice for their investment given that it is cheaper compared to other sources of funding. Further, the acquirers' leverage ratio carries a positive and significant coefficient while the leverage ratio of targets has no effect on the likelihood of cash offers. Whereas acquirer analyst coverage has no effect on the likelihood of cash offers, target analyst coverage has a negative and significant effect. Consistent with market-timing behavior hypothesis, acquirers with overvalued stocks are less likely to use cash as the method of payment. This is evidenced by the negative coefficient of acquirer stock returns. However, it is significant at the 10% level. Further, the coefficient of relative size is negative and significant at the 1% level. This is in line with the argument that as the target firm size relative to the acquirer firm increases, the ability of the acquirer to offer cash as the choice of payment method decreases. This is also in line with Hansen's (1987) theory. In addition, the target M/B ratio has a negative effect on the likelihood of cash offers, which is significant at the 1% level. The coefficients of both variables of target R&D and target being in the high-tech industry are positive and significant at the 1% level and 5% level, respectively. Considering that R&D and being in the high-tech industry are associated with high asymmetric information, the results are consistent with prior studies' argument that acquirers exploit the opportunity by using cash as the method of payment

(Chemmanur et al., 2009; Luypaert & Van Caneghem, 2017). Further, takeover transactions in which both acquirers and targets belong to the same industry according to two-digit SIC code, are less likely to settle in cash. The corresponding variable carries a negative coefficient that is significant at the 10% level. This is in line with the argument that target shareholders are less risk-averse when the acquirer is in the same industry, therefore they are more willing to accept stock as the method of payment. Finally, the acquirer and target being in the same state decreases the probability of cash offers.

Hypothesis 1 posits that the acquirer board size is associated with the choice of payment method in takeovers. In Model 2 the coefficient of board size is negative and significant at the 5% level after having controlled for the various acquirer, target, and transaction-related factors that are reported influencing the method of payment. Potentially effective governance should increase the probability that an acquirer use cash as the method of payment in takeovers (Daher & Ismail, 2018; Karampatsas et al., 2014; Martin, 1996). This result shows that larger boards seem to fail to do so. In fact, the finding is line with the argument that smaller size boards are more effective in monitoring managers and take less time for such boards to reach consensus (Cheng, 2008; Jensen, 1993; Lipton & Lorsch, 1992; Yermack, 1996). Indeed, firms with smaller board size are more likely to choose cash as the choice of payment and reap the benefit associated with such method like lower rejection probability by the target firm, faster completion time, and non-negative outcome (Fishman, 1989; Karampatsas et al., 2014; Travlos, 1987). This result holds also when the simultaneous effects of various board characteristics are examined in Model 7.

Hypothesis 2 states that acquirer board independence is associated with an increase in the probability that acquirer use cash as the method of payment in takeovers. Consistent with this prediction, Model 3 reports that the coefficient of acquirer board independence is positive and significant at the 10% level. This result is consistent with the argument that independent directors tend to provide better monitoring (Byrd & Hickman, 1992; Fama & Jensen, 1983; Lipton & Lorsch, 1992) and ensure better quality financial report and lower the firm information asymmetry (Ajinkya et al., 2005; Armstrong et al., 2014; Klein, 2002a). Promoting better information environment and therefore lower cost of borrowing (Anderson et al., 2004; Bhojraj & Sengupta, 2003; Fields et al., 2012), a higher fraction of independent directors on board enables acquirers to choose cash as the method of payment which in turn increase their shareholders' wealth. However, the coefficient of independent directors is not significant at a conventional level when it is inserted in model 7 along with other attributes of the board of directors.

Hypothesis 3 conjectures that the presence of female directors on board at the acquirer level increases the probability that the acquirer use cash as the choice of payment. Model 4 documents a positive, significant at the 10% level, the association between the fraction of females on board and the probability of cash offers which lends support to hypothesis 3. This finding is line with the argument that female directors are less likely to subvert the shareholders' wealth (Adams & Ferreira, 2009; Carter et al., 2003; Levi et al., 2014). Further, the result is consistent with the fact that presence of female directors on board increases the quality of firm's reports and therefore increase the firm debt capacity (Fields et al., 2012; Srinidhi et al., 2011), which overall makes an acquirer with higher fraction of females on its board more likely to use cash as the medium of exchange in takeovers. The coefficient of females on board at the acquirer level is not significant at a conventional level when it is inserted in model 7 along with other attributes of the board of directors. However, when I check the robustness of the results using ordered probit regression models in the following section, the coefficient of females on board is positive and significant at the 5% level in Model 7 having controlled for all the other characteristics of the board of directors.

Hypothesis 4 states that multiple directorships at the acquirer level increases the probability that the acquirer use cash as the choice of payment. Model 5 reports that the coefficient of multiple directorships is positive and significant at the 5% level. This result holds also when variable multiple directorships is inserted in model 7 along with other attributes of the board of directors. This finding is consistent with the notion that directors who serve on multiple boards have reputation concerns and are less likely to shirk their responsibilities. They are well aware of the workload and rationally distribute their time and energy to different directorships (Fama & Jensen, 1983; Ferris et al., 2003; Harris & Shimizu, 2004; Huang et al., 2018). Further, this result is line with the finding that indicates multiple directorships is associated with higher credit ratings and easier access to capital (Ashbaugh-Skaife et al., 2006; Chakravarty & Rutherford, 2017; Huang et al., 2018). In the context of a takeover, the result shows that acquirer directors serving on multiple boards tend to create value for shareholders by effective monitoring and facilitating the use of cash as the choice of payment.

Hypothesis 5 posits that institutional ownership at the acquirer level increases the probability that the acquirer use cash as the method of payment. The result in Model 6 indicates that the coefficient of institutional ownership is positive and significant at the 5% level, providing support for hypothesis 5. This finding is consistent with the fact that institutional investors have a great incentive to monitor managers (McConnell & Servaes, 1990; Shleifer & Vishny, 2003). Given that

stock swaps are associated with a decrease in acquirer shareholders' wealth, institutional investors encourage use of cash as the method of payment and pave the way for such decision by being associated with better information environment and easier access to capital (Ajinkya et al., 2005; Bhojraj & Sengupta, 2003; Martin, 1996). The coefficient of institutional ownership is not significant at a conventional level when it is inserted in model 7 along with other attributes of the board of directors. However, when I check the robustness of the results using ordered probit regression models in the following section, the coefficient of institutional ownership is positive and significant at the 5% level in Model 7 in which all the other characteristics of the board of directors are inserted as well.

*[insert Table 5 about here]*

*[insert Table 6 about here]*

#### **4.3. Further Analyses**

In this section, I report several supplemental analyses aimed at assessing the robustness of the earlier findings. In the first set of robustness check, following previous studies (Chemmanur et al., 2009; Faccio & Masulis, 2005; Luypaert & Van Caneghem, 2017), I estimate ordered probit regression models for the effect of acquirer board of directors and institutional ownership on the likelihood of cash offers in takeovers. The results of these analyses are reported in Table 7. The dependent variable in all the specifications equals 0 if the choice of payment is stock, 1 if it is a combination of cash and stock, and 2 if it is cash offers. As it can be seen, all the results remain the same and confirm the findings reported in Table 6. Whereas acquirer board size has a negative and significant effect on the probability of cash offers, board independence, female on board, multiple directorships, and institutional ownership at acquirer level significantly increase the probability that acquirer use cash as the choice payment in takeovers.

*[insert Table 7 about here]*

Second, following prior studies (Luypaert & Van Caneghem, 2017), I run all the regressions once more using binary logit models and ordered logit models. The results of these extra analyses confirm the findings and conclusions of the earlier results in Table 6. The output of these analyses is not reported but is available upon request.

## 5. Summary and Conclusion

Given that acquirer shareholders' wealth is at least partially a function of the strategic choice of payment method, corporate monitors at the acquirer level are expected to intervene in such a decision of acquirer. Whereas, the extant literature has examined the influence of external monitoring mechanisms, such as institutional investors and creditors, on the choice of payment method in takeovers, little is known on whether and how internal governance mechanisms, more specifically, acquirer board of directors influences such decision. This study aims to fill this gap by answering this question and promote our understanding regarding such association.

Using binary probit regression models I document that board size is negatively associated with the probability that acquirer use cash as the method of payment in takeovers. Further, board independence, the fraction of female on board, multiple directorships, and institutional ownership increase the likelihood that the acquirer opts for cash as the method of payment. Building on insights from the agency theory and given that cash offers are, on average, associated with increase of acquirer shareholders' wealth, these findings support the view that acquirer board of directors and institutional investors by exerting effective monitoring and being associated with better information environment and lower cost of borrowing, pave the way for acquirer to use cash as the choice of payment.

This study adds to the literature on the determinants of the choice of payment method in takeovers. Institutional investors (Martin, 1996), block holders (Karampatsas et al., 2014), and creditors (Daher & Ismail, 2018) by exerting effective monitoring, increase the probability that acquirers use cash as the method of payment which is associated in turn with higher value creation for shareholders of acquirer firm. This paper provides new evidence that the internal governance mechanisms, the attributes of the board of directors, account as an additional important and significant determinant of the choice of payment in takeovers.

This study is also related to the literature that investigates the direct effect of the acquirer board of directors and institutional investors on the takeover wealth effect (Ahn et al., 2010; Byrd & Hickman, 1992; L. Y. Chen et al., 2015; X. Chen et al., 2007; Ferreira et al., 2010; Field & Mkrtychyan, 2017; Gaspar et al., 2005; Harris & Shimizu, 2004; Masulis et al., 2007, 2012; Schmidt, 2015). Instead, this paper documents that the board of directors and institutional investors influence the choice of payment method in takeovers which in turn has a material impact on the announcement and long-term performance of the takeovers. Therefore, it can be considered as a

back-door mechanism through which the board of directors and institutional investors increase shareholders' wealth.

Finally, by establishing that better-quality monitoring by board of directors and institutional investors increases the likelihood that acquirers use cash as the choice of payment method in takeovers, the study contributes to the literature that highlights the effect of better-quality governance mechanisms on cost of borrowing (Anderson et al., 2004; Bhojraj & Sengupta, 2003; Chakravarty & Rutherford, 2017; Fields et al., 2012; Huang et al., 2018).

Like any empirical study, some limitations apply, which in turn present a number of additional avenues for future research. First, in this study, I focus on the effect of the board of directors and institutional investors at the acquirer level on the decision regarding the choice of payment. It would be interesting, however, to examine how board and institutional ownership at the target level affect such decision. Second, whereas in this study I focus on the choice of payment method, it would be interesting to examine how the board of directors and institutional investors influence other aspects of a takeover transaction at the pre-completion stage, such as deal initiation, probability of deal completion, and time to completion among other relevant variables. Finally, it would be equally insightful to examine the aforementioned association in countries other than the US, provided that shareholder protection is different in various countries.



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## Appendix

Table 1. Variables' Definitions/Measures

This table reports the definitions of the explanatory variables and their hypothesized effect on the probability of cash offers in takeovers.

Variable	Definition/Measure	Expected sign
Board size	Number of directors serving on a board	Uncertain
Board independence	Fraction of independent directors on board	+
Female on board	Fraction of female directors on board	+
Multiple directorships	Fraction of directors serving on four or more boards	+
Institutional ownership	Percentage of firm's shares held by institutions	+
Acquirer free cash flow	Operating income before depreciation minus interest expenses, taxes, preferred dividend, and common dividend divided by book value of total assets.	+
Acquirer M/B ratio	Acquirer number of common shares outstanding multiplied by its share price divided by its book value of equity.	-
Acquirer size	Log (total assets).	+
Acquirer leverage	Total long-term debt divided by total assets.	Uncertain
Acquirer analyst coverage	Maximum number of analysts who provide an estimation of EPS in any month in the most recent fiscal year prior to the deal announcement.	Uncertain
Acquirer stock returns	Acquirer share price 28 business days before the deal announcement minus acquirer share price 154 business days before the deal announcement divided by acquirer share price 154 business days before the deal announcement.	-
Acquirer's directors' ownership	Percentage of firm's shares held by its directors.	+
Relative size	Target total assets divided by acquirer total assets.	-
Target M/B ratio	Number of common shares outstanding multiplied by share price divided by its book value of equity.	-
Target leverage	Total long-term debt divided by total assets.	Uncertain
Target analyst coverage	Maximum number of analysts who provide an estimation of EPS in any month in the most recent fiscal year prior to the deal announcement.	Uncertain
Target sales growth	(target sales in year $t$ minus target sales in year $t-1$ )/target sales in year $t$ , where $t$ is the fiscal year prior to the deal announcement.	-
Target R&D	R&D investment divided by total assets.	Uncertain
Target in high tech	Indicator variable that takes the value of 1 if the target firm is in the high-tech industry.	Uncertain
Related industry	Indicator variable that takes the value of 1 if the acquirer firm and target firm share the same two-digit SIC codes.	-
Same state	Indicator variable that takes the value of 1 if the acquirer and target are in the same state in the US according to Thomson Reuters EIKON M&A database.	Uncertain

Table 2. Sample Distribution

This table displays the distribution of the transactions year by year, the choice of payment method (cash, stock, and mixed), and industry relatedness of the transaction according to two-digit SIC code.

Year	No. of Deals	Percent	Cash-Only	Stock-Only	Mixed	Related
1999	28	0.065	12	14	2	13
2000	27	0.063	12	9	6	19
2001	22	0.051	10	6	6	16
2002	20	0.046	12	3	5	16
2003	20	0.046	10	8	2	14
2004	24	0.056	15	3	6	13
2005	33	0.076	20	2	11	23
2006	30	0.069	20	5	5	16
2007	37	0.086	26	5	6	22
2008	22	0.051	15	2	5	16
2009	24	0.056	13	2	9	14
2010	43	0.100	30	7	6	29
2011	17	0.039	8	3	6	14
2012	30	0.069	22	3	5	16
2013	24	0.056	16	3	5	19
2014	31	0.072	17	5	9	22
<b>Total</b>	<b>432</b>	<b>1.00</b>	<b>258</b>	<b>80</b>	<b>94</b>	<b>282</b>

Table 3. Descriptive Statistics

This table displays the descriptive statistics of acquirer, target, and transaction-related variables. The sample includes 432 US completed takeovers that took place between publicly traded acquirers and targets over the period of 1999 to 2014. Board size (BS), board independence (BINDP), female on board (FOB), multiple directorship (MUD), acquirer free cash flow (A.FCF), acquirer market-to-book ratio (A.MB), acquirer size (A.Size), acquirer leverage (A.Leverage), acquirer analyst coverage (A.Analyst), acquirer directors ownership (A.DIROWN), relative size (R.Size), target market-to-book ratio (T.MB), target leverage (T.Leverage), target analyst coverage (T.Analyst), target R&D expenditure (T.R&D) are measured at the end of the most recent year prior to takeover announcement. Institutional ownership (INSTO) is measured at the quarter end prior to the takeover announcement. Acquirers' stock run-up before the acquisition (A.Stock>Returns) is measured as acquirer buy and hold cumulative stock returns over the period of -154 business days to -28 business days prior to the deal announcement. Target sales growth (T.Sales.Growth) is measured over the two years before the deal announcement. Dummy variables are target in being the high-tech industry (T.Hi-Tech), acquirer and target being in the same industry (Related), target and acquirer being in the same state in the US (Same.State), cash-only deals (Cash.Only), and stock-only deals (Stock.Only).

Variables	N	Mean	St. Dev.	Min	Pctl(25)	Median	Pctl(75)	Max
BS	432	10.8	3.15	5	9	10.5	12	20
BINDP	432	0.75	0.14	0.27	0.67	0.78	0.86	0.93
FOB	432	0.12	0.08	0	0.07	0.13	0.18	0.33
MUD	432	0.11	0.13	0	0	0.09	0.18	0.73
INSTO	432	0.71	0.17	0.23	0.6	0.72	0.83	0.98
A.FCF	432	0.08	0.06	-0.08	0.03	0.08	0.12	0.27
A.MB	432	4.07	4.02	0.63	1.78	2.88	4.46	26.15
A.Size	432	3.95	0.76	2.38	3.39	3.97	4.5	5.54
A.Leverage	432	0.15	0.13	0	0.05	0.14	0.22	0.67
A.Analyst	432	18.12	9.61	3	10	17	24	44
A.Stock>Returns	432	0.09	0.23	-0.35	-0.06	0.06	0.2	0.94
A.DIROWN	432	0.04	0.08	0.00	0.01	0.01	0.04	0.42
R.Size	432	0.17	0.28	0	0.01	0.06	0.19	1.56
T.MB	432	2.93	2.92	-2.77	1.27	2.04	3.61	15.71
T.Leverage	432	0.14	0.19	0	0	0.06	0.22	0.86
T.Analyst	432	6.94	6.57	0	2	5	10	30
T.Sales.Growth	432	0.17	0.42	-0.49	-0.01	0.1	0.23	2.32
T.R&D	432	0.07	0.12	0	0	0.01	0.1	0.63
T.Hi.Tech	432	0.25	0.43	0	0	0	1	1
Related	432	0.65	0.48	0	0	1	1	1
Same.State	432	0.17	0.38	0	0	0	0	1
Cash.Only	432	0.60	0.49	0	0	1	1	1
Stock.Only	432	0.19	0.39	0	0	0	0	1



Table 4. Correlation Matrix

This table displays the correlation coefficients for explanatory variables that are used in the regression models. The sample includes 432 US completed takeovers that took place between publicly traded acquirers and targets over the period of 1999 to 2014. Board size (BS), board independence (BINDP), female on board (FOB), multiple directorship (MUD), acquirer free cash flow (A.FCF), acquirer market-to-book ratio (A.MB), acquirer size (A.Size), acquirer leverage (A.Leverage), acquirer analyst coverage (A.Analyst), acquirer directors ownership (A.DIROWN), relative size (R.Size), target market-to-book ratio (T.MB), target leverage (T.Leverage), target analyst coverage (T.Analyst), target R&D expenditure (T.R&D) are measured at the end of the most recent year prior to takeover announcement. Institutional ownership (INSTO) is measured at the quarter end prior to the takeover announcement. Acquirers' stock run-up before the acquisition (A.Stock>Returns) is measured as acquirer buy and hold cumulative stock returns over the period of -154 business days to -28 business days prior to the deal announcement. Target sales growth (T.Sales.Growth) is measured over the two years before the deal announcement. Dummy variables are target being in the high-tech industry (T.Hi-Tech), acquirer and target being in the same industry (Related), target and acquirer being in the same state in the US (Same.State), cash-only deals (Cash.Only), and stock-only deals (Stock.Only). The symbols \*, \*\*, \*\*\* indicates significance at the 10%, 5%, and 1% levels, respectively.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
1.BS	1																				
2.BINDP	0.06	1																			
3.FOB	0.23***	0.29***	1																		
4.MUD	0.12*	0.08	0.12*	1																	
5.INSTO	-0.42***	0.18***	0.03	-0.13**	1																
6.A.FCF	-0.29***	-0.04	0.08	0.11*	0.18***	1															
7.A.MB	-0.04	-0.08	0.11*	0.25***	-0.08	0.31***	1														
8.A.Size	0.64***	0.17***	0.39***	0.23***	-0.40***	-0.17***	-0.07	1													
9.A.Leverage	-0.07	0.08	0.16**	-0.01	0.13**	0.09	0.15**	0.02	1												
10.A.Analyst	0.27***	-0.02	0.20***	0.27***	-0.27***	0.21***	0.29***	0.59***	-0.09	1											
11.A.Stock>Returns	-0.16***	-0.11*	-0.15**	-0.01	0.01	-0.03	0	-0.11*	-0.07	0.01	1										
12.DIROWN	-0.11*	-0.35***	-0.10*	-0.04	-0.06	0.10*	0.01	-0.18***	0.03	-0.08	-0.04	1									
13.R.Size	-0.16**	-0.08	-0.08	-0.15**	0.21***	0.04	0	-0.34***	0.10*	-0.26***	-0.04	0.02	1								
14.T.MB	-0.13**	-0.02	0.06	0.05	0.05	0.19***	0.26***	-0.05	-0.01	0.12*	0.04	0.05	-0.04	1							
15.T.Leverage	0	0.04	0.08	0.04	0.08	0.09	0.02	0.03	0.37***	-0.08	-0.06	-0.06	0.24***	0.02	1						
16.T.Analyst	0.13**	0.02	0.22***	0.10*	-0.03	0.18***	0.08	0.32***	0.04	0.40***	0.01	-0.02	0.22***	0.16***	0.11*	1					
17.T.Sales.Growth	-0.03	-0.04	0.04	0.13**	-0.05	0.14**	0.20***	0.01	0.03	0.15**	0.05	-0.07	-0.09*	0.20***	0.08	0.04	1				
18.T.R&D	-0.19***	0.09*	0	0.14**	-0.01	0.13**	0.20***	-0.07	-0.08	0.19***	-0.01	-0.02	-0.20***	0.21***	-0.15**	0.02	0.13**	1			
19.T.Hi.Tech	-0.28***	-0.05	-0.11*	0.01	0.02	0.12**	0.09	-0.13**	-0.12*	0.12*	0.14**	0.11*	-0.12*	0.09	-0.19***	0.06	0.06	0.23***	1		
20.Related	0.04	-0.04	-0.10*	-0.16***	0	-0.10*	-0.06	-0.07	0.02	-0.03	0.01	0.01	0.16**	0	0.05	0.03	0	0.08	-0.06	1	
21.Same.State	-0.06	-0.03	-0.08	-0.07	0	-0.08	-0.07	-0.03	-0.03	-0.02	0.04	0.03	0.05	-0.03	-0.08	0.01	-0.07	-0.02	0.02	0.01	1

Table 5. Choice of Payment Method, Completion Time, and Acquirer Announcement Returns

This table documents the results of ordinary least squares regression models. The sample includes 432 US completed takeovers that took place between publicly traded acquirers and targets over the period of 1999 to 2014. The dependent variable in models 1-3 is the number of days between announcement and completion of the takeover and in models 4 and 5 is the acquirer cumulative abnormal return over the five-day [-2, +2] and three-day [-1, +1] windows, respectively. Independent variables include cash-only deals (Cash.Only) and stock-only deals (Stock.Only). Control variables that are measured at the end of the most recent fiscal year prior to the takeover announcement include acquirer free cash flow (A.FCF), acquirer market-to-book ratio (A.MB), acquirer size (A.Size), acquirer leverage (A.Leverage), acquirer analyst coverage (A.Analyst), relative size (R.Size), target market-to-book ratio (T.MB), target leverage (T.Leverage), target analyst coverage (T.Analyst), and target R&D (T.R&D). Acquirers' stock run-up before the acquisition (A.Stock>Returns) is measured as acquirer buy and hold cumulative stock returns over the period of -154 business days to -28 business days prior to the deal announcement. Target sales growth (T.Sales.Growth) is measured over the two years prior to the takeover announcement. Dummy variables are target being in the high-tech industry (T.Hi-Tech), acquirer and target being in the same industry based on two-digit SIC code (Related), and target and acquirer being in the same state in the US (Same.State). The symbols \*, \*\*, \*\*\* indicate significance at the 10%, 5%, and 1% levels, respectively. t-statistics are calculated using White heteroscedasticity-consistent standard errors. p-values are presented in parentheses.

	<i>Ordinary Least Squares Regression Models</i>				
	Model 1	Model 2	Model 3	Model 4	Model 5
Constant	33.0984 (0.2904)	9.655 (0.7602)	33.7339 (0.2581)	-0.0727*** (0.0052)	-0.0798*** (0.0005)
Cash.Only	-68.3344*** (0.0000)		-69.1784*** (0.0000)	0.0196** (0.0271)	0.0185** (0.0150)
Stock.Only		37.8502** (0.0154)	-1.8951 (0.9167)	0.0037 (0.7228)	-0.0006 (0.9439)
A.FCF	-18.4072 (0.7956)	-133.0724* (0.0876)	-19.2811 (0.7927)	0.0624 (0.2793)	0.0534 (0.2894)
A.MB	0.4567 (0.6012)	0.3325 (0.7256)	0.4766 (0.6039)	0.0006 (0.4701)	0.0011* (0.0896)
A.Size	23.7476*** (0.0069)	19.6903** (0.0320)	23.8867*** (0.0092)	0.0089 (0.1354)	0.0087* (0.0922)
A.Leverage	-6.5511 (0.8398)	-28.6213 (0.4268)	-6.9415 (0.8367)	0.0455* (0.0631)	0.0325 (0.1198)
A.Analyst	0.0691 (0.9003)	0.063 (0.9163)	0.0697 (0.8992)	-0.0002 (0.6490)	-0.0002 (0.0662)
A.Stock>Returns	-27.1018** (0.0248)	-24.3185* (0.0632)	-26.9290** (0.0316)	0.01 (0.4760)	0.0015 (0.9020)
R.Size	54.4880** (0.0242)	83.5021*** (0.0024)	54.4207** (0.0228)	0.0173 (0.3614)	0.0099 (0.5151)
T.MB	-1.2347 (0.3045)	-0.715 (0.5654)	-1.2313 (0.3038)	-0.0012 (0.3523)	-0.0011 (0.1930)
T.Leverage	-1.0784 (0.9685)	10.4295 (0.7172)	-1.4034 (0.9603)	0.0095 (0.5559)	0.01 (0.4198)
T.Analyst	0.0946 (0.9127)	0.6673 (0.4461)	0.0844 (0.9191)	-0.0015*** (0.0013)	-0.0012*** (0.0036)
T.Sales.Growth	-10.0244 (0.1630)	-9.6459 (0.2192)	-9.9435 (0.1604)	-0.0076 (0.3173)	-0.0046 (0.4868)
T.R&D	-86.0839*** (0.0001)	-117.1350*** (0.0000)	-86.3285*** (0.0001)	0.0248 (0.3293)	0.0277 (0.1603)
T.Hi.Tech	-18.7388*** (0.0046)	-23.2892*** (0.0014)	-18.7988*** (0.0049)	-0.0071 (0.3116)	-0.0064 (0.2909)
Related	19.5679*** (0.0084)	23.8763*** (0.0021)	19.5972*** (0.0085)	0.0107* (0.0579)	0.0106** (0.0297)
Same.State	-0.7932 (0.9504)	7.7205 (0.5552)	-0.8714 (0.9468)	-0.0106 (0.1223)	-0.0098* (0.0957)
Year.Index	2.0128** (0.0217)	1.4832* (0.0958)	2.0016** (0.0176)	0.0009 (0.1609)	0.0013** (0.0140)
Observations	432	432	432	432	432
Adjusted R <sup>2</sup>	0.2438	0.1913	0.242	0.0696	0.1006
F Statistic	9.1754***	6.9969***	8.6460***	2.7903***	3.6769***

Table 6. Board of Directors and Institutional Investors and The Choice of Payment Method in Takeovers

This table documents the results of probit regression models. The sample includes 432 US completed takeovers that took place between publicly traded acquirers and targets over the period of 1999 to 2014. The dependent variables in all specifications is a binary variable that takes the value of 1 if the method of payment is cash and 0 otherwise. Independent variables include acquirer board size (BS), board independence (BINDP), the fraction of female on board (FOB), multiple directorships (MUD), and institutional ownership (INSTO). Control variables that are measured at the end of the most recent fiscal year prior to the takeover announcement include acquirer free cash flow (A.FCF), acquirer market-to-book ratio (A.MB), acquirer size (A.Size), acquirer leverage (A.Leverage), acquirer analyst coverage (A.Analyst), acquirer directors' ownership (A.DIROWN), relative size (R.Size), target market-to-book ratio (T.MB), target leverage (T.Leverage), target analyst coverage (T.Analyst), and target R&D (T.R&D). Acquirers' stock run-up before the acquisition (A.Stock>Returns) is measured as acquirer buy and hold cumulative stock returns over the period of -154 business days to -28 business days prior to the deal announcement. Target sales growth (T.Sales.Growth) is measured over the two years prior to the takeover announcement. Dummy variables are target being in the high-tech industry (T.Hi-Tech), acquirer and target being in the same industry based on two-digit SIC code (Related), and target and acquirer being in the same state in the US (Same.State). The symbols \*, \*\*, \*\*\* indicate significance at the 10%, 5%, and 1% levels, respectively. z-statistics are calculated using White heteroscedasticity-consistent standard errors. p-values are presented in parentheses.

	<i>Probit Regression Models</i>						
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Constant	-0.964 (0.1308)	-0.8513 (0.1902)	-1.4235** (0.0420)	-0.7248 (0.2688)	-0.8998 (0.1570)	-2.2421** (0.0151)	-1.7511* (0.0917)
BS		-0.0686** (0.0341)					-0.0606* (0.0642)
BINDP			0.9349* (0.0907)				0.4709 (0.4310)
FOB				1.9549* (0.0725)			1.4582 (0.2041)
MUD					1.5204** (0.0201)		1.4451** (0.0356)
INSTO						1.4215** (0.0184)	1.0052 (0.1237)
A.FCF	10.0266*** (0.0000)	9.6047*** (0.0000)	9.9389*** (0.0000)	9.9045*** (0.0000)	9.7791*** (0.0000)	9.5121*** (0.0000)	8.9686*** (0.0000)
A.MB	-0.0288 (0.2589)	-0.0212 (0.4380)	-0.0292 (0.2532)	-0.0377 (0.1570)	-0.0362 (0.1354)	-0.025 (0.3108)	-0.0332 (0.2038)
A.Size	0.1133 (0.4816)	0.3077* (0.0978)	0.0765 (0.6375)	0.0234 (0.8887)	0.0281 (0.8633)	0.2527 (0.1629)	0.2126 (0.3141)
A.Leverage	2.3132*** (0.0009)	2.0905*** (0.0033)	2.2678*** (0.0015)	2.2680*** (0.0015)	2.3516*** (0.0005)	2.0898*** (0.0023)	1.9251*** (0.0057)
A.Analyst	-0.0068 (0.5989)	-0.0092 (0.4880)	-0.0043 (0.7445)	-0.0041 (0.7554)	-0.0062 (0.6257)	-0.0063 (0.6188)	-0.005 (0.7080)
A.Stock>Returns	-0.5233 (0.1092)	-0.6156* (0.0607)	-0.4819 (0.1399)	-0.4586 (0.1608)	-0.4986 (0.1208)	-0.4916 (0.1564)	-0.4878 (0.1481)
A.DIROWN	-1.436 (0.2029)	-1.3332 (0.2387)	-0.9052 (0.4182)	-1.4036 (0.2327)	-1.4314 (0.2085)	-0.9206 (0.3844)	-0.6947 (0.5371)
R.Size	-2.4955*** (0.0002)	-2.5169*** (0.0002)	-2.4562*** (0.0002)	-2.4887*** (0.0000)	-2.5139*** (0.0002)	-2.4371*** (0.0001)	-2.4844*** (0.0000)
T.MB	-0.0466* (0.0724)	-0.0524** (0.0465)	-0.0495* (0.0548)	-0.0509* (0.0544)	-0.0438* (0.0770)	-0.0534* (0.0586)	-0.0585** (0.0281)
T.Leverage	-0.5063 (0.2150)	-0.5542 (0.1707)	-0.5308 (0.1928)	-0.5269 (0.1996)	-0.59 (0.1425)	-0.5005 (0.2215)	-0.6445 (0.1076)
T.Analyst	-0.0263* (0.0652)	-0.0271* (0.0634)	-0.0264* (0.0665)	-0.0289** (0.0434)	-0.0266* (0.0633)	-0.0280** (0.0466)	-0.0297** (0.0403)
T.Sales.Growth	-0.2025 (0.2888)	-0.1935 (0.2808)	-0.1883 (0.3299)	-0.2128 (0.2593)	-0.2338 (0.2251)	-0.1994 (0.2970)	-0.2229 (0.2135)
T.R&D	3.0132*** (0.0028)	2.7861*** (0.0048)	2.9077*** (0.0038)	3.0772*** (0.0053)	2.6875*** (0.0053)	3.3151*** (0.0008)	2.7028*** (0.0063)
T.Hi.Tech	0.4832** (0.0158)	0.4256** (0.0354)	0.4792** (0.0167)	0.4956** (0.0176)	0.4795** (0.0182)	0.4471** (0.0264)	0.4070* (0.0558)
Related	-0.3067* (0.0532)	-0.2720* (0.0957)	-0.3067* (0.0553)	-0.2833* (0.0757)	-0.2477 (0.1125)	-0.2857* (0.0708)	-0.1892 (0.2360)
Same.State	-0.5476*** (0.0010)	-0.5666*** (0.0009)	-0.5460*** (0.0010)	-0.5413*** (0.0013)	-0.5392*** (0.0014)	-0.5378*** (0.0014)	-0.5409*** (0.0018)
Year.Index	0.0538*** (0.0045)	0.0530*** (0.0053)	0.0451** (0.0247)	0.0470** (0.0166)	0.0622*** (0.0014)	0.0372* (0.0732)	0.0404* (0.0739)
Observations	432	432	432	432	432	432	432
Pseudo R squared	0.3457	0.3529	0.3500	0.3522	0.3543	0.3572	0.3748
Maximum VIF	3.15	4.04	3.21	3.36	3.29	3.51	4.83

Table 7. Board of Directors and Institutional Investors and The Choice of Payment Method in Takeovers

This table documents the results of ordered probit regression models. The sample includes 432 US completed takeovers that took place between publicly traded acquirers and targets over the period of 1999 to 2014. The dependent variables in all specifications is an ordinal variable that takes the value of 0 if the method of payment is stock, 1 if it is a combination of cash and stock, and 2 if it is cash. Independent variables include acquirer board size (BS), board independence (BINDP), the fraction of female on board (FOB), multiple directorships (MUD), and institutional ownership (INSTO). Control variables that are measured at the end of the most recent fiscal year prior to the takeover announcement include acquirer free cash flow (A.FCF), acquirer market-to-book ratio (A.MB), acquirer size (A.Size), acquirer leverage (A.Leverage), acquirer analyst coverage (A.Analyst), acquirer directors' ownership (A.DIROWN), relative size (R.Size), target market-to-book ratio (T.MB), target leverage (T.Leverage), target analyst coverage (T.Analyst), and target R&D (T.R&D). Acquirers' stock run-up before the acquisition (A.Stock>Returns) is measured as acquirer buy and hold cumulative stock returns over the period of -154 business days to -28 business days prior to the deal announcement. Target sales growth (T.Sales.Growth) is measured over the two years prior to the takeover announcement. Dummy variables are target being in the high-tech industry (T.Hi-Tech), acquirer and target being in the same industry based on two-digit SIC code (Related), and target and acquirer being in the same state in the US (Same.State). The symbols \*, \*\*, \*\*\* indicate significance at the 10%, 5%, and 1% levels, respectively. z-statistics are calculated using White heteroscedasticity-consistent standard errors. p-values are presented in parentheses.

	Ordered Probit Regression Models						
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
0  1	0.0647 (0.9039)	-0.0166 (0.9756)	0.6671 (0.2701)	-0.2196 (0.6920)	0.0334 (0.9507)	1.4708** (0.0423)	1.1809 (0.1498)
1  2	0.9592* (0.0750)	0.8841 (0.1050)	1.5717** (0.0103)	0.6889 (0.2153)	0.9420* (0.0830)	2.3904*** (0.0012)	2.1280** (0.0104)
BS		-0.0488* (0.0899)					-0.0346 (0.2320)
BINDP			1.1743** (0.0228)				0.6899 (0.2027)
FOB				2.5065*** (0.0053)			1.8529** (0.0465)
MUD					1.5638*** (0.0047)		1.3417** (0.0189)
INSTO						1.6642*** (0.0010)	1.2584** (0.0171)
A.FCF	8.9753*** (0.0000)	8.6075*** (0.0000)	8.9443*** (0.0000)	8.9959*** (0.0000)	8.8588*** (0.0000)	8.4967*** (0.0000)	8.2632*** (0.0000)
A.MB	-0.0406* (0.0694)	-0.0358 (0.1190)	-0.0413* (0.0636)	-0.0509** (0.0289)	-0.0487** (0.0234)	-0.0369* (0.0912)	-0.0492** (0.0265)
A.Size	0.0726 (0.5965)	0.2116 (0.1882)	0.0348 (0.7990)	-0.0297 (0.8389)	-0.0064 (0.9636)	0.2218 (0.1311)	0.1171 (0.4999)
A.Leverage	2.0297*** (0.0004)	1.8601*** (0.0014)	1.9883*** (0.0007)	1.9976*** (0.0006)	2.0880*** (0.0003)	1.7668*** (0.0019)	1.7019*** (0.0039)
A.Analyst	-0.0061 (0.5754)	-0.0074 (0.5017)	-0.0032 (0.7676)	-0.0041 (0.7107)	-0.0063 (0.5615)	-0.0052 (0.6311)	-0.0034 (0.7537)
A.Stock>Returns	-0.5720** (0.0422)	-0.6325** (0.0250)	-0.5339* (0.0556)	-0.5073* (0.0736)	-0.5610** (0.0428)	-0.5682* (0.0505)	-0.5333* (0.0608)
A.DIROWN	-1.5367* (0.0978)	-1.4447 (0.1225)	-0.8331 (0.3681)	-1.5395 (0.1022)	-1.4992 (0.1098)	-0.9797 (0.2638)	-0.6154 (0.5061)
R.Size	-1.1298*** (0.00002)	-1.1151*** (0.0000)	-1.0876*** (0.0000)	-1.1174*** (0.0000)	-1.1559*** (0.0000)	-1.1461*** (0.0000)	-1.1225*** (0.0000)
T.MB	-0.0433** (0.0395)	-0.0463** (0.0280)	-0.0467** (0.0274)	-0.0477** (0.0237)	-0.0385* (0.0603)	-0.0535** (0.0165)	-0.0541** (0.0124)
T.Leverage	-0.1855 (0.6150)	-0.2209 (0.5460)	-0.2062 (0.5754)	-0.2221 (0.5438)	-0.2675 (0.4657)	-0.1596 (0.6651)	-0.3001 (0.4070)
T.Analyst	-0.0176 (0.1273)	-0.0179 (0.1253)	-0.0178 (0.1262)	-0.0209* (0.0655)	-0.0181 (0.1187)	-0.0194* (0.0872)	-0.0221* (0.0553)
T.Sales.Growth	-0.1923 (0.2867)	-0.1837 (0.2965)	-0.1867 (0.3071)	-0.2232 (0.2122)	-0.2129 (0.2446)	-0.1965 (0.2788)	-0.2258 (0.2054)
T.R&D	3.3536*** (0.0002)	3.1878*** (0.0003)	3.2149*** (0.0003)	3.4480*** (0.0003)	2.9664*** (0.0005)	3.6631*** (0.0000)	3.1009*** (0.0004)
T.Hi.Tech	0.4732*** (0.0079)	0.4226** (0.0190)	0.4717*** (0.0084)	0.4997*** (0.0073)	0.4606*** (0.0100)	0.4357** (0.0137)	0.4168** (0.0254)
Related	-0.3092** (0.0301)	-0.2807* (0.0517)	-0.3084** (0.0312)	-0.2921** (0.0434)	-0.2464* (0.0832)	-0.2716* (0.0592)	-0.1936 (0.1837)
Same.State	-0.2752* (0.0643)	-0.3004** (0.0469)	-0.2619* (0.0806)	-0.2602* (0.0819)	-0.2540* (0.0893)	-0.2699* (0.0682)	-0.2507* (0.0954)
Year.Index	0.0496*** (0.0020)	0.0487*** (0.0024)	0.0385** (0.0263)	0.0406** (0.0140)	0.0589*** (0.0004)	0.0298* (0.0774)	0.0288 (0.1248)
Observations	432	432	432	432	432	432	432
Pseudo R Squared	0.2200	0.2235	0.2266	0.2301	0.2285	0.2354	0.2526

## **Conclusion**

This thesis advances our knowledge with respect to the effects that different sources of information and corporate governance mechanisms have on the choice of payment method in takeovers. Within the research area of corporate takeover, understanding the drivers of the choice of payment method is of particular interest. This is due to the fact that such choice is associated with various aspects of the takeover transaction including acquirer shareholders' wealth. In order to explore and provide answers to pending questions in this strand of the literature, the first and second chapters of this thesis focus on the effects of two important sources of information that are integral inputs in the information set of firms in takeover transaction, namely; firms annual reports and corporate social responsibility performance ratings, respectively on the choice of payment method in takeovers, while the third chapter employs acquirer governance mechanisms focus.

To briefly summarize, chapter 1 reveals that the probability that the acquirer use cash as the choice of payment method is rising in the percentage of vague terms in the target firm's annual report. This result is mainly driven by the terms that can be associated with a lack of confidence. Furthermore, the chapter shows that the vague language in the target firm's annual report leads to wealth loss for acquirer shareholders around the takeover announcement. These results are stable across different specifications and alternative measures of the overall annual report's readability.

In the second chapter, I document that with regard to the target firm, the existence of CSR performance ratings is positively associated with the probability of cash offers, whereas I find a negative relationship with CSR concerns (low CSR performance) and no effect for CSR strengths (high CSR performance). Furthermore, on the acquirer side, I show that the existence of CSR performance ratings and CSR strengths both increase the probability of cash offers, whereas CSR concerns have no impact. These results prove robust to the inclusion of additional control variables and sample selection bias.

Chapter three moves from different sources of information to the role of acquirer governance mechanisms on the decision regarding the choice of payment method in takeovers. The results of the study reveal that the acquirer board of directors and institutional ownership intervene in such a decision given that it affects the shareholders' wealth. More specifically, I document that board size is negatively and board independence, the fraction of females on board, multiple directorships, and institutional ownership positively associated with the likelihood of cash offers in takeovers.